Science Foundation Ireland sfi For what's next

Annual Report and Accounts 2017

Rialtas na hÉireann
Government of Ireland

Cover image taken by the SFI Research Image of the Year 2017 winner, Dr Mark Jessopp, Research Fellow, MaREI Centre for Marine and Renewable Energy, Environmental Research Institute, University College Cork.

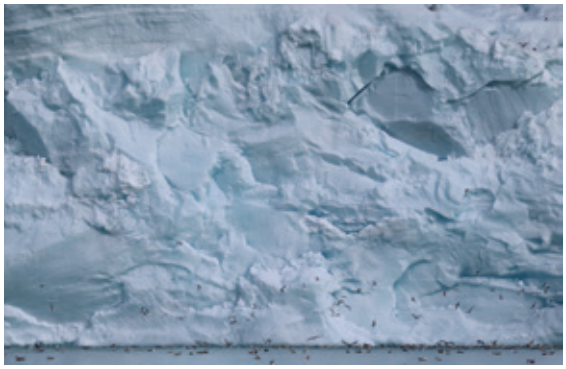


Image title: 'Osmotic Shock'

"The image was taken in Svalbard in the Arctic Circle, at about 78-79 degrees north. As part of the Quark Expedition's 'expert in residence' programme, I was doing pilot work on remote monitoring of seabird populations. Kittiwakes, my species of interest, are in broad scale decline across their Atlantic range and reasons for this are unclear. The image was taken as we sailed past a glacier where thousands of kittiwakes and fulmars were feeding. Increased but localised foraging opportunities, as seen in the image, may be balanced by overall lower food availability associated with the loss of ice-edge productivity due to reduced sea ice coverage in the Arctic. By monitoring colonies over a large scale from the Arctic to the south of Ireland, we can see how global change is affecting populations."

Dr Mark Jessopp, MaREI SFI Research Centre, University College Cork.

SCIENCE FOUNDATION IRELAND
#BelieveInScience

Our #BelieveInScience campaign promotes the potential that science and discovery offer Ireland, today and in tomorrow's world. Read more at:

www.ScienceFoundationIreland.ie.

Table of Contents

About Science Foundation Ireland

Science Foundation Ireland is the national foundation for investment in science, technology, engineering and mathematics (STEM) research.

Science Foundation Ireland funds basic and applied research in the areas of science, technology, engineering and mathematics to promote and assist the development and competitiveness of industry, enterprise and employment in Ireland.

Over recent years, **Science Foundation Ireland has transformed the funding of scientific research on a competitive basis in Ireland,** supporting innovation and promoting collaboration, talent development, excellence and impact. This has significantly advanced Ireland's reputation for research and innovation internationally and is at the core of **future-proofing our knowledge economy.**

Science Foundation Ireland has been at the forefront of developing an environment that attracts and supports researchers of international standing, secures high levels of investment from industry and helps to sustain an environment in which the talent and skills agenda can flourish.

In 2017, Science Foundation Ireland invested €173 million in Irish research. **All awards are competitively assessed using independent international expert peer review.** Science Foundation Ireland funds a diverse and balanced portfolio of programmes from supporting individual researchers across the career spectrum (from early-stage to established highly-esteemed research leaders), to supporting research teams in large-scale world-leading SFI Research Centres.

Science Foundation Ireland offers a range of funding programmes which support scientists and engineers to deliver research excellence as well as economic and societal impact. The majority of funding is committed to basic research projects – excellent research with impact – at Technology Readiness Levels (TRLs) 1 and 2.

Approximately 50% of Science Foundation Ireland's budget is committed to SFI Research Centres which perform Applied and Basic Combined research (ABC). Approximately 40% of Science Foundation Ireland's grants include an industry collaborator; these collaborations may be to perform either basic or applied research.

Our vision is to be a global leader in scientific and engineering research, discovery and innovation.

Our mission is to progress Ireland's society and economy by supporting the best scientific and engineering research, while building an awareness of the role, impact and opportunities science creates. We believe in the ability of STEM to effect positive change in the world and to drive a sustainable international economy.

GREAT PLACE TO WORK Best Workplaces 2018 Ireland

SFI Driving Excellent Science

Ireland is 11th in global scientific ranking

(from InCites by Clarivate Analytics)

Science Foundation Ireland-funded publications are **2.7** times more likely to be star publications* than average

*Star publications are publications in the top 1% most cited papers.

The Irish national average is 1.62%.
The SFI funding average is 2.67%
(based on citations by Clarivates Analytics).

Ireland is:

1st in the world for knowledge diffusion

2nd for knowledge impact

5th for business environment

5th for knowledge and technology outputs

6th for innovation efficiency

10th most innovative country

(Global Innovation Index 2017)

2,433 International collaborations

Science Foundation Ireland researchers were involved in **2,433** international collaborations in **66 countries**

A total of **4,894** publications were reported in 2017 (17% increase)

40% are available in open access repository

Talent & Skills

4,524 people working on SFI-supported research projects

Science Foundation Ireland supported **1,451** postgraduate students

29% of PhD and 30% of Postdocs were employed by industry as their first job

Number of female to male award holders has increased to **26%**

1,169 international reviewers from **623 institutions** in **40 countries** took part in SFI merit review processes

Education & Public Engagement

593 primary schools received SFI Discover Primary Science and Maths Awards

Science Week reached **250,000+** people across Ireland

41 projects supported by the SFI Discover Programme (€4.4 million)

1,600 Smart Futures volunteers engaged 120,000+ students, providing STEM careers advice

Public engagement activities carried out by SFI-funded researchers increased **60%** in 2017

Innovation Driving Economic Impact

€173 million

spend across SFI programmes generates an additional

€116 million non-exchequer funding, which includes:

€70.4 million in EU funding

€32 million in business and enterprise funding

Over €10 million from other international funding sources

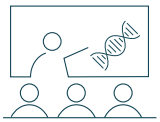
Winning in Europe

51 ERC awards have been secured by Irish-based researchers

31 of these were won by SFI-awardees

SFI Research Centres have won approximately **€100 million** competitive H2020 funding, which equates to more than 50% of funding to Irish Higher Education Institutes.

787 conferences and workshops, with 10,933 international delegates



Projected local economic value to Ireland: **€13.8 million**

(up from €10.5 million in 2016)

32 SFI-funded researchers in **8 Institutes of Technology** are collaborators in SFI Research Centres

There are

23 active SFI awards

with the Institutes of Technology, with a value of **€7 million**

SFI award holders:

spun out 10 companies

(up from six in 2016)

↑ +67%

were granted 36 patents

(up from 22 in 2016)

↑ +64%

SFI Driving Regional Development

Science Foundation Ireland directly and indirectly supports

31,200

jobs in Ireland

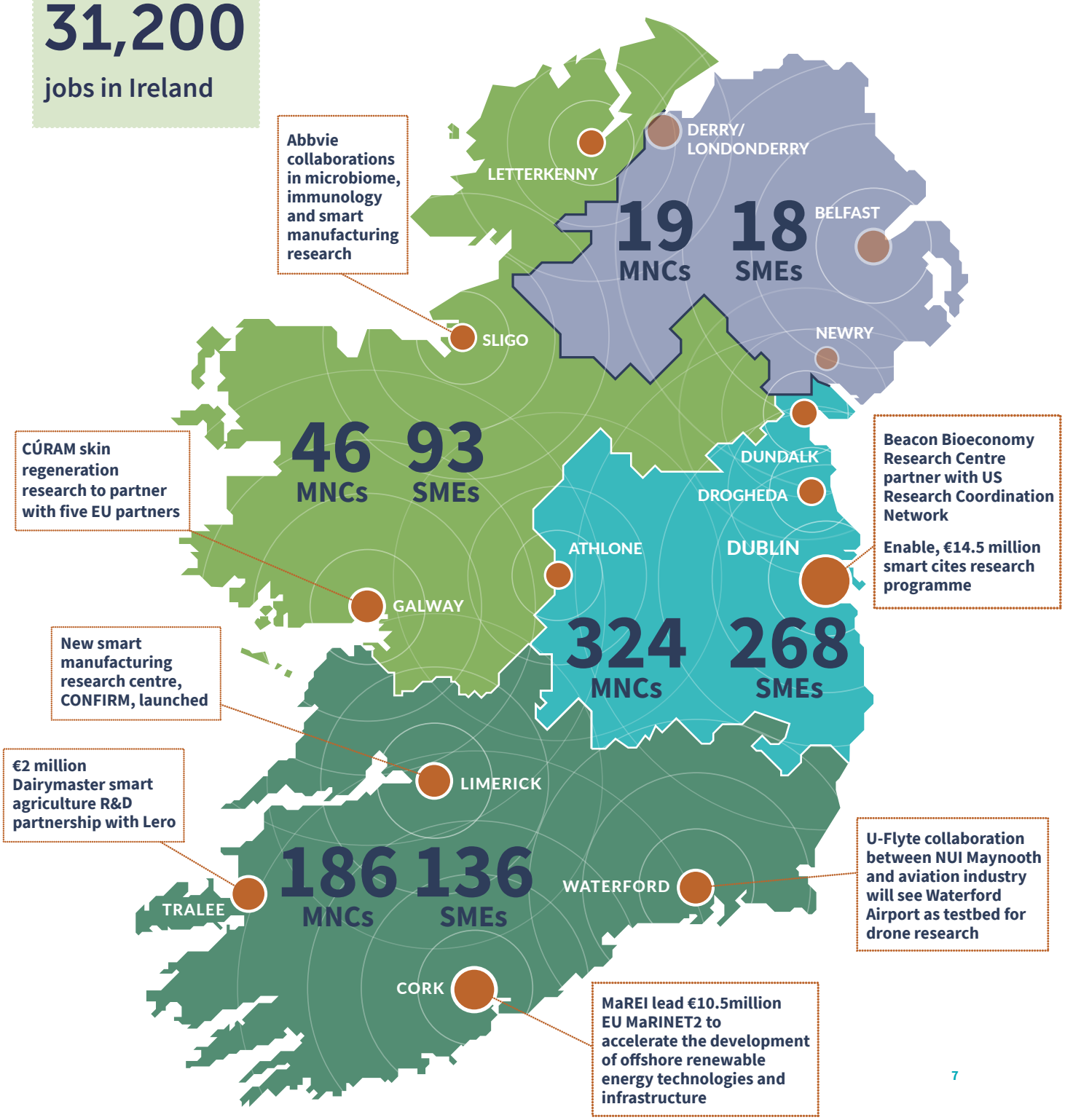
Industry Collaborations

1,521 industry collaborations supported

911 collaborations with **463** MNCs

610 collaborations with **464** SMEs

SFI-INDUSTRY COLLABORATIONS



Chairman's and Director General's Joint Statement

Ann Riordan, Chairman of Science Foundation Ireland

Professor Mark W.J. Ferguson, Director General, Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland

Science Foundation Ireland has made significant progress in building a high-quality collaborative research environment in Ireland, establishing it as a global player, renowned for its scientific excellence. The leading-edge research and research teams we fund contribute to the development and betterment of the Irish economy, society and beyond.

We are implementing the Government's vision for Ireland to become a global innovation leader, driving a strong sustainable economy and a better society for all. Science Foundation Ireland has delivered significant progress on the Government's science and innovation strategy for Ireland - Innovation 2020. Across all programmes in 2017 we have seen an exceptionally high standard of applications, such that Science Foundation Ireland had reserve lists of excellent and impactful projects across all its major programmes.

However, to maintain this hard-won global competitive edge, we must not become complacent: we need to fund more excellent and impactful research projects. Science Foundation Ireland continues to be ambitious – we need to keep evolving and transforming with new programmes to develop research and innovation; to train young people in the skills needed for tomorrow; to attract star talent to Ireland; and to attract and grow new businesses.

Highlights and achievements

Ireland is now 11th in global scientific ranking for overall quality of scientific research, having entered the top ten for a period in 2016-2017 (from InCites by Clarivate Analytics). This is an impressive upward trajectory from a position of 48th just 13 years ago.

Our global rankings for individual subject areas further demonstrate that we continue to play an important role in global R&D. Ireland is now 1st in Animal and Dairy, 1st in Immunology, 2nd in Nanotechnology and Agricultural Sciences. Ireland remains 1st in the world for knowledge diffusion and 10th in the Global Innovation Index.

Science Foundation Ireland's figure of 2.67% of publications in the top 1% continues to be comparable to other leading global research funders and is nearly twice the average percentage figure for all Irish publications, illustrating the effectiveness of our competitive peer review processes.

Science Foundation Ireland is making substantial regional economic impact, supporting 31,237 jobs, directly and indirectly. 4,524 people are working on Science Foundation Ireland-supported research projects, including 1,038 Postdoctoral researchers and 1,451 PhD and Masters students. We are developing the STEM talent pipeline for an advanced economy, with 29% of PhD and 30% of Postdocs going to industry as a first destination and 51% of Science Foundation Ireland team leavers transitioning to the private sector six to eight years post-award; the quality and mobility of our researchers is clear.

Indeed, Ireland's reputation as a location for world-class research continues to grow steadily. In 2017, Science Foundation Ireland-funded award holders reported a total of 2,433 international academic collaborations in 66 countries, an increase of 18% on 2016. 1,521 industry collaborations were also supported. Our researchers continued to win funding from other diverse sources, obtaining €176 million in additional external funding (up 4%) and €70 million in EU funding.

Spinout companies and awarded patents directly attributed to Science Foundation Ireland-funded research, all increased significantly from 2016. 300 companies are building intellectual property on Science Foundation Ireland-funded research, and 40% of these create jobs in Ireland. Regional impact is evident, both from the diverse range and geographical location of collaborating companies and the outputs of some of our recent major investments: the circular bioeconomy, artificial intelligence for the dairy industry, etc.

Science Foundation Ireland's public-private partnerships are at the heart of Ireland's accelerating performance in R&D. We operate in an open and agile manner, with a willingness to seize new opportunities.

The Foundation is focused on engaging with innovators and leaders across all industries. Bold creation of disruptive discoveries, innovations, entrepreneurship, skills training, and development of research talent and partnership with enterprise are of particular interest.

US headquartered companies are building on IP from Ireland-based basic and applied research programmes, with 40% of global patents – citing Irish-funded research – being filed by US companies. Several US-based research foundations and universities are also filing patents that have been developed from Irish research, including MIT, Cornell and Harvard.

Innovation 2020 and the National Development Plan – Project Ireland 2040

Implementing the Government's Project Ireland 2040 'National Development Plan' and policy from Innovation 2020 are top priorities for Science Foundation Ireland. Irish science, technology and innovation are key to achieving the ten strategic outcomes. Science Foundation Ireland is well placed to drive delivery on a number of objectives, particularly plans to ensure a strong economy, supported by enterprise, innovation and skills.

There is immense potential for Science Foundation Ireland to further capitalise on Government investment by funding – in partnership with enterprise – a network of 20 world-leading SFI Research Centres; an additional 500 PhD/MSc researcher enrolments in areas of future skills need; recruiting research stars to Ireland; further strengthening important international collaborations; and catalysing disruptive innovations and challenges which will benefit Irish society and the economy.

We welcome the Government's newly established challenge-based disruptive technologies innovation fund. Science Foundation Ireland will develop new programmes to fund disruptive research and innovation. We are already collaborating with the American Chamber of Commerce to identify major challenges of transformative economic and societal potential for Ireland. The Foundation would then co-fund, with enterprise, innovative research programmes to address and solve these challenges.

To meet the targets of the Government's Innovation 2020 strategy and in response to the potential demands of the Irish research base, Science Foundation Ireland is expanding its network of world-leading SFI Research Centres, to build critical mass in strategic research areas and address the needs of enterprise. In 2017, five new SFI Research Centres were announced by Taoiseach Leo Varadkar TD, with an investment of over €72 million by Science Foundation Ireland over the next six years, matched by industry and EU H2020 funding, creating jobs and attracting cutting-edge industry to Ireland.

These Centres build on the existing internationally recognised regional network of 12 SFI Research Centres, which have already transformed the Irish research landscape, having signed collaborative research agreements with over 300 industry partners, representing cumulative company commitments of over €120 million to-date, €65 million in cash and €79 million in-kind.

In 2017, the researchers funded in the SFI Research Centres won prestigious European Research Council (ERC) awards and are leading and participating in major EU H2020 consortia. By year end, they had won €132 million from international competitive funding agencies. In 2017, three SFI Research Centres collaborated to win a large €6.1 million award from the EU Horizon 2020 programme to fund a postdoctoral training programme.

In June 2017, Science Foundation Ireland conducted a midterm review of its strategy, Agenda 2020, to better align it with the Government's Innovation 2020 strategy, and the challenges presented by Brexit. The review found the Foundation had delivered strongly against the majority of Key Performance Indicator (KPI) targets and identified areas where performance could be improved.

Delivering excellent relevant research with impact

Going forward, Science Foundation Ireland will focus on increasing ERC award numbers, attracting international STEM research prize-winners and achieving gender balance among funded researchers. The Foundation's gender strategy implementation will be refreshed and further enhancements will be made to Science Foundation Ireland programmes to drive increased numbers of female-funded researchers.

We will deliver a range of competitive funding programmes in 2018 that will support Ireland's top principal investigators and catalyse the recruitment of excellent researchers to Ireland. An SFI Strategic Research Infrastructure call will also run in 2018, with the aim of improving the quality of research equipment in the Research Bodies.

International partnerships

Science Foundation Ireland continues to pursue opportunities for growth and prosperity, through scientific research excellence, and has worked to further strengthen all our bilateral relationships internationally. In the context of Brexit, our deep and significant existing engagement with the UK research bodies such as the UK Research Councils, the Royal Society and Wellcome Trust, remains extremely positive and forward looking. Brexit presents an opportunity for the UK and Ireland to forge mutually beneficial higher education and research partnerships.

We are exploring plans with UK universities to appoint joint-professorships to outstanding researchers co-locating between Ireland and the UK. To maximise the opportunities to attract UK-based researchers, it is vital that we have the necessary conditions in place and budget is critical to achieving this. Ireland is also intensifying its efforts to diversify its partnerships in science and innovation with other EU countries, the US and China.

Talent and skills

Science Foundation Ireland works to guide and support the STEM talent pipeline, from the SFI Discover Primary Science and Maths Awards for primary school students, to the Smart Futures STEM careers programme for second-level students; young people are encouraged to explore and develop STEM skills.

Under the National Development Plan, funding for 500 additional PhD/MSc studentships in Ireland will be provided and managed by Science Foundation Ireland. A new SFI Centres for Research Training programme will launch in 2018, focusing on strategic areas of skills and employment needs and will include international training and co-supervision with world-leading experts, placement in industry and an efficient cohort-based structure encouraging collaboration across Irish higher education institutions.

Education and public engagement

Science Foundation Ireland is delivering impactful public engagement and education. In 2017, 44 projects received an investment of €2.8 million under the SFI Discover Programme to improve public understanding of STEM, increase STEM uptake in education and improve diversity. Our #BelieveInScience campaign continues to create dialogue about the role of science in our society and public engagement activities by Science Foundation Ireland-funded researchers has increased 60% on 2016. Over 1,200 Science Week events involving 315,000 participants, took place in November across the country, including the launch of two new regional science festivals.

Our community

Science Foundation Ireland works with a broad range of stakeholders from academia, industry and government to achieve its objectives. We would like to thank An Taoiseach Leo Varadkar TD, Minister for Business, Enterprise and Innovation, Heather Humphreys TD and Minister of State for Training, Skills, Innovation, Research and Development, John Halligan TD, and the many elected representatives for their support throughout the year.

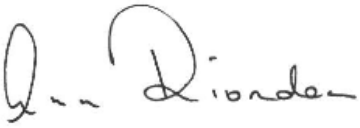
We would like to thank the Department of Business, Enterprise and Innovation – our parent government department – the many sister departments and agencies such as Enterprise Ireland, IDA Ireland, Higher Education Authority and many others, nationally and internationally for their continued support and collaboration. In particular, we would like to acknowledge the valuable contribution of Ireland's Higher Education Institutions and Science Foundation Ireland's research community. We thank the many international and industry partners that have collaborated and helped to co-fund our partnership programmes.

We would like to thank the Board for their support and time commitment to Science Foundation Ireland through their work and attendance at Board and Committee meetings during the year. We thank Dr Rita Colwell who has retired from the Board, for her commitment and contribution. We thank all Science Foundation Ireland employees for their passion, integrity and dedication in delivering our goals. We are delighted that our employees find SFI among the Best Places to work in Ireland.

Looking ahead

Science Foundation Ireland is determined to drive Ireland's R&D agenda with vision, ambition, excellence and impact. As employment levels and economic growth rises, researchers at home and abroad are seeking to fully realise their potential without borders. We are not just competing internationally for the best people, industry contracts and international funding opportunities, we also want to lead and disrupt. We look forward to increased investment through the implementation of the National Development Plan Project 2040, and to working together with our wider stakeholder community and Government to create "what's next" for Ireland.

Prof Mark Ferguson
Director General, Science Foundation Ireland, and Chief Scientific Adviser to the Government of Ireland



Ms Ann Riordan
Chairman, Science Foundation Ireland

Science Foundation Ireland Board Members*

Ms Ann Riordan, Chairman, Science Foundation Ireland

Prof Mark W.J. Ferguson, Director General, Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland

Ms Geraldine Ruane, Chief Operating Officer, Trinity College Dublin

Prof Sir Tom Blundell, Director of Research and Professor Emeritus in Biochemistry, University of Cambridge

Prof Liam Madden, Executive Vice President of Engineering at Xilinx

Ms Bernie Cullinan, CEO of Pragma Advisory

Ms Mary Doyle, former Deputy Secretary General, Department of Education and Skills

Mr Barry O'Sullivan, Senior Adviser Permira LLC

Mr Aidan W. Donnelly, MD of Advest Management Ltd.

Ms Máire Geoghegan-Quinn, Former EU Commisioner for Research, Innovation and Science. Appointed SFI Board member in April 2018

Dr Pat Duane, Vice President and General Manager, Interventional, with Creganna Medical

Mr Dermot Mulligan, Assistant Secretary General, Department of Business, Enterprise and Innovation

Dr Rita Colwell, Professor, University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health. Retired from SFI Board in 2017

Ms Kim Lavelle, Board Secretary and Chief Risk Officer

* Board Members as of May 2018.

2017

The Year in Review

January

- The ESERO Ireland Programme supported a live video call between 300 primary school students and European Space Agency (ESA) astronaut, Thomas Pesquet, in Limerick Institute of Technology (LIT).
- Prof Alan Smeaton from the SFI Research Centre Insight at Dublin City University (DCU) was named as Fellow of the Institute of Electrical and Electronics Engineers.
- 4,000 Transition Year students attended the SFI Discover-supported I WISH events in Dublin and Cork, to encourage girls to pursue STEM careers.

Limerick students Sophie Guilfoyle and Andrea Ford, pictured with the ESA astronaut Thomas Pesquet, during a live video call from the International Space Station.

Minister for Training, Skills, Innovation, Research and Development, John Halligan TD and Dr Ruth Freeman, Director of Innovation, Communications and Education for Science Foundation Ireland, are pictured with awardees of the 2017 SFI Discover programme call.

February

- Minister for Training, Skills, Innovation, Research and Development, John Halligan TD, announced a €2.8 million investment by Science Foundation Ireland in public engagement and education Initiatives.
- Minister Halligan announced €47.4 million Science Foundation Ireland investment in 36 research infrastructure and facilities projects.
- SFI Research Centre MaREI in University College Cork (UCC) announced €10.5 million MaRINET2 EU project to accelerate the development of marine renewable energy technologies.

March

- A new US-Ireland collaboration between Science Foundation Ireland and the US National Science Foundation (NSF) Innovation Corps (I-Corps™) programme was announced.
- Minister Halligan announced a €2.5 million Science Foundation Ireland investment to bring 'Lab-on-a-Chip' technologies to Ireland with the creation of a Fraunhofer Project Centre (FPC) for Embedded BioAnalytical Systems in DCU.
- The SFI St. Patrick's Day Science Medal was awarded to Dr T. Pearse Lyons, Founder of Alltech, and Prof Adrian E. Raftery, Prof of Statistics and Sociology, University of Washington.

Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, Prof Mark Ferguson is pictured with Prof Jens Ducrée and DCU President, Prof Brian MacCraith, launching the Fraunhofer Project Centre for Embedded Bioanalytical Systems at DCU.

Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, Prof Mark Ferguson is pictured with Associate Director of the UK's EPSRC, Jane Nicholson, and British Ambassador to Ireland, Robin Barnett.

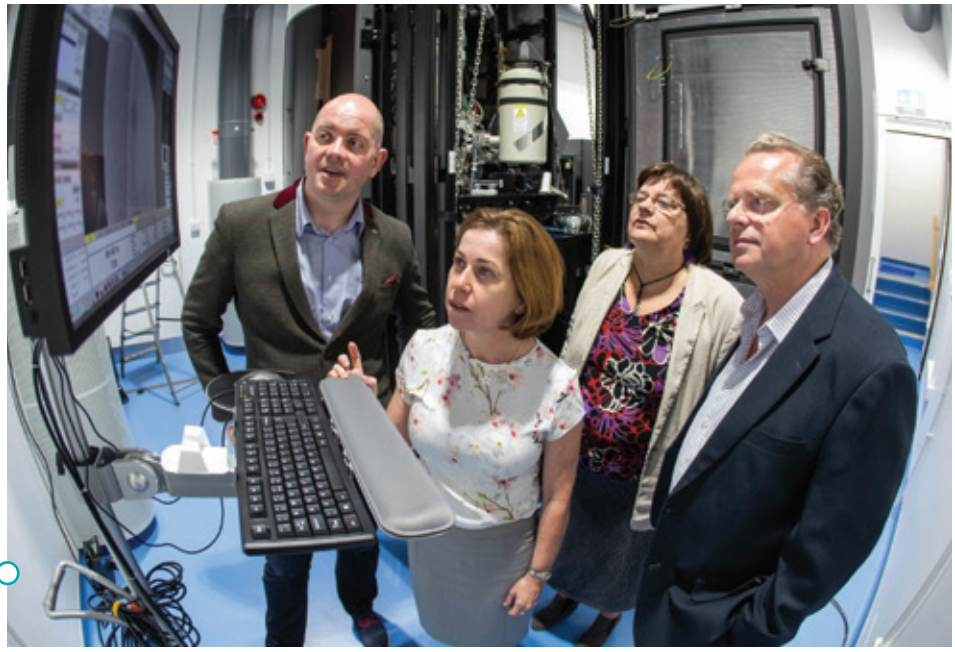
April

- Minister Halligan announced a €6.7 million joint research investment by Science Foundation Ireland and the UK's Biotechnology and Biological Sciences Research Council (BBSRC) to address key global challenges in biosciences.
- Science Foundation Ireland announced a €4.6 million investment to support 37 research commercialisation projects under the joint SFI-EI Technology Innovation Development Award (TIDA) Programme.
- A new collaborative agreement between Science Foundation Ireland and the UK's Engineering and Physical Sciences Research Council (EPSRC) was announced to encourage joint research applications between the two countries.
- The SFI Discover-supported 'Big Week on the Farm' show returned to RTÉ One.

May

- The SFI Research Centre CONNECT partnered with SMART Dublin (Dublin City Council), INTEL and others, to use sensors to help address city flooding.
- The SFI Research Centre ADAPT used 360-degree technology to let the public experience the 'National Famine Walk' remotely.

Researchers from the SFI Research Centre CONNECT launch the SMART Dublin project.



Dr Andy Stewart, Lecturer in Microscopy, Dr Lorraine Byrne, Executive Director of the SFI Research Centre AMBER, Prof Ursel Bangert, Bernal Chair of Microscopy and Imaging and Prof Luuk van der Wielen, Director of the Bernal Institute, unveiling the Titan microscope at University Limerick (UL).

June

- Science Foundation Ireland and UL's Bernal Institute unveiled a €9 million Titan Microscope allowing researchers to study materials at an atomic level in real-world conditions.
- Futureproof, the SFI-supported science and technology radio programme on Newstalk, won two medals in New York's World Best Radio Programme Awards.
- 593 primary schools received an SFI Discover Science and Maths Award.
- Cork Institute of Technology's (CIT) Blackrock Castle Observatory, supported by Science Foundation Ireland, hosted the 30th International Space University's Space Studies Program.

July

- Minister Halligan switched on the I-LOFAR telescope, the largest radio telescope in the world, at Birr Castle, Co. Offaly, supported by Science Foundation Ireland.
- The SFI Discover-supported Dublin Maker family day took place in Merrion Square.
- Minister Halligan announced three new awards under the Royal Society-Science Foundation Ireland University Research Fellowship Scheme.
- Science Foundation Ireland and Enterprise Ireland showcased Horizon 2020 successes in Brussels.

Minister for Training, Skills, Innovation, Research and Development, John Halligan TD, and Dr Ruth Freeman, Director of Innovation, Communications and Education at Science Foundation Ireland (centre), pictured with SFI-Royal Society University Research Fellows (l-r): Sinead O'Keeffe (UL), David Wilson (TCD), Fraser Morgan (UCD) and Lynette Keeney (Tyndall National Institute) with her baby Sophie.

August

- The SFI Research Centre SSPC, based at UL, announced its new co-directors, Professors Gavin Walker and Mike Zaworotko.
- The CONNECT SFI Research Centre for Future Networks and Communications joined forces with Cork County Council to fight mastitis in milking cows.

Profs Gavin Walker and Mike Zaworotko were announced as new co-directors of the SFI Research Centre SSPC, based at UL.

September

- An Taoiseach Leo Varadkar TD announced a €74 million investment in four new SFI Research Centres, which will engage over 80 collaborations with industry partners.
- Minister Halligan announced a €43 million investment in 26 research projects through the SFI Investigators Programme, supporting 94 research positions.
- Minister Halligan launched a new professional doctorate programme in software engineering through the SFI Research Centre Lero and UL.
- Lero researchers at DCU were announced to lead a new €3.8 million EU H2020 programme to boost the competitiveness of the European retail sector.

Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, Prof Mark Ferguson is pictured with An Taoiseach Leo Varadkar TD, at the launch of four new SFI Research Centres.

Prof Mani Ramaswami, Trinity College Dublin (TCD), one of recipients of the SFI-Wellcome-HRB Investigator Awards 2017.

October

- A €5.55 million investment in Irish biomedical research partnership was announced by Science Foundation Ireland with Wellcome (UK) and the Health Research Board (HRB).
- The SFI Discover Programme-supported Space Week kicked off with 100+ events in 18 counties to promote space science.
- The SFI Research Centre MaREI appointed its new co-directors, UCC Professors Brian Ó Gallachóir and Jerry Murphy.
- The SFI Research Centre SSPC won Pharma Research Centre of the Year at the Pharma Industry Awards 2017 for the third consecutive year.
- Funding for a new Science Foundation Ireland PhD programme was announced in Budget 2018.

November

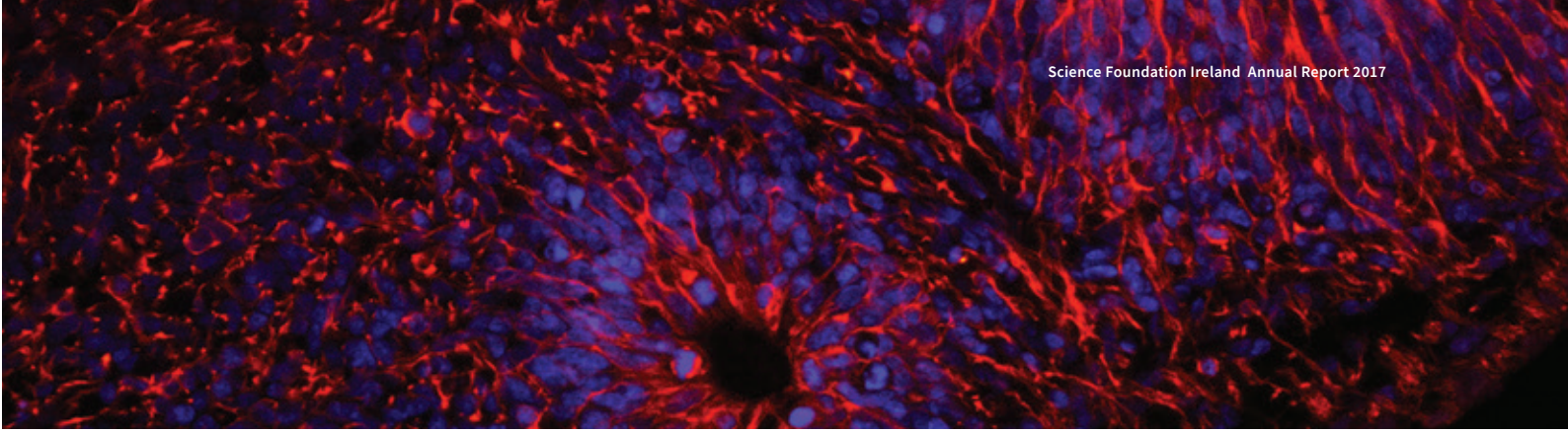
- Science Foundation Ireland launched national Science Week with the #StopAndAsk campaign.
- Science Foundation Ireland's annual Science Summit took place in Croke Park, with winners of the SFI Research Awards announced.
- The SFI Research Centre for medical devices, CÚRAM, won a prestigious AAAS Scientist Award at the New York film festival for a documentary about Parkinson's disease.
- The Galway Science & Technology Festival, which is supported by the SFI Discover programme, celebrated 20 years. The festival runs over two weeks, culminating in a huge family day of shows, STEM demonstrations, workshops and interactive exhibitions in NUI Galway.
- Science Week reached over 315,000 people across 1,150 events nationwide.

The Science of Bubbles during National Science Week 2017.

December

- Science Foundation Ireland, the Royal College of Surgeons Ireland (RCSI) and Shire, in partnership with the Irish Haemophilia Society, announced a major €4 million iPATH study.
- The SFI Research Centre ADAPT hosted the 'AI: Accelerating Impact' showcase in Croke Park.
- The SFI Research Centre Amber at TCD was announced to lead a new €8.2 million EU project to pioneer the mass production of anti-reflective and abrasion resistant surfaces.

Real-Time Dialogue Translation with Furhat Robots at the ADAPT SFI Research Centre AI showcase in Croke Park.



Overview of 2017

Excellent Science

Science Foundation Ireland's strategic plan, Agenda 2020, which was launched in 2012 with the aim of positioning Ireland as a global knowledge leader, was reviewed and updated in 2017 to ensure the Foundation's strategic objectives remain fully aligned with the national science and innovation strategy, Innovation 2020.

Progress of each Key Performance Indicator (KPI) has been assessed and Science Foundation Ireland continues to make excellent progress towards meeting its Agenda 2020 targets, demonstrated by the numerous success stories presented in this annual report.

2017 Table of Country Rankings

(Top 20 Countries –InCites Essential Science Indicators)

Ireland is 11th in global scientific ranking for overall quality of scientific research (InCites from Clarivates Analytics, April 2018).

Countries-Territories	Rank
SWITZERLAND	1
SCOTLAND	2
NETHERLANDS	3
DENMARK	4
ENGLAND	5
USA	6
BELGIUM	7
WALES	8
SWEDEN	9
SINGAPORE	10
IRELAND	11
GERMANY (FED REP GER)	12
CANADA	13

Field Specific Global Excellence

Science Foundation Ireland's ranking statistics are gathered via InCites from Clarivate Analytics. Rankings are compiled based on the number of citations per paper, which serves as a normalisation for the country's size. Ireland's rankings in individual subject areas:

1st	Immunology
1st	Animal and Dairy
2nd	Nanotechnology
2nd	Agricultural Sciences
4th	Molecular Biology and Genetics
5th	Materials Sciences
6th	Basic Medical Research
6th	Neuroscience & Behaviour
7th	Mathematics
8th	Chemistry
8th	Microbiology

Publications and Citations

Country	Funder	# Documents in Web of Science	Documents in the Top 1%
Ireland	All	154,578	1.59%
Ireland	Science Foundation Ireland	16,084	2.67%
USA	All	8,811,439	1.77%
USA	NSF	484,988	2.85%
USA	NIH	735,316	2.90%
Switzerland	All	507,251	2.60%
Denmark	All	280,519	2.44%
Singapore	All	210,427	2.13%
United Kingdom	All	2,439,315	1.80%
Finland	All	222,750	1.71%
New Zealand	All	159,163	1.73%
Israel	All	263,437	1.58%
China	All	3,467,867	0.97%
EU	All	10,263,822	1.25%
EU	European Research Council	53,501	4.85%

Publications and citations remain a strong indicator for Science Foundation Ireland that it's funded-researchers are achieving significantly on an international level. The percentage of publications arising from grants funded by Science Foundation Ireland that are in the top 1% (based on citations by category) is 2.67%. The overall figure for Ireland is 1.62%. Source: InCites by Clarivate Analytics, based on publications published between 2003 and 2017.

- A total of 4,894 publications were reported in 2017, a 17% increase on 2016.
- 48% of publications directly attributed to active Science Foundation Ireland awards have an international co-author; 84% of researchers have credited Science Foundation Ireland in their publication; and 11% had a co-author from industry.
- There has been a further 24% increase in publications primarily attributed to the SFI Research Centres, which have increased from 844 in 2016 to 1,093 in 2017.
- Ten Science Foundation Ireland-funded researchers featured in the Highly-Cited Researchers list of 2017 produced by Clarivate Analytics. This list identifies researchers whose publications place them in the top 1% most cited in their subject field.

Researchers from TCD, published in the prestigious journal Nature Communications, have discovered a shared genetic origin for Motor Neurone disease and schizophrenia, indicating that the causes of these diverse conditions are biologically linked. Led by Prof Orla Hardiman, this work was funded through an SFI Strategic Partnership award.

Prof Niall English from UCD's School of Chemical and Bioprocess Engineering published research in the Journal of Physical Chemistry Letters showing that the Earth's store of water might have originated via chemical reactions in the mantle, rather than arriving from space through collisions with ice-rich comets. This work is supported by Prof English's SFI ERC Development Programme award.

SFI Career Development Award holder, Dr Andrew Kellett from DCU, published results on the first ever evidence of opiate-nucleic acid binding interactions. The article was presented in the open access journal, Nucleic Acid Research.

Prof Colm O'Dwyer's team at UCC's School of Chemistry have developed a method that allows titanium dioxide (TiO2), a naturally occurring mineral, to create one of the longest life Li-ion battery anode materials. The work, published in Advanced Energy Materials, was supported by Prof O'Dwyer's SFI Investigator award.

24%
INCREASE IN PUBLICATIONS PRIMARILY ATTRIBUTED TO THE SFI RESEARCH CENTRES

4,894
PUBLICATIONS IN 2017

10
SCIENCE FOUNDATION IRELAND-FUNDED RESEARCHERS FEATURED IN THE HIGHLY-CITED RESEARCHERS LIST OF 2017

Societal Impacts

Science Foundation Ireland-funded researchers not only create impact with highly-cited publications and excellent science, they also deliver research that positively impacts on society, in areas such as health, technology, education and climate, to name but a few.

- The SFI Research Centre MaREI is contributing to Ireland's Climate Action Policy, with a scenario analysis exercise referenced in Ireland's first National Mitigation Plan (NMP), published in July 2017.
- Prof Thorfinnur Gunnlaugsson and his team at TCD have developed a technology, funded by Science Foundation Ireland, to create extremely detailed 3D images of tiny cracks in bone without exposing patients to harmful radiation such as X-rays.
- Dr Matthew Campbell, TCD Department of Genetics, in collaboration with RCSI researchers, discovered that blood vessel abnormalities in the brain may play a major role in the development of schizophrenia. The study was supported by Dr Campbell's PIYRA award.
- A 'First in Man' medical device clinical trial design was completed by the CÚRAM SFI Research Centre with Arch Therapeutics, on a wound sealant. It was published on ClinicalTrials.gov.

CASE STUDY

Climate Change

Prof Jennifer McElwain's research interests include plant macroecology and macroevolution, mass extinction and the use of fossil plants as proxies for reconstructing paleoamospheric composition (CO_2, O_2 and SO_2), paleoelevation and paleoclimate.

Through her SFI Principal Investigator award, Prof McElwain led a team of UCD researchers in a study, *Predicting biome-level vegetation responses to future global change: Implications for future flood risk*. Findings from this project were published in 2017 in the prestigious journal *Nature Plants*.

Prof McElwain's SFI Research Infrastructure award supported the establishment of an Integrated Plant Phenomics and Future Experimental Climate Platform in UCD's Centre for Plant Science. The platform consists of an X-ray CT system and six reach-in plant growth chambers.

The benefit and novelty of this platform is that a future 2020 climate scenario can be simulated in the climate chambers and continuous phenotypic responses of the plant can be tracked non-destructively below and above ground using X-ray and thermal imaging.

"Funding from Science Foundation Ireland has enabled my team to investigate the responses of woody vegetation to anthropogenic climate change on short timescales of decades all the way up to evolutionary time scales of millions of years using the plant fossil record," Prof McElwain says. "We have shown that greenhouse gas-induced global warming results in a fundamental shift in how land based ecosystems function with implications for the nitrogen, carbon and water cycles."

Developing and Supporting Talent

Continued Government investment in scientific research has enabled Science Foundation Ireland to produce world-class researchers and fulfil its commitment to having one of the most highly skilled and innovative workforces in the world.

Science Foundation Ireland supports an internationally competitive research base, with high levels of training and skills, from PhD graduates through to early career researchers, and senior investigators to internationally renowned research professors. This ensures innovation remains at the heart of Irish R&D, as well as the delivery of high-value jobs, services and products and transformative societal impacts.

There were 4,524 people working on Science Foundation Ireland-supported research projects in 2017. This includes 545 award holders. Science Foundation Ireland supported 1,038 Postdoctoral researchers and 1,451 PhD and Masters students. 29% of PhD and 30% of Postdoc departures went to industry as a first destination. 51% of Science Foundation Ireland team leavers, between six to eight years post-award, are in the private sector.

4,524
PEOPLE WORKING ON SFI RESEARCH PROJECTS IN 2017

1,038
POSTDOCTORAL RESEARCHERS

1,451
PhD AND MASTERS STUDENTS

In 2017, Science Foundation Ireland supported the launch of a new Professional Doctorate in Engineering (PDEng) in software and enterprise excellence, through the SFI Research Centre Lero and UL. This new programme, a first for the Irish software industry, will allow employees working in software to study for the equivalent of a PhD without having to give up their jobs. Forging academic links with industry in this collaborative manner ensures future doctoral graduates can tailor their education to meet the demands of emerging markets.

Each year, Science Foundation Ireland recognises and celebrates the achievements of its funded researchers and their contributions to STEM through the Science Foundation Ireland Research Awards. The 2017 winners were:

1. **Science Foundation Ireland Researcher of the Year:** Prof Mike Zaworotko, UL
2. **Early Career Researcher of the Year:** Dr Rachel McLoughlin, TCD
3. **Industry Partnership Award:** SSPC & Advanced Biopharmaceutical Technologies Spokes Project
4. **Best International Engagement:** Prof Peter Gallagher, TCD, I-LOFAR
5. **Entrepreneurship Award:** Dr Peter Cahill, ADAPT
6. **Outstanding Contribution to STEM Communication:** Dr Aoibhinn Ní Shúilleabháin, UCD
7. **Best Reported Impact:** Prof Fiona Newell, TCD
8. **Research Image of the Year:** Dr Mark Jessopp, MaREI Research Centre, UCC: Osmotic Shock.

Prof Mike Zaworotko (UL) pictured with Dr Aoibhinn Ní Shúilleabháin (UCD) at the SFI Science Summit 2017.

Attracting Overseas Talent

The SFI President of Ireland Future Research Leaders programme is a recruitment-only programme designed to attract to Ireland outstanding new and emerging research leaders in both scientific and engineering domains. The programme helps to provide the best setting for award holders to foster their creativity and further develop their leadership role. Five awards, representing a €7.7 million investment, were made in 2017.

The recipients of the SFI President of Ireland Future Research Leaders Award 2017 pictured at Áras an Uachtaráin are (left to right): ***Prof John Laffey,*** *recruited from St Michael's Hospital, Toronto, Canada, to the SFI Research Centre CÚRAM in NUI Galway, is researching how cells restore function to the immune system in late sepsis;* ***Dr Claire McCoy,*** *recruited from the Hudson Institute of Medical Research, Melbourne, Australia, to the RCSI, is researching therapeutic strategies for the treatment of multiple sclerosis;* ***Prof Mark Ferguson,*** *Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland; President of Ireland* ***Michael D. Higgins; Dr Christina Kiel,*** *recruited from the Centre de Regulació Genòmica, Barcelona, to UCD, is researching cellular signalling networks in colorectal cancer;* ***Dr Tomás Ryan,*** *who was awarded under the President of Ireland Young Researcher Award (PIYRA) Programme which preceded the President of Ireland Future Research Leaders Programme, was recruited from Massachusetts Institute of Technology to TCD, is researching memory storage and* ***Dr Lydia Lynch,*** *recruited from Harvard University, USA, to TCD, is researching novel therapeutics for obesity-related diseases and immunometabolism.*

Dr Cameron Hall joined the Science Foundation Ireland-funded Mathematics Applications Consortium for Science and Industry (MACSI) group, when he was recruited from University of Oxford in 2017, where he held a prestigious Hooke Research Fellowship.

Prof Neil O'Connell, winner of an ERC Advanced Grant in 2015, was recently recruited to the UCD School of Mathematics & Statistics, where his ERC-funded research is being further supported through an SFI ERC Support Programme award. He previously held an SFI Research Professorship award in UCC which focused on probability and its applications to the development of ICT. Prof O'Connell then became Professor of Mathematics at the University of Warwick in the UK, before returning to Ireland in 2017.

CASE STUDY

Storing Memories

Memory shapes who we are and our perception of the world through insight gained from past experiences.

However, one in three of us who live to 65 or over will experience some form of dementia. Ground-breaking research by Prof Tomás Ryan at Trinity College Dublin and colleagues at Massachusetts Institute of Technology (MIT), USA, has shed new light into the processes involved in memory storage and recall. Results from animal studies have shown that all memories are potentially stored in the structure of the brain. They can be mapped, labelled and triggered even in an artificial state of amnesia.

To understand how this is achieved, it is important to understand what memories are and how they are formed. In simple terms, memories are knowledge accumulated through a process of learning, where learning causes a material change in the brain. The structural change made by a specific memory is called an engram and these engrams are long lasting and stable.

Prof Ryan describes how "*The physical data of a memory remains in the brain even if the pathways to retrieving the information have been damaged. For the first time, amnesia can be attributed to a deficit in memory access. The desired information, or engram, survives. The trick to restoring it is knowing where to find it.*" Prof Ryan's work is supported by an SFI ERC Support award and he is also an SFI PIYRA awardee.

Prof Ryan and his team have managed to fluorescently label the neuronal constellations in the brain responsible for specific memories by triggering a learning event and using fluorescently labelled dyes to map the pathways that fire during memory formation. They followed the brain's own trail of breadcrumbs. They could then stimulate these specific engram cells to trigger targeted memory recall, even in cases of amnesia due to drug treatment or early Alzheimer's disease.

International Reputation and Recognition

Ireland's reputation as a location for world-class research continues to grow steadily. In 2017, Science Foundation Ireland-funded award holders reported 2,443 collaborations across 66 countries.

Science Foundation Ireland's international collaborations have extensive global reach: Europe (64%), North America (20%), Asia (9%), Australia and Oceania (3%), South America (2%) and the Middle East, North Africa, and Greater Arabia (1%).

The primary objective for these collaborations is to facilitate joint publications and /or research (80%).

Other objectives include building networks and relationships (11%) and providing access to equipment, software and/or data (7%).

Top 25 International Academic Collaborations by Country in 2017

United Kingdom *(excluding Northern Ireland)*	474
United States of America	447
Germany	201
France	145
Italy	137
Spain	116
Northern Ireland	89
China *(People's Republic of)*	87
Netherlands	85
Sweden	65
Australia	64
Canada	62
Denmark	59
Belgium	44
Switzerland	41
Austria	37
Brazil	33
Portugal	28
Poland	24
India	22
Japan	22
Finland	21
Russian Federation	19
New Zealand	17
Greece	16

International Collaborations

Science Foundation Ireland's international partnerships enable mutually beneficial transfers of knowledge and expertise to and from Ireland. The reach of these has been significantly extended with the launch of a new partnership with the National Natural Science Foundation of China (NSFC) in March 2017. The call focused on thematic areas of co-operation which are priorities in both countries, including novel functional materials and devices, data analytics, management, security and privacy, digital platforms, content and applications, smart grids and smart cities, future networks and communications, energy and environmental sustainability, manufacturing competitiveness and future agri-food. Science Foundation Ireland granted eight co-funded awards with an investment of €8.5 million and €4 million from the NSFC.

Science Foundation Ireland is the first European funding agency to implement the extremely prestigious US National Science Foundation (NSF) Innovation Corps Programme (I-Corps™). The programme prepares researchers to extend their focus beyond the laboratory and achieve economic and societal impact from their research projects. In 2017, as part of the I-Corps@SFI partnership, eight SFI-funded teams travelled to the US and successfully completed intensive entrepreneurial skills development training under the NSF I-Corps™ Curriculum. Several teams were successful in securing follow-on commercialisation funding arising from their participation on the programme.

This initiative builds on the long-standing relationship that exists between Science Foundation Ireland and the NSF. Four awards were also made under the US-Ireland R&D partnership programme, while three were awarded under the US-Ireland R&D Partnership Planning Programme. Under the NSF/SFI Graduate Research Opportunities Worldwide (GROW) Programme, four awards were also granted.

2,433
INTERNATIONAL COLLABORATIONS

66
COUNTRIES

CASE STUDY

Fraunhofer Partnership

Science Foundation Ireland continued to deepen links with other EU countries during 2017, encouraging excellent researchers to think of relocating to Ireland.

The first Fraunhofer Project Centre (FPC) for Embedded BioAnalytical Systems in Dublin City University (DCU) was announced in 2017, following an investment of €2.5 million by Science Foundation Ireland, in partnership with Fraunhofer-Gesellschaft's renowned Fraunhofer Institute for Production Technology IPT in Aachen, Germany. Funded through the SFI Strategic Partnerships Programme, the Centre focuses on microfluidic 'lab-on-a-chip' technologies in support of the MedTech industry.

The investment will be complemented with an additional €2.5 million provided by Fraunhofer to support the partnership over a period of five years and the technologies will enable immediate 'point-of-use' testing of samples, such as blood or water, for a wide range of applications, including personal healthcare, pharmaceutical production, life-science research, quality testing in agri-food and environmental monitoring.

Director of the new FPC is Prof of Microsystems in the School of Physical Sciences at DCU, Jens Ducrée. Speaking of its significance he said, *"This Fraunhofer Project Centre at Dublin City University is geared to provide next-generation Lab-on-a-Chip technologies for translating 21st century breakthroughs in medical research and the life sciences into reality for the direct benefit of people's health and lives."*

Prof Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, pictured with Reimund Neugebauer, Executive Director of the Fraunhofer IPT and Prof Brian MacCraith, President of DCU.

UK Partnerships and BREXIT

During 2017, Science Foundation Ireland continued to prepare for the UK's exit from the European Union by significantly strengthening our bilateral links with the UK's research bodies while diversifying and strengthening research collaborations with EU-27 countries.

Science Foundation Ireland entered a new partnership agreement with the UK's Engineering and Physical Sciences Research Council (EPSRC), to support joint research and technology development projects in the areas of engineering, ICT, mathematical sciences, physics, chemistry and materials science. This agreement builds on the existing relationship with the UK involving collaborative agreements with the Royal Society, Wellcome and the BBSRC. Four awards were approved under the SFI-BBSRC Joint Funding of Research Awards in 2017, while four awards were also approved under the Royal Society-Science Foundation Ireland University Research Fellowship Programme.

> The Royal Society research fellowships demonstrate that Irish researchers can compete with the very best in the world." *- Prof Mark Ferguson*

A joint PhD scheme was announced between Science Foundation Ireland and the UKRI to co-fund students registered in Ireland and UK, to avail of co-supervision with mobility, spending approximately 50% of their time in Ireland and 50% in the UK. 120 students will come on stream in 2018 into SFI Research Centres, fostering wider participation and international collaboration.

Science Foundation Ireland continues to actively participate in the national dialogue on opportunities and challenges associated with BREXIT, participating in subgroups and committees to address the national approach across a number of sectors.

In 2017, Prof Mark Ferguson appeared before the Seanad Committee on the withdrawal of the UK from the EU, and Science Foundation Ireland worked with the British Embassy Dublin and colleagues at TCD to host a visit by Boris Johnson, the UK's Secretary of State for Foreign Affairs. The Foundation has also input into key policy documents at home and overseas, including the Royal Society/Wellcome Future Partnership Project.

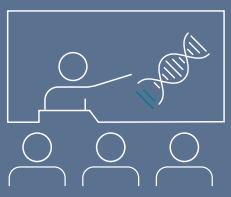
Researchers from the SFI Research Centre Lero, in collaboration with colleagues at The Open University in the UK, have developed a new haptic interaction device for managing end-user privacy. The device is a physically wearable wristband, called a 'privacy band', that provides both adaptive awareness and discreet interactive control of end-user data visibility and sharing. Based on a metaphor of 'itch and scratch', the privacy band generates different physical sensations on the wearer's arm, and the user can then take a variety of privacy control actions relating to data sharing.

International Engagement

Science Foundation Ireland's diverse range of international engagement activities are focused on promoting research carried out in Ireland and creating opportunities for international collaboration for our research community. The quality of research in Ireland is increasingly a critical part of the national dialogue for international trade, investment and education.

In March 2017, Science Foundation Ireland celebrated the achievements of two outstanding members of the Irish diaspora. The SFI St. Patrick's Day Science Medals for industry and academia were presented to the late Dr Pearse Lyons, Founder and President of Alltech and Prof Adrian Raftery, University of Washington, by An Taoiseach, Enda Kenny TD at an event in Washington D.C.

Prof Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland is pictured with the late Dr Pearse Lyons and Prof Adrian Raftery in the United States Institute of Peace, Washington D.C.



787

NATIONAL AND INTERNATIONAL CONFERENCES ORGANISED IN 2017

The Government launched Ireland's new trade strategy, Ireland Connected: Trading and Investing in a Dynamic World. Science Foundation Ireland will support the delivery of the STEM-related elements of the strategy. A briefing session on Science Foundation Ireland and research in Ireland was hosted by Prof Mark Ferguson for all embassies and consulates in October 2017.

Science Foundation Ireland entered a global partnership with the Irish International Business Network (IIBN), a group that promotes, supports and grows the global connectivity of the Irish business community, abroad and in Ireland. This partnership expands the Foundation's reach in promoting Irish research across this influential network in the UK, the US and Ireland. In May 2017, the Embassy of Ireland in London showcased a strong research collaboration between the SFI Research Centre APC Microbiome Institute and Janssen.

Science Foundation Ireland took part in two Small Advanced Economies Initiative meetings, and welcomed several international delegations to Ireland to discuss areas of mutual interest, collaboration opportunities and shared learnings. Delegations included Australia, China, Brazil, Lithuania and those from the US. The Foundation participated in interdepartmental committees and subgroups related to the international trade and education agenda in 2017. These included the International Trade Coordination Group, Export Trade Council, the High-Level Group on International Education, and the Interdepartmental Committee on the Irish Abroad.

Leveraging Funding

Science Foundation Ireland-funded researchers have continued to win funding from diverse international sources such as the UK's Wellcome Trust, the European Research Council and the European Union. The amount of external funding obtained by Science Foundation Ireland-funded researchers in 2017 was €176 million (up 4% from €169 million in 2016). This rise is primarily led by an increase in the level of Enterprise Ireland funding being leveraged by our funded researchers, which is strong evidence of research relevance, as well as of scientific excellence.

Funding from EU sources stayed static, with researchers securing €70.4 million compared with €71 million in 2016. At the end of 2017, Irish-based researchers had won 21 Starting Grants, 16 Consolidator Grants, 3 Advanced Grants and 11 Proof of Concept Grants from the ERC. Of 51 ERC awards, 31 were Science Foundation Ireland awardees. Five SFI-ERC Support Programme awards were also funded in 2017, with a total value of €800k.

Science Foundation Ireland remains committed to supporting Ireland's objective of drawing down €1.25 billion under the EU Horizon 2020 programme. To support this goal, Science Foundation Ireland has undertaken several initiatives:

- Science Foundation Ireland staff members act as National Contact Points and national delegates for several Horizon 2020 areas, mainly under the Excellent Science Pillar of the programme, including Research Infrastructures and ERC. The success rate for Ireland under EU H2020 Research Infrastructures, including e-Infrastructures is among the highest at 40%.
- Prof Mark Ferguson chairs a cross-departmental and high-level Strategic Projects Group to drive big bids.
- Science Foundation Ireland has furthered its engagement with transnational European funding and currently supports nine joint transnational initiatives, which include: the EU Joint Programmes for Neurodegenerative Diseases & Healthy Diet for a Healthy Life, ERANets in advanced materials, system medicine, quantum technologies, nanomedicine, the Bioeconomy and the Joint Technology Initiative ECSEL.

SFI Research Centres have drawn down approximately €100 million in Horizon 2020 funding, which equates to more than 50% of funding to the Irish higher education institutes.

Source of External Funding Secured by SFI Funded Researchers in 2017 (All awards)	Total Funding (€)
European Union (Includes Marie Curie, ERC etc.)	70,404,032
Private Enterprise	31,959,012
Enterprise Ireland - Non-Commercialisation Awards	16,587,434
Enterprise Ireland - Commercialisation Awards	13,855,168
Irish Research Council (IRC)	7,526,057
Other International Government Source	4,237,959
Health Research Board (HRB)	4,194,997
Dept. Communications, Energy and Natural Resources (DCENR)	3,963,859
Marine Institute (MI)	3,923,021
Dept. Agriculture Fisheries and Food	3,230,828
Charity/Non-Profit Organisation (Irish)	3,062,841
Environmental Protection Agency (EPA)	2,738,998
Other Irish Government Sources	2,400,901
Wellcome Trust	2,125,667
Other International Interest Organisations	1,977,491
Charity/Non-Profit Organisations (International)	1,737,086
Higher Education Authority Ireland (HEA)	1,034,874
Teagasc	609,373
Other Sources	484,078
National Institute of Health USA (NIH)	247,121
Grand Total	**176,300,797**

Science Foundation Ireland-funded researchers and the SFI Research Centres continue to leverage significant funding from industry, entering into a further €32 million worth of in-year and multi-annual collaborative agreements in 2017. This builds upon several years of strong collaboration between our researchers and industry. These collaborative activities will increase with the launch of four new SFI Research Centres in 2017.

Key examples

Prof Annette Byrne, RCSI, coordinated the European consortium COLLOSSUS which was successful in applying for €6 million in Horizon 2020 funding in 2017. The collaborative study, supported by Prof Byrne's SFI CDA award, will focus on metastatic colorectal cancer. The COLOSSUS proposal was ranked #1 from over 200 European projects submitted to the H2020 call and includes four Ireland-based partners.

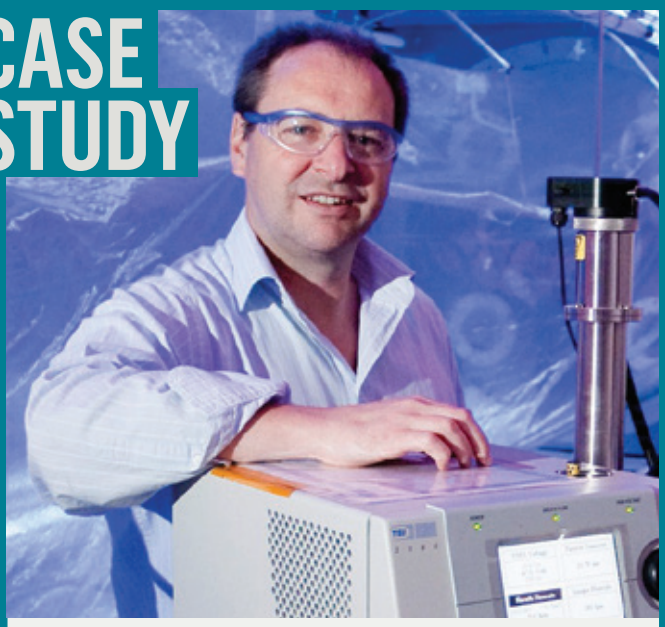
Director of the SFI Research Centre, CONNECT, Prof Luiz DaSilva's SFI Principal Investigator award supported a successful H2020 bid for the €5 million EU research project, ORCA, which began in January 2017 and focuses on 5G technology enabling applications from ultra-high definition video to the Internet of Things.

SFI Investigator awardee, Prof Martin Leahy of the Tissue Optics and Microcirculation Imaging (TOMI) group at NUI Galway, led a consortium that won a €6 million EU project grant to develop a novel imaging platform for regenerative medicine.

Dr Alan O'Riordan, Tyndall National Institute (TNI), an SFI-funded investigator with the SFI Research Centre CONNECT, has developed sensors for animal health disease diagnostics in a project supported by SFI's US-Partnership programme. These are now being explored for use as heavy metal sensors, with funding from the H2020 funded project GateOne.

The SFI Research Centre AMBER is leading the new €8.2 million SUN-PILOT EU project, working with partners from six European countries. The project focuses on the production of anti-reflective, scratch and abrasion resistant surfaces. The AMBER win of €2.1 million in the project is the largest amount ever awarded to TCD for a collaborative H2020 project.

CASE STUDY



Winning in Europe

Prof John Wenger's SFI Research Infrastructure award supported the building of the Irish Atmospheric Simulation Chamber (IASC) facility in Cork.

The facility enabled UCC to join the European Consortium, EUROCHAMP-2020, a €9 million H2020 research infrastructure project integrating the most advanced atmospheric simulation chambers in Europe into a unique world-class infrastructure for research and innovation. Simulation chambers are highly valuable research tools used by atmospheric scientists to probe the complex processes that occur in the atmosphere. They lay the foundations for air quality and climate models and also aid interpretation of field measurements.

Prof Wenger was amongst more than 50 European scientists from ten countries in attendance at the H2020 EUROCHAMP-2020 kick-off meeting in Paris in January 2017. The three-day meeting allowed the partners from 23 research institutes to discuss implementation of the project. Prof Wenger has previously held two SFI Research Frontiers awards which supported atmospheric chemistry projects in UCC (between 2005-2010).

Commenting on the SFI Research Infrastructure award, Prof Wenger said, *"The new atmospheric simulation chamber is unique in Ireland. It will enable ground-breaking studies in atmospheric chemistry, while also acting as a testbed for the development of new measurement techniques for gases and particles. We are very excited about the new scientific opportunities the facility will bring."*

Engaging Industry

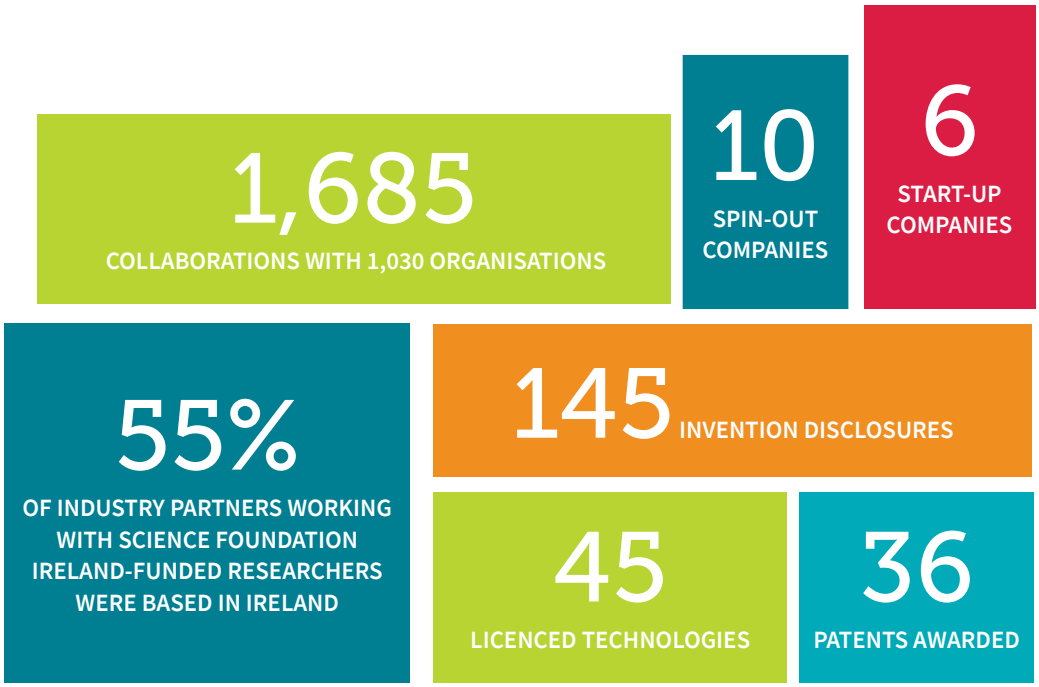
Science Foundation Ireland's deep engagement with industry is a strong mechanism for transferring the excellent research we support so that it can deliver economic and societal benefits; foster the creation of high value jobs, skills and knowledge, while also supporting both foreign direct investment and the creation of new high growth SMEs.

There were 1,685 collaborations with 1,030 organisations directly attributed to active Science Foundation Ireland awards. The majority of these collaborations (1,521) are with MNCs and SMEs. These result in the creation of new products, services, jobs and companies. Researchers can see their discoveries developed, learn about and/or test the potential of ideas and options for possible new directions of future R&D (34%). Collaborations also allow the efficient sharing of equipment, data and expertise between academia and industry.

In 2017, 55% of industry partners working with Science Foundation Ireland-funded researchers were based in Ireland; 16% were based in the US, 8% were based in the UK and 21% based elsewhere. These figures are largely unchanged from 2016, demonstrating that even in a time of major global uncertainty, Science Foundation Ireland has sustained its industry partnerships and continues to attract global interest as an innovative place to do business.

Innovation and Commercialisation

- Ten spinout companies were reported in 2017 (up from six in 2016)
- Six start-up companies reported in 2017 (up from one in 2016)
- SFI researchers were involved in 78 patent filings in 2017.
- 36 patents were awarded (up from 22); 23 of which were directly attributed to Science Foundation Ireland awards (up from nine in 2016).
- 45 licenced technologies were reported by Science Foundation Ireland-funded researchers in 2017; 27 directly attributed to Science Foundation Ireland awards, compared with 58 and 44, respectively, in 2016.
- There were 145 invention disclosures reported; 104 of these were directly attributed to Science Foundation Ireland awards.
- Science Foundation Ireland-funded researchers contributed to eight standards in 2017 (up from one in 2016).



CASE STUDY

Rethinking Obesity

Prof Carel le Roux's research focuses on rethinking obesity and type 2 diabetes.

Having discovered that optimising the metabolic state could reverse many of the complications associated with type 2 diabetes and obesity, Prof le Roux's research, supported by his SFI PIYRA award, has broken the stigma that diabetic kidney disease is chronic and progressive.

During 2017, the Irish Society for Nutrition and Metabolism (IrSPEN) used findings from Prof le Roux's Science Foundation Ireland-funded research to campaign during the European Obesity Day and World Obesity Day, to use intentional weight loss to reduce the complications of diabetes.

Prof le Roux's research is being used by major global companies such as NovoNordisk, Johnson & Johnson and Medtronic to increase the functionality of their products, while organisations such as the International Diabetes Federation, the American Diabetes Association and the Irish Society for Nutrition and Metabolism have incorporated these findings into their teachings.

Significantly, Prof le Roux's research is helping to change healthcare policy, with a five-fold increase per year in the number of patients receiving metabolic surgery in Ireland. He says, *"The most effective way for us to change clinical practice is to provide robust scientific evidence that shows we can improve outcomes of patients, while also helping clinicians understand the mechanisms of how the interventions work."*

Science Foundation Ireland and Enterprise Ireland work together to build and strengthen the pipeline of High Potential Start Ups (HPSUs) spinning out from academic research. Enterprise Ireland invests in approximately 90 High Potential Start Up companies per year, including 15 that emerge from academic research. In 2017, five of the 15 companies invested in by Enterprise Ireland had previously been funded by Science Foundation Ireland, demonstrating the effectiveness of the interlinkages between the two agencies.

Start up companies from this source have disruptive technology, a superior survival rate and an ability to attract significant private funding.

Showcasing Industry Engagement

Professor of Chemistry at TCD and Principal Investigator and Director of the Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN), John Boland, was voted Intel Researcher of the Year in November 2017, following research published in Science on the anomalous properties of nanoscale copper used in device interconnects.

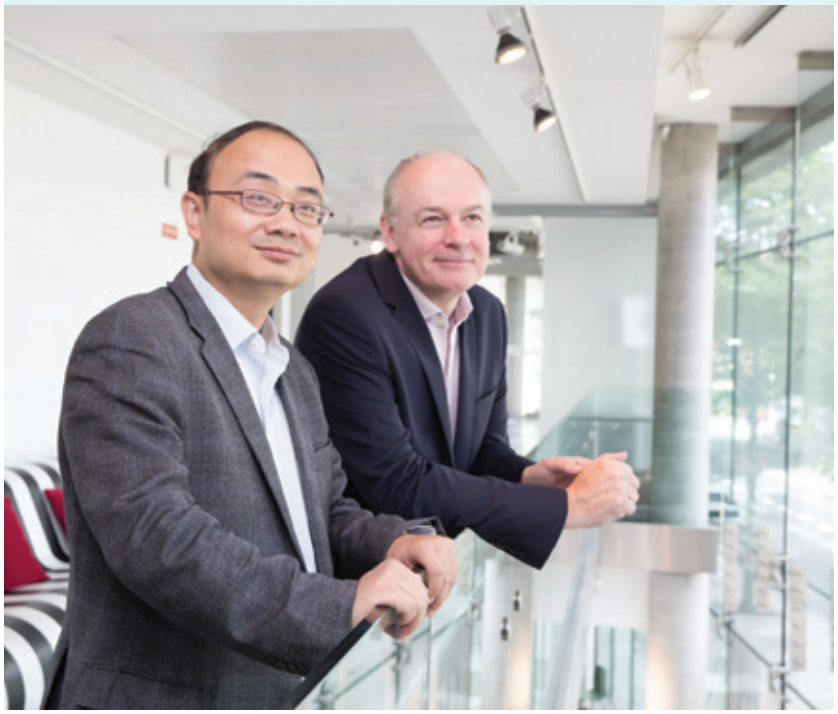
Huawei, the world's biggest mobile telecoms equipment company, announced a new research partnership in 2017 with TCD as part of its growing R&D footprint in Ireland. The partnership will involve SFI Research Centres, ADAPT and CONNECT, futher connecting Huawei and TCD researchers and fuelling transformations in the next wave of Huawei video and media innovation.

Henkel Technologies, the chemical and consumer goods giant, cited the presence of SFI Research Centres such as I-Form and AMBER as a key factor in the company's decision to establish an industrial 3D printing operation in Dublin, as part of a new multi-million euro investment.

As part of its expansion of operations to Ireland, the US artificial intelligence (AI) company, InsideSales.com, signed a new partnership with the Insight SFI Research Centre.

The SFI Research Centre CÚRAM was awarded the 'Academic Contribution to Medtech Award' at the The Irish Medtech CEO Conference and Awards Ceremony 2017.

Dr Jonathan Bones and his team at the National Institute for Bioprocessing Research and Training (NIBRT), have developed bio-analytical workflows to optimise pharmaceutical production and analytical characterisation of protein-based molecules. A collaboration with Thermo Fisher Scientific facilitated the development of this novel cloud-based system, onto which Dr Bones' research can be uploaded and shared with scientists across the globe. This work was made possible through SFI Starting Investigator and Career Development Awards.



Mr Haibo Lin, Global Head of Technology Collaboration at Huawei Technologies pictured with Prof Vincent Wade, Director of the SFI Research Centre ADAPT.

CASE STUDY

Biotech Partnership

Pictured at the launch of the iPath partnership (left-right) Ms Noelle Costello (RCSI); Dr Peter Turecek (Shire); Mr Brian O'Mahony, (Irish Haemophilia Society); Prof Mark Ferguson, (Science Foundation Ireland); Prof James O' Donnell (RCSI, St James' Hospital); Dr Roger Preston (RCSI); Prof Padraic Fallon (TCD); Dr John Gormley (TCD); Dr Michelle Lavin (RCSI, St. James's Hospital).

iPATH, the Irish Personalised Approach to the Treatment of Haemophilia, is one of the latest studies to come out of the emerging field of personalised medicine - treating patients on an individual basis. The €4 million SFI Strategic Partnership co-funded project brings together expertise from the Royal College of Surgeons Ireland, the global biotech company Shire, and the Irish Haemophilia Society, as well as clinicians from St James's Hospital Dublin, Our Lady's Children's Hospital Crumlin, Cork University Hospital, and University Hospital Galway. The study seeks to develop innovative approaches to clinical care and revolutionise the outdated 'one size fits all' global standard of treatment.

Haemophilia A is an inherited bleeding disorder caused by deficiency of the blood clotting protein factor VIII (FVIII). For the past 50 years the standard treatment has been the administration of the missing factor to reduce bleeding. However, bleeding risk varies significantly in patients with haemophilia, making it difficult to predict how much FVIII each patient requires. iPATH aims to uncover the biological mechanisms that underpin the marked differences in bleeding risks and long-term complications that exist between individual patients with haemophilia. The true strength of the project lies in the collaborative effort arising from multiple stakeholders; leading Irish investigators will work in collaboration with the world class clinical and scientific investigators from Shire, as well as leading medical authorities from within the Irish healthcare system.

Strategic Partnerships and Collaborations

Science Foundation Ireland is committed to leveraging its investment and capability to the maximum extent possible through building and collaborating in strategic partnerships. Science Foundation Ireland's Strategic Partnerships Programme funds compelling collaborative research opportunities that are not otherwise served by other national funding programmes. Three awards were made under the SFI Strategic Partnership Programme in 2017, with cumulative industry cash co-investment of €5 million.

At the end of 2017, Science Foundation Ireland had awarded a cumulative 19 Strategic Partnerships with industry, including nine Pfizer awards, with a total industry contribution of over €24 million.

The Valuation and Risk (VAR) partnership brings multiple industry partners together with researchers from UCD, DCU and Maynooth University with different skill sets in finance and mathematics. The VAR programme is led by John Cotter, Professor in Finance and the Chair of Quantitative Finance at UCD. It aims to build financial research capacity within Ireland to compete globally.

U-Flyte, a collaboration between researchers at Maynooth University and aviation industry partners Airbus, Irelandia Aviation, Ryanair and Intel, along with 15 other companies, was established to develop computer systems to tackle global management of increased drone operations. The partnership is co-funded by Science Foundation Ireland and industry partners, contributing €1.46 million and €1.56 million respectively. It is supported under the SFI Strategic Research Partnership Award and includes testbed facilities at Waterford Airport.

One award was made under the SFI-Pfizer Biotherapeutics Innovation Award Programme to develop a cancer therapeutic. Science Foundation Ireland and Pfizer continue to work together in supporting research to identify potential biopharmaceutical candidates (therapeutic and/or preventative) directed at novel disease targets. In 2017, an SFI-Pfizer Biotherapeutics Innovation Award was won by Margaret McGee, Assistant Professor at UCD's School Of Biomolecular & Biomed Science, for a project on the development of a novel cancer therapeutic.

SFI Research Centres

16 World-Leading Centres of Scale, Excellence and Impact

Excellent Science

Industry Collaboration

SSPC
Synthesis and Solid State Pharmaceutical Centre
Innovation Through Collaboration

ADAPT
Engaging Content
Engaging People

AMBER

apc Microbiome Ireland
Interfacing Food & Medicine

MaREI
Centre for Marine and Renewable Energy

Software
Pharma
Nanotechnology
MEDICAL DEVICES
Applied Geosciences
Digital Content
Industry commitment of €228 million
Nano
€428 million from SFI
MANUFACTURING
Telecoms
PERINATAL RESEARCH
Bio Econonomy
Energy
Functional Foods
FOOD FOR HEALTH
BIG DATA
Marine Renewable Energy

BEACON
Bioeconomy Research Centre

Lero

Confirm
Smart Manufacturing

IPIC
Bringing Photonics to Life

CONNECT
Networks of the Future

Insight

curam
Centre for Research in Medical Devices

Infant
Irish Centre for Fetal and Neonatal Translational Research

future neuro

I-Form
Advanced Manufacturing Research Centre

iCRAG
Irish Centre for Research in Applied Geosciences

International Engagement

Skills

Science Foundation Ireland has an established network of 16 world-leading SFI Research Centres of scale, excellence and impact, four of which were announced in 2017, with budget provision provided for one further in 2018. Representing a commitment of €428 million from Science Foundation Ireland and an Industry commitment of €228 million, the SFI Research Centres are the epitome of Science Foundation Ireland's transformational effect on the national research system.

These major funding awards link scientists and engineers in partnerships across 19 research bodies, including all seven universities, and 328 companies in Ireland. They act as magnets, attracting, retaining and creating industry that make important contributions to Ireland's economy, and expanding STEM education and career opportunities.

Maintaining a strong commercial focus, they have already exceeded their targets for intellectual property and spin-out creation. Companies they have created are scaling and employing people in high-value jobs. Throughout this world-class network, researchers are being trained in the key skills required for high-value jobs in large and small, foreign and indigenous companies.

Research excellence and global thought leadership are at the core of the SFI Research Centres. They are meeting global challenges and excel at winning international funding. In 2017, the first 12 Research Centres had won over €30 million in non-exchequer, non-commercial funding, creating jobs, and intellectual/commercial outcomes.

Four new SFI Research Centres launched in 2017:

- **€74 million investment from Science Foundation Ireland over six years**
- **€40 million from 80 Industry partners over six years**

CONFIRM, the SFI Research Centre for smart manufacturing led by UL, will deliver the technological advances and expertise for a smart manufacturing innovation ecosystem. It will enable companies to compete within the rapidly changing global landscape, and boost Ireland's competitiveness and reputation as a leading international manufacturing location.

BEACON, the SFI Research Centre for bioeconomy led by UCD, will develop alternative technologies based on renewable, sustainable biological resources to produce valuable goods, such as bioactive molecules, chemical building blocks, fuels, and energy. It will be a key driver to stimulate rural and agricultural redevelopment.

FutureNeuro, the SFI Research Centre for neurological science led by RCSI, will focus on addressing the socio-economic burden caused by chronic and rare neurological diseases. It will strengthen Ireland's ability to attract foreign direct investment from companies active in the multi-trillion euro global market for diagnostics, treatments and medical technologies for neurological diseases, and facilitate indigenous companies seeking to access this market.

I-FORM, the SFI Research Centre for advanced manufacturing led by UCD, will enhance processing efficiency for Irish manufacturing, allowing the production of highly customised 3-D printed components. It will make a strong impact on the international competitiveness of Irish additive manufacturing.

Key achievements of SFI Research Centres

The SFI Research Centres were funded with the primary objective of delivering significant economic and societal impact to Ireland. Their success is strongly driven by a number of key performance indicators. Each SFI Research Centre has targets for the relevant indicators and is continually measured against these targets. The SFI Research Centres are also mandated to maintain a minimum level of 30% cost share from industry partners, which includes a minimum of 10% cash.

A new education and public engagement KPI was introduced in 2017 to capture the percentage of Research Centre teams participating in EPE. The KPIs are reported and validated with SFI Research Centres on a six-monthly basis. Table 1 on page 34 shows the cumulative KPI results against target for the first 12 Research Centres, from start date until the end of 2017.

Key highlights include the level of non-exchequer, non-commercial funding; this includes over €172 million secured against a target of €160 million, 271 participations in and 74 co-ordinations of EU consortia and the awarding of 23 prestigious ERC awards.

Commercialisation activities are strong with 132 licensing agreements signed, 20 spin-outs reported and over 245 Enterprise Ireland commercialisation awards secured.

The academic outputs are also strong with over 5,400 journals and 3,300 conference publications reported. The cash cost share KPI is greater than 14%, with the overall cost share (cash and in-kind) now above the 30% target. While the number of Masters graduates and the percentage of trainee departures with industry as a first destination are below target, Research Centres are on course to reach these KPIs by the end of the funding period, with the help of targeted programmes recently rolled out by Science Foundation Ireland.

Spoke and Partnership awards with Industry - 2017

The SFI Research Centres Spokes Programme permits new partners to work with the existing SFI Research Centres, again with a co-funding requirement. Science Foundation Ireland has awarded a cumulative 16 SFI Research Centres Spokes awards, seven of which were awarded in 2017.

A new €14.5 million Science Foundation Ireland research programme which will examine how the Internet of Things can be used to improve the quality of life for ordinary citizens living in urban environments, is one of the projects funded under the SFI Spokes Programme. It will address a wide range of topics including water management, transport congestion and cyber security, with 60 researchers in three SFI Research Centres, CONNECT, Insight and Lero, working in partnership with Dublin City Council and over 25 companies. These include large multinationals such as Intel and Huawei, and SMEs such as Cork-based Accuflow.

Table 1 - Cumulative performance of first 12 SFI Research Centres up to December 2017

Key performance indicators		Target	Result	Performance against target
Academic	Journal Publications	3,253	5,443	167%
	Conference Publications	2,623	3,347	128%
Human capital	MSc/MEng Graduates	129	92	71%
	PhD Graduates	355	587	165%
	% Trainee departures with industry as first destination	41.4%	32.8%	79%
Europe	Participation in major EU initiatives	231	271	117%
	Coordination in major EU initiatives	71	74	104%
	ERC awards granted	24	23	96%
Industry co-fund	Funding from non-exchequer, non commercial sources	€159,750,000	€172,996,289	108%
	Cash in Bank	€28,653,209	€41,768,185	146%
	% Industry cost share (cash)	10.0%	14.6%	146%
	% Industry cost share (Total)	30.0%	33.5%	112%
Entrepreneurial	EI Commercialisation Awards	159	248	156%
	Licence agreements	111	132	119%
	Spin out companies formed	21	20	95%
EPE	% participation in EPE	18%	24%	133%

€172m
NON-EXCHEQUER, NON-COMMERCIAL FUNDING SECURED

132 LICENSING AGREEMENTS SIGNED

245
ENTERPRISE IRELAND COMMERCIALISATION AWARDS SECURED

16
SFI RESEARCH CENTRES SPOKES AWARDS

CASE STUDY

Internet of Things – Pervasive Nation

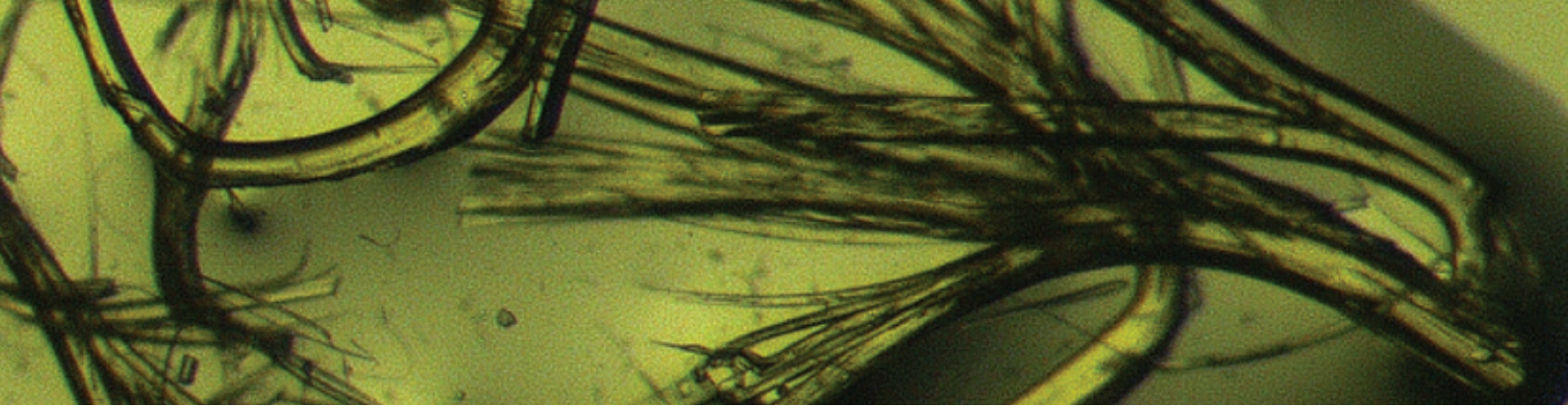
Researchers from the SFI Research Centre CONNECT are working with Intel Corporation and Smart Dublin - an initiative of Dublin City Council and other Dublin Local Authorities, to deploy low-cost sensors across the capital as part of an Internet of Things (IoT) project. These sensors will monitor rainfall, weather conditions and river levels. The sensors will communicate data wirelessly to Dublin City Council's operations team who will analyse water levels and take appropriate action. It's all part of a plan to make our cities smarter.

The Internet of Things (IoT) involves embedding sensors into ordinary, everyday objects such as lights and fridges, or even in riverbanks, allowing them to send and receive data. This data is carried on a network and the SFI Research Centre CONNECT, based at TCD, has developed a new, nationwide IoT testbed called Pervasive Nation for this purpose. Pervasive Nation is a Low Power Wide Area Network (LPWAN) that now covers a significant portion of Ireland. LPWANs are designed for the specific purpose of gathering small amounts of data at regular intervals from large numbers of sensors. Pervasive Nation uses sensors to achieve bi-directional communication allowing information exchange between the sensors and control centres.

The rainfall sensors use a tipping bucket mechanism that tilts each time a specified rainfall amount has been reached. A message is then communicated, via the Pervasive Nation network, to signify that the tip has occurred and allows a calculation of the rainfall amount. There are currently 24 gauges deployed in eight locations around the capital. The data from these sensors will be very useful to the local authority and will feed into many day-to-day activities such as gully clearance. The data could also be used in the planning processes for new builds. CONNECT is also focusing on the development of low cost gauges which can gather reliable data.

Flood damage to Dublin's infrastructure averages at around €8 million per annum. This figure is increasing due to sea level rises and more intense rainfall events. Using Dublin as a testbed, Pervasive Nation hopes to demonstrate the benefit of IoT applications in real-world conditions.

Minister Heather Humphreys launched the €14.5 million SFI Spokes research programme, Enable, which will connect communities to smart urban environments through the Internet of Things. She is pictured with Prof Mark Ferguson Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, and Prof Siobhan Clarke, Director of ENABLE.



Award Portfolio and New Awards Approved

Science Foundation Ireland funds a diverse and balanced portfolio of programmes, supporting both individually led researchers (from across the career spectrum from early-stage to mid-stage career researchers, to emerging research stars and established highly-esteemed research leaders) and research teams working collaboratively in SFI Research Centres.

Many of Science Foundation Ireland's funding programmes involve national and international collaborations with both small and large companies, charities, international funders as well as national funders such as Teagasc, Marine Institute, Environmental Protection Agency, Health Research Board, etc.

In 2017, 367 new awards were approved across 28 programmes, with a value of €213 million. Total payments to research bodies and institutions were €173 million. The following is a summary of award programme decisions in 2017:

- 24 awards were made under the Career Development Award programme supporting early and mid career researchers with an investment of €13 million.
- 34 outstanding senior researchers were supported by an investment of €40 million through the SFI Investigator Programme.
- SFI's Research Infrastructure Programme funded two research equipment and facilities awards valued at €10.5 million to support key research infrastructure projects in UCC and NUI Galway.
- Four awards were made under the new BBSRC-SFI Joint Partnership involving an investment of €1.7 million.
- Three awards were made under the SFI-HRB-Wellcome Trust Biomedical Research Partnership Programme with an investment of €1.2 million.
- Four prestigious SFI-Royal Society University Research Fellowship (URF) awards were granted to Irish early career researchers, with an investment by Science Foundation Ireland of €1.7 million, administered by the Royal Society.
- 38 awards valued at €3 million were made under the SFI Industry Fellowship Programme to provide researchers with first hand experience of working in an industry research environment.
- 37 awards were funded under the SFI Technology Innovation Award Programme (TIDA) with an investment of €4.5 million.
- €6 million was awarded to support three key Strategic Partnership Awards with industry.
- Two awards valued at €1 million were made under the ERC development programme to increase the success rate of Irish based applicants to the ERC.
- 65 awards were made as part of the SFI Discover Programme totalling €5.3 million to support the education and engagement of the public and young people in STEM.

Full details of all awards and grant commitments made by programme are outlined in the Grant Commitments and Payments Analysis section from page 76.

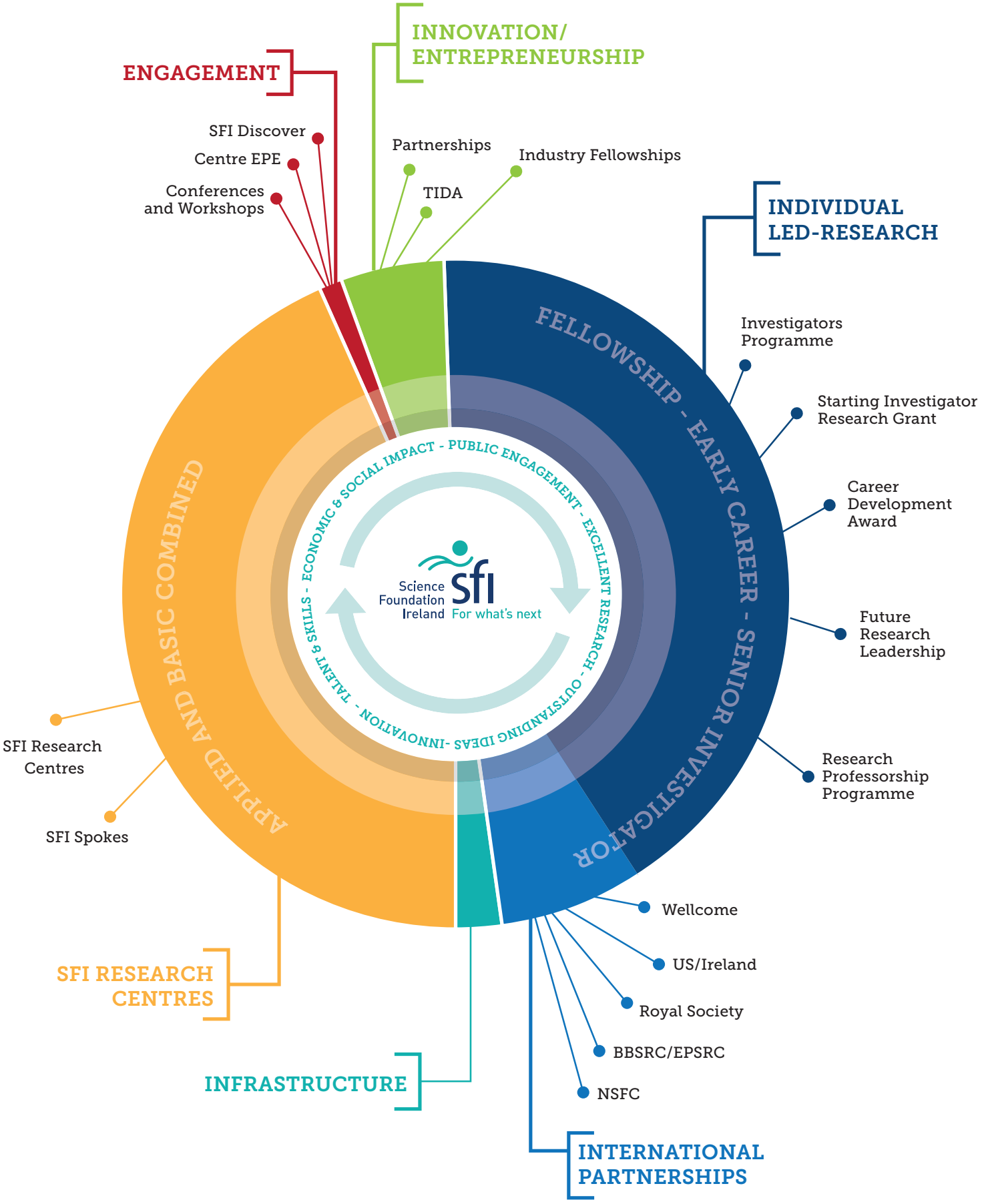
367

NEW AWARDS WERE APPROVED ACROSS 28 PROGRAMMES

WITH A VALUE OF

€213m

Science Foundation Ireland's Award Portfolio



Calculated from outstanding commitments and in-year spend for 2017

Science Foundation Ireland has analysed the publication outputs of its portfolio of awards by Technology Readiness Level (TRL) using an artificial intelligence approach, independent of subjective human classification (Boyack et al 2014 Journal of Informetrics 8 [1] pp 1-12).

The figures below show that the absolute number of Science Foundation Ireland publications in TRL 1 has increased over the years (Fig 1), but the proportion of publications in TRL 1 has slightly decreased (Fig 2), reflecting Science Foundation Ireland's widened legal remit to fund applied research (in 2013) and its increased focus on economic and societal impact.

The number of publications in TRL levels 2-4 also increased (Fig 1) and the proportion in TRL levels 3 and 4 increased slightly (Fig 2).

Technology Readiness Levels (TRL)

TRL 1 Basic principles observed

TRL 2 Technology concept formulated

TRL 3 Experimental proof of concept

TRL 4 Technology validated in lab

Figure 1

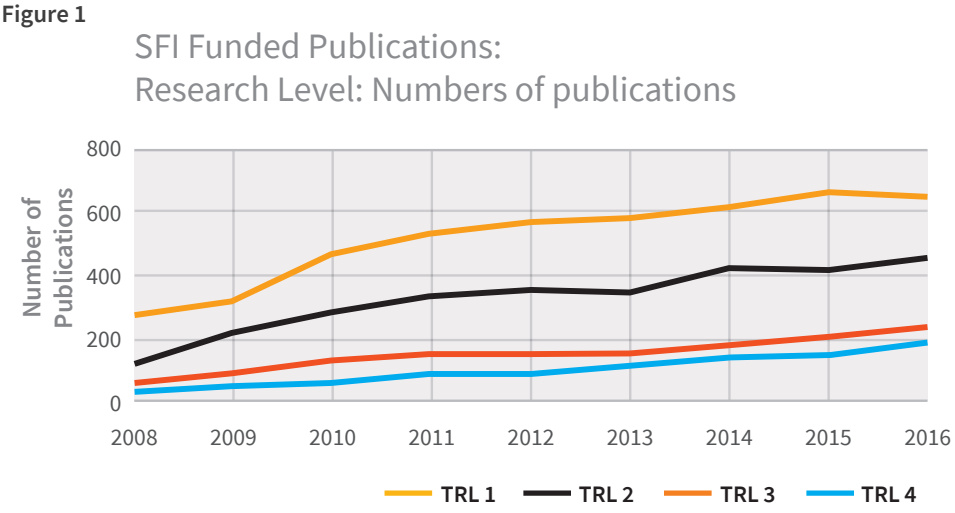
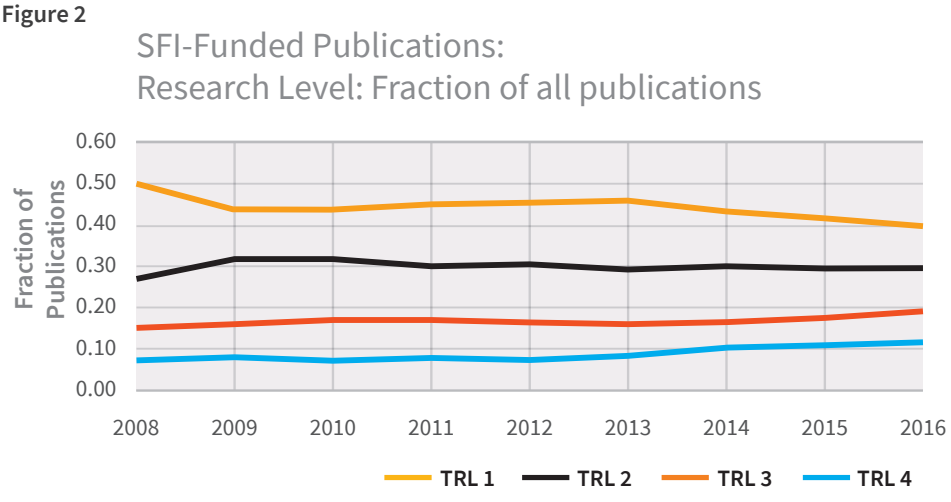


Figure 2



Policy Initiatives

Gender

Since the launch of its Gender Strategy in 2016, Science Foundation Ireland has moved towards streamlining gender initiatives across all its programmes, with the overarching aim of redressing the gender imbalance amongst its award holders. In 2017, Science Foundation Ireland achieved its Agenda 2020 target of female researchers comprising 25% of its award holders and this target has now been revised to 30%.

Progress has been made whereby Science Foundation Ireland has provided incentives for research bodies to submit applications from female researchers to various programmes, with a focus on those aligned with early career stage.

The most recent analysis of award holders in 2017 shows that 26% are female, which compares with 23% in 2016, and so represents progress towards redressing gender imbalance.

Science Foundation Ireland continues to implement specific grant management policies to support the needs of female researchers during periods of maternity and adoptive leave, and will continue to innovate in this regard. The policies being developed and associated outcomes will complement and support the Athena SWAN initiative, whereby the Irish Research Council, Science Foundation Ireland and the Health Research Board will require research bodies to have attained a bronze institutional Athena SWAN award by the end of 2019 and a silver institutional Athena SWAN award by the end of 2023, to be eligible for research funding.

Another aspect of Science Foundation Ireland's Gender Strategy is to ensure that the gender perspective is addressed in the research Science Foundation Ireland funds, where relevant. While this approach was launched for some programmes during 2017, applicants will in future be required to provide a statement articulating the sex/gender variables in their research, and guidance in this regard will be available for applicants and reviewers alike.

Science Foundation Ireland is a partner in an EU H2020 gender project called ACT, which aims to improve access, sharing, and gender equality knowledge by advancing Communities of Practice (CoP) as agents for implementing gender equality actions amongst Research Performing Organisations and Research Funding Organisations in the European Research Area. This project will also consider the integration of the gender dimension into research content and processes. As a Research Funding Organisation in ACT, Science Foundation Ireland will set up and coordinate a CoP amongst Research Funding Organisations across Europe.

CASE STUDY

The Body Clock

Heading up the CurtisClock Lab at the Royal College of Surgeons (RCSI), Dr Annie Curtis and her team are studying the immune system and the influence our natural body clock has on inflammation elicited through macrophages and dendritic cells.

The body clock is the timing mechanism within our cells that ensures that certain physiologies or functions occur at the appropriate time of day (termed circadian rhythms). This work could have far reaching impact on our understanding of chronic inflammatory diseases such as arthritis, heart disease and cancer. There are also implications for when medications – including vaccinations – should be dispensed, aligning treatment with the daily changes in our immune system.

Dr Curtis explained that: *"Inflammation is a key target in the treatment of chronic inflammatory disease. Our goal is to understand the precise mechanisms by which the body clock impacts on function of immune cells, in particular those cells of the innate immune system, our first line of defence against damage and infection."*

Dr Curtis began her work into the body clock's influence on the immune system during her PhD with SFI St. Patrick Day Science Medal awardee Prof Garret FitzGerald, at University of Pennsylvania. Upon graduation she rounded out her experience, spending time in both industry and governmental posts. Dr Curtis returned to the bench in 2011 in the laboratory of the esteemed immunologist Prof Luke O'Neill at Trinity College Dublin and was awarded an SFI Starting Investigator Research Grant (SIRG) aiding in the establishment of her own independent research group.

In 2016, she joined the RCSI Department of Molecular and Cellular Therapeutics as a StAR research lecturer and is also part of the Tissue Engineering Regenerative Group (TERG) at RCSI. She went on to win a prestigious L'Oréal-UNESCO For Women in Science Fellowship the following year and is a strong advocate for women in STEM careers.

Research Integrity

Science Foundation Ireland places paramount importance on ensuring that the highest standards of research integrity underpin all aspects of the research that it supports. To this end, Science Foundation Ireland endorses the National Policy Statement on Ensuring Research Integrity in Ireland; that is all institutions and Science Foundation Ireland award holders are expected to abide by this policy statement and the European Code of Conduct for Research Integrity.

During 2017, Science Foundation Ireland trialled some innovative processes that will help support the research environment in Ireland in operating in accordance with best practice and that Ireland is the best place to carry out excellent research with impact whether you are an aspiring academic, an innovator or entrepreneur. These processes will also enhance Science Foundation Ireland's evaluation and monitoring of the quality and potential impact of its funded research.

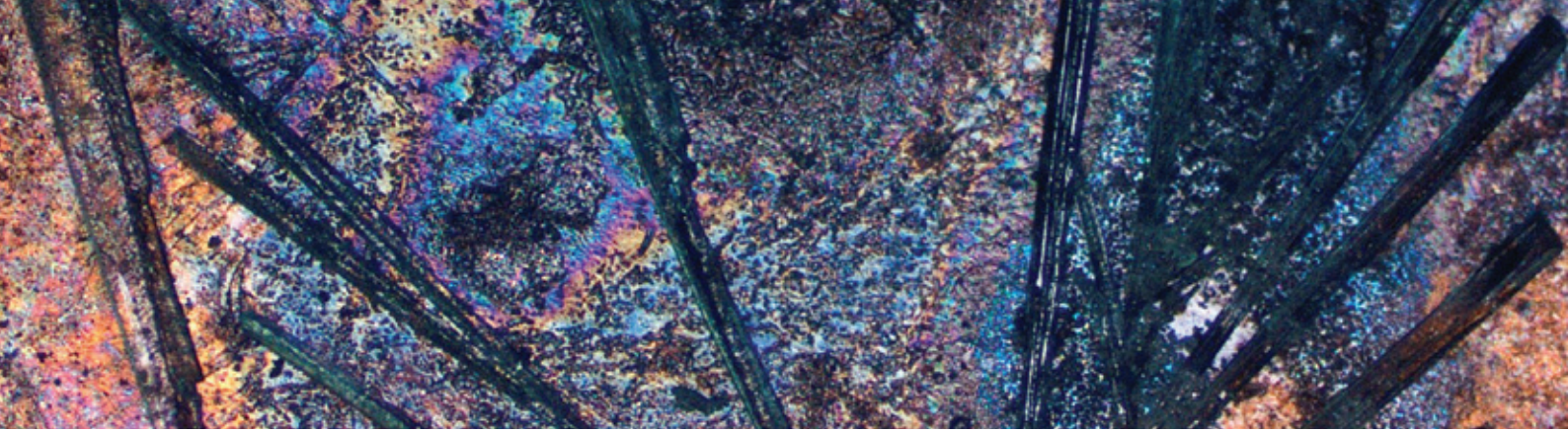
This year has seen the piloting of a data integrity/ provenance review as part of Science Foundation Ireland's programme progress review process, and the appointment of an expert advisor on research integrity. Collaborative efforts with the research environment to develop an 'Agreed Upon Procedure' (AUP) have also been made.

In regard to the former, a section of Science Foundation Ireland's progress review process is set aside for an external subject-matter expert panel to study the provenance of a data set and engage with the team on matters concerning training, mentoring and supervision, procedures used for data capture, analysis, storage and curation.

The AUP is a system-wide approach which can be conducted by an independent auditor appointed by Science Foundation Ireland, the intent of which is to provide assurance to the Foundation as the funder, that the monies being invested in STEM are embedded in good research practices, and adhere to guidelines in support of research integrity and ethics. The questions that will form part of this AUP will help Science Foundation Ireland understand the policies and processes that are in place in relation to research integrity and research ethics, and the 'reach' of these across the institution to schools, centres and research teams where Science Foundation Ireland makes its awards.

Collectively these processes once finalised and fully integrated into Science Foundation Ireland's monitoring of its portfolio of research activities, will position the agency as a lead nationally and internationally in the promotion of good practice, integrity and reproducibility in research, help promote improvements in the training of the next generation of researchers and graduates moving to industry and ultimately ensure that the highest standards of integrity underpin all aspects of research.

Attendees at the SFI Early Career Researchers event at the Ballsbridge Hotel, Dublin.



Education & Public Engagement

The mission of the education and public engagement programme is to catalyse, inspire and guide the best in education and public engagement with science, technology, engineering and maths (STEM). One of Science Foundation Ireland's strategic objectives, as set out in Agenda 2020, is to also have the most engaged and scientifically informed public.

Science Foundation Ireland runs three core activities under the education and public engagement programme:

1. **SFI Discover Funding Programme**
2. **Supporting researcher engagement capacity and activity**
3. **Directly managed programmes**

In 2017, Science Foundation Ireland supported a portfolio of 41 projects with an investment of € 4.4 million through the SFI Discover programme, reaching over 1.4 million people throughout the country.

Members of the SFI Research Centres also received training on science communication and engaged research over the year. Directly managed programmes include Discover Primary Science and Maths, Smart Futures and national Science Week. In addition, Science Foundation Ireland also manages the European Space Education Resource Office (ESERO Ireland).

In 2017, Science Foundation Ireland also contributed to the development and implementation of the National STEM Education Policy and Implementation Plan; and the Digital Strategy for Schools.

Science Week 2017

Science Foundation Ireland both directly manages national Science Week and provides support through the SFI Discover Programme to regional Science Week festivals. In 2017, projects were supported to help grow activity in areas of low participation, where communities are not traditionally engaged in STEM.

Two new regional science festivals were launched in Carlow and Tipperary and a variety of innovative events were funded in Dublin, including 'The Science of Horror Movies' and 'Irish Mental Health Legacies of the Great Famine'. In addition, Science Foundation Ireland ran its first family open day in the Convention Centre Dublin. Science Week reached over 315,000 people across 1,150 events nationwide.

Dara O'Briain at the Scintillating Science show in the National Concert Hall, explored science stories with an audience of over 1,000 people as part of National Science Week 2017

Students pictured at the launch of Tech Week 2017, an SFI Discover-funded festival coordinated by the Irish Computer Society, which promotes technology skills and careers.

Smart Futures – Key Achievements

Smart Futures is a collaborative government-industry-education programme that provides post-primary students in Ireland with information about careers in STEM. Coordinated and managed by Science Foundation Ireland, in partnership with the Engineers Ireland STEPS programme, it is supported by 200+ organisations from industry, research and academia. The programme completed its initial three-year strategy in 2016 and will launch its next phase in 2018.

The website www.SmartFutures.ie provides STEM career resources, including over 170 STEM career profiles, with the aim of stimulating an interest in STEM subjects in secondary school and at third level.

- **120,000+ post-primary students directly engaged since 2013**
- **1,600+ STEM role models recruited and trained**
- **STEM careers resources delivered to students, teachers and parents**
- **Presence at key career events, e.g. Higher Options, SciFest, TY EXPO etc.**
- **Over 6,000 hours donated by industry and academia through volunteering**

Discover Primary Science and Maths (DPSM)

For 15 years, the DPSM programme has been supporting teachers and school children to engage with the primary school science curriculum. The delivery of continuing professional development (CPD) to primary school teachers is a significant part of the programme. In 2017, 120 schools participated in the CPD programme, which consists of three two-hour workshops held in participating schools for all teaching staff. The focus is to support curriculum teaching using an inquiry-based approach to STEM teaching and learning. In addition, 593 schools achieved an SFI Discover Science and Maths Award, recognising their work in STEM throughout the year.

CASE STUDY

Science Foundation Ireland is committed to supporting a greater level of STEM programming with Irish broadcasters.

The broadcast strategy has focused on supporting programmes that are relevant to a broad audience and reach people traditionally unengaged in STEM.

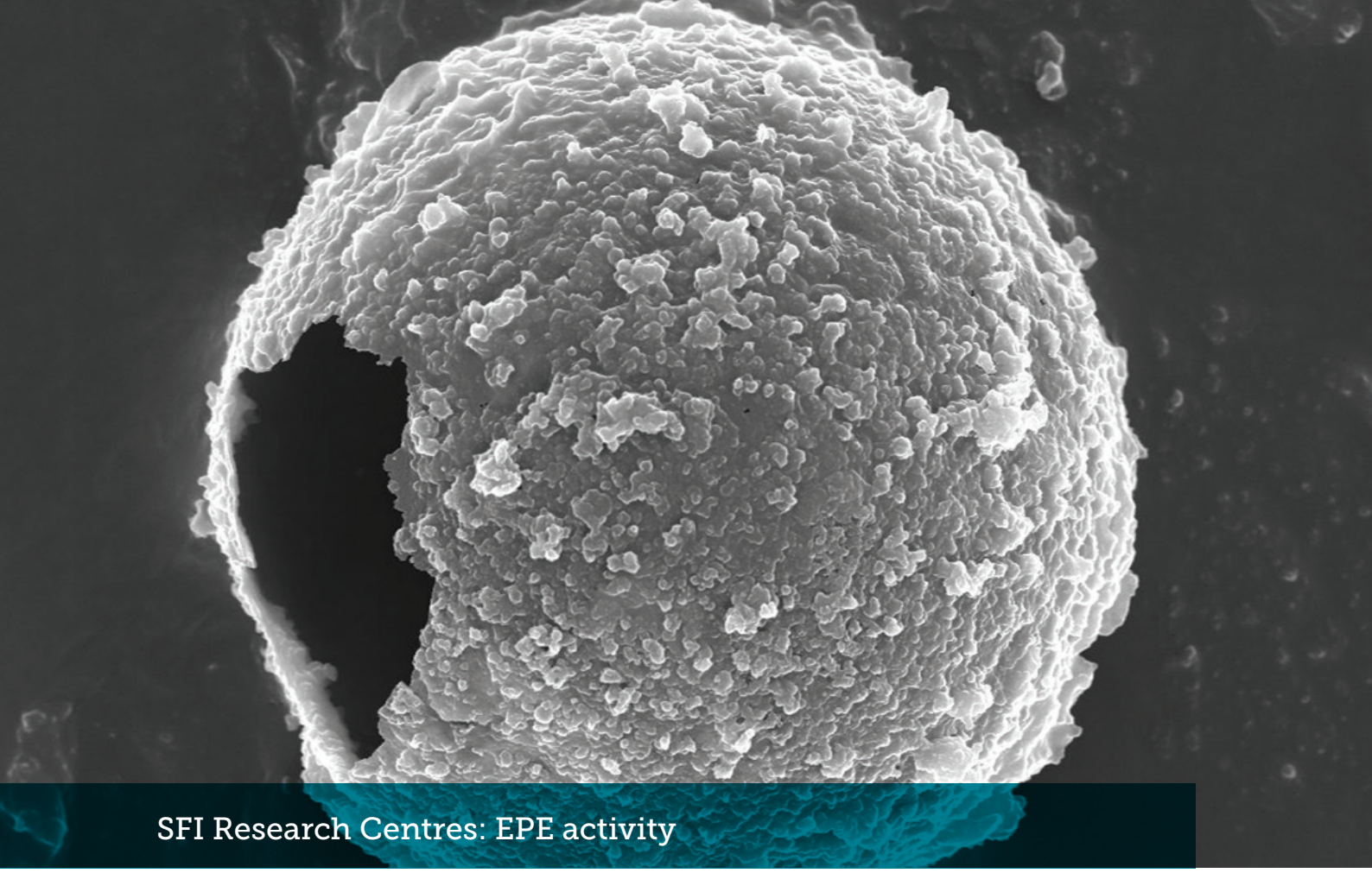
A joint agreement between Science Foundation Ireland and RTÉ was established in 2015 and began with the Big Week on the Farm (first broadcast in 2016) which in 2017, screened daily on RTÉ 1 in April, with the week-long show attracting over 1.5 million viewers and an average nightly audience share of 25.9%. Science Foundation Ireland co-funded the production with RTÉ and the Broadcast Authority of Ireland and worked closely with the production team to identify research stories to be featured. The programme helped reach rural and farming communities that are often more difficult to engage through traditional face-to-face outreach activities.

Several outputs from the joint agreement took place during Science Week. The SFI-supported documentary 'Will a Robot Steal My Job?' reached an audience of 250,000 with a 21% share of audiences viewing. The SFI Research Centre CÚRAM also had its SFI Discover-funded short film 'Feats of Modest Valour' aired.

Daily weather broadcasts at 6pm and 9pm featured Science Week references and a new concept 'Weather Live' featured on RTÉ for three one-hour prime time slots during Science Week, exploring research on weather, climate change and other related topics.

RTÉ conducted an audience reaction panel survey, using a sample of 1,167 adults (15+). Of those surveyed, 86% felt it was important to invest in scientific research, while 78% said they would like to see more STEM-related content on RTÉ. Results found that there is a strong appetite for STEM-related programming content amongst RTÉ audiences.

Throughout the initiatives with RTÉ, Science Foundation Ireland has learned invaluable lessons in terms of linking researchers to the production community. In 2017, Director General of RTÉ, Ms Dee Forbes, acknowledged the cross-media approach to Science Week as an exemplar of how RTÉ can achieve more for big 'public service' themes through increased cooperation with different teams. The increased internal cooperation in RTÉ because of the initiative has facilitated opportunities to grow awareness of how STEM underpins a variety of programmes from broader RTÉ commissioning groups and platforms.



SFI Research Centres: EPE activity

Researcher-led Engagement

Science Foundation Ireland has been supporting the research community to engage with the public. An Education and Public Engagement key performance indicator has been introduced to the SFI Research Centres, and training provided. This has seen Science Foundation Ireland-supported researchers increasing their involvement in education and public engagement, delivering 1,530 activities - a 60% increase on 2016, and a 163% increase on 2015 activity. Researchers also took part in over 2,500 media interviews.

Education and public engagement is a key function of the world-leading SFI Research Centres network.

The SFI Research Centres work to improve public understanding of STEM and engage with under-represented groups, delivering on Science Foundation Ireland's mission to foster the most engaged and scientifically-informed public. Some 2017 highlights include:

- Insight, the SFI Research Centre for data analytics, spearheaded the largest study ever conducted into Fundamental Movement Skills (FMS) to tackle the crisis in lack of physical activity among Irish adolescents. This resulted in the 'Moving Well – Being Well' project, the largest of its kind anywhere in the world, with 3,000 children assessed in 2017. Researchers are developing an intervention to be adopted in schools and delivered by DCU's Insight researchers and the GAA.
- Professor of Comparative Immunology at TCD, Cliona O'Farrelly, ran a public campaign as part of her Science Foundation Ireland-funded research, to recruit DNA samples from the women who were found to be resistant to the Hepatitis C viral infection outbreak during the 1970s. The campaign, which utilised social media, received major media coverage and strong public engagement. 700 contacts were made, 331 of which were suitable individuals to participate. The team plans to develop HCV resistant liver cells from their HCV resistant blood stem cells to fully understand the mechanism of resistance.
- Professor of Equine Science at UCD, Emmeline Hill, created an SFI-supported short film entitled BLOODLINE, with a UK producer, which led to a collaboration with an award winning Canadian documentary film maker Niobe Thompson. His feature-length documentary on horse genetics highlights Emmeline's work.
- The SFI Research Centre CÚRAM and Galway Film Centre's partnership project, 'Science on Screen,' have produced a documentary directed by Invisible Thread Films on research currently underway in CÚRAM. The film captures the health system's fight to treat the rising number of diabetic patients.
- The SFI Research Centre, I-PIC, launched the Little Book of Photonics Careers - a valuable and impactful programme that helps students and their parents to make positive and informed education and career decisions.

Governance Statement and Board Members' Report, Organisational Structure 2018 and Statutory Notices

Statement on Corporate Governance and Board Members' Report

Governance

The Board of Science Foundation Ireland (SFI) was established under the Industrial Development (Science Foundation Ireland) Act 2003. The functions of the Board are set out in section 7 of this Act, as amended. The Board is accountable to the Minister for Business, Enterprise & Innovation ("the Minister") and is responsible for ensuring good governance and it performs this task by setting strategic objectives and targets and taking strategic decisions on all key business issues. Section 7(4) of the Act requires the Board to comply with such general directives relating to policy in the exercise of its functions as may be given by the Minister. The regular day-to-day management, control and direction of SFI are the responsibility of the Director General and the senior management team. The Board also sets the ethical tone of the Foundation by its own actions, but also in overseeing senior management and staff to ensure that SFI's values, good standards of governance and ethical behaviours permeate all levels of the Foundation. The Director General and the senior management team follow the broad strategic direction set by the Board, and must ensure that all Board members have a clear understanding of the key activities and decisions related to the entity, and of any significant risks likely to arise. The Director General acts as a direct liaison between the Board and management of SFI.

Science Foundation Ireland Board Members

Ms Ann Riordan, Chairman of Science Foundation Ireland

An experienced board member, Ann Riordan has held several senior positions in the ICT sector. Notably she established Microsoft Ireland in 1990 and was instrumental in establishing the Fast-track to IT (FIT) initiative which has to-date trained over 18,000 long-term unemployed people. She has served on the Information Society Steering Committee and the Irish Council for Science, Technology & Innovation. Since her retirement from Microsoft, she has served as President of the Institute of Directors in Ireland; Chairman of the National Standards Authority of Ireland; Chairman of Tourism Ireland; Chairman of the Dublin Regional Tourism Authority and as a public interest director of the EBS Building Society. She has also served as a director of MIT Media Lab Europe and as an advisory Board member of the UCD Michael Smurfit Graduate Business School and currently serves as Chair of the Advisory Board of Asia Matters.

Prof Mark W.J. Ferguson, Director General, Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland

Prof Mark Ferguson commenced as Director General of Science Foundation Ireland in January 2012 and as Chief Scientific Adviser to the Government of Ireland in October 2012. Previously a Professor and Dean of Biological Sciences at The University of Manchester, he was co-founder and CEO of Renovo Group Plc. Prof Ferguson is the recipient of numerous international research prizes and awards, including the 2002 European Science Prize (jointly), author of 329 papers and book chapters, 61 patent families, author/editor of eight books, supervised 77 PhD students and has been awarded over £70 million in competitive research grants and approximately £100 million in start-up company equity funding.

Prof Ferguson graduated from the Queens University of Belfast with degrees in Dentistry (BDS 1st class honours), Anatomy and Embryology (BSc 1st class honours, PhD) and Medical Sciences (DMedSc), and holds Fellowships from the Royal Colleges of Surgeons in Ireland (FFD), and Edinburgh (FDS) and is a Founding Fellow of the UK Academy of Medical Sciences (FMedSci). He is a member or Fellow of a number of learned Societies, and was made a "Commander of the British Empire" (CBE) by the Queen in 1999 for services to Health and Life Sciences.

Ms Máire Geoghegan-Quinn
Former EU Commisioner for Research, Innovation and Science. Appointed SFI Board member April 2018

Máire Geoghegan-Quinn served as the European Commissioner for Research, Innovation and Science from 2010-2014. As Commissioner she established the 'Innovation Union' initiative; progressed the European Research Area; and delivered the largest ever research framework programme, Horizon 2020, with a 30% budget increase (€80 billion in total for research and innovation). She had political responsibility for two directorates general – the Director General for Research and Innovation and the Joint Research Council.

Máire previously served as a Fianna Fáil TD for the Galway West constituency (1975–1997); and held several Ministerial positions including: Minister for the Gaeltacht (1979–1981), becoming the first female Cabinet Minister since the foundation of the Irish State; Minister for European Affairs (1987–1991); and Minister for Justice (1993–1994). She holds a Degree of Doctor of Laws from NUIG, a degree of Doctor of Science from UCD (both honoris causa); and the Légion d'honneur among other awards. She is a Member of the European Joint Research Centre (JRC) Alumni Network and an Honorary Fellow of the Royal College of Physicians of Ireland.

Prof Sir Tom Blundell,
Director of Research and Professor Emeritus in Biochemistry, University of Cambridge

Sir Tom Blundell is Director of Research and Professor Emeritus in Biochemistry, University of Cambridge. He has previously held teaching and research positions in the Universities of London, Sussex and Oxford and leads an active research team in structural and computational biology. Co-founder of Astex Therapeutics, he has also been a member of several Boards and Scientific Advisory Boards of both pharma and biotech companies, including SKB, Celltech and UCB. Tom has held several prestigious roles in public bodies, Royal Commissions and Charities including as a member of the advisory group to the Prime Minister and founding CEO and Chair of the UK Biotechnology and Biological Sciences Research Council. Sir Blundell was knighted in 1997 and is a member of several academies. He has received numerous international awards, prizes, medals and honours for his research work and holds Honorary Doctorates from 16 universities. Awards received in 2017 include the Ewald Prize and the Shizhang Bei International Award for Contributions to Biophysics.

Prof Liam Madden,
Executive Vice President of Engineering at Xilinx

Liam Madden leads a world-wide organization of R&D professionals, including teams in Dublin and Cork. Mr Madden has spent more than 30 years in the US semiconductor industry where he has contributed to a range of industry leading products and technologies. Based in Silicon Valley, he has worked with established companies and start-ups, including a leadership role in a successful IPO. Mr Madden is a regular speaker at university and industry events worldwide. He holds five patents in semiconductor technology. He is a Fellow of Engineers Ireland and in June 2013 was appointed an Adjunct Professor of Electrical, Electronic and Communication Engineering at UCD.

Ms Bernie Cullinan,
CEO of Pragma Advisory

Bernie Cullinan is CEO of Pragma Advisory, a company providing strategic and operational advisory solutions for companies in the SME sector in a broad range of domains. Bernie is also a director of Crest Solutions Limited, Crest Solutions (T.S) UK Limited, PrintInspector Limited and the Pharmaceutical Training Academy Limited. She has held C-level positions in several Irish technology companies and continues to be active in this sector. She has played a key role in driving growth and shareholder value in the US, UK and Ireland and is a past Chairman of the Irish Software Association. Bernie has a BComm from UCD, an MBA from UCD and is a Fellow of the Chartered Institute of Management Accountants (CIMA). Bernie is a past President of CIMA and is a member of the DCU Educational Trust.

Ms Mary Doyle,
Former Deputy Secretary General, Department of Education and Skills

Mary Doyle sits on the SFI Board as the appointee of the Minister for Education and Skills. Mary took up her role in the Department of Education and Skills in June 2012 where she led the Higher Education Division in the Department. She has worked in the Departments of the Taoiseach, Health, and was Director General in the Office/ Department of the Minister for Children and Youth Affairs. She has been a member of the National Economic and Social Council and the National Statistics Board and a Forum Member of the Economic and Social Research Institute. She holds a degree in European Studies from the University of Limerick and a Masters in Public Service Management from Trinity/Irish Management Institute.

Ms Geraldine Ruane, Chief Operating Officer, Trinity College Dublin

Geraldine Ruane is an experienced board member having served on boards within the Pharma, ICT, Government and Not for Profit Sectors. As a performance-focused leader she has held positions of CEO, COO, and CFO in leading national and international organisations successfully driving transformation and change. A Fellow Certified Public Accountant and qualified and experienced Chartered Director, Geraldine has deep functional knowledge of corporate governance, risk management, compliance and regulatory changes. Geraldine is Chief Operating Officer of Trinity College Dublin. Using the power of technology, commercial, innovation, e-commerce and people management, she has transformed the infrastructure of Trinity College into a 21st century customer centric high performing service and commercially focused organisation.

Mr Aidan W. Donnelly, MD of Advest Management Ltd

Aidan Donnelly is the MD of Advest Management Ltd., a private equity fund management company. In addition, he is Chairman of NORA, the Irish government agency responsible for Ireland's National Oil Reserves and has interests in renewable and environmental start-up companies. Aidan has extensive experience in the development and management of technology-oriented multinationals in Ireland such as Xerox (Europe) Ltd. Quantum Peripheral Products Ltd., Puritan Bennett, Cabletron Systems, Betdaq (Global Betting Exchange Ltd.) and most recently, ServeCentric Ltd. For over 12 years, Aidan also served in the Irish army, holding the rank of Captain in the Army Ordnance Corp. He earned an M.B.A. (UCG), M.I.E. (UCD) and a B.Sc. (UCG) and is a Chartered Director (C.Dir.) with the IOD.

Mr Barry O'Sullivan, Senior Adviser, Permira LLC

Barry O'Sullivan is a Senior Adviser at Permira LLC, a global investment firm. He is also the founder of Altocloud, an artificial intelligence software company with a mission of improving customer engagement. Prior to Altocloud, Barry was SVP at Cisco Systems and has been General Manager of several multi-billion dollar divisions, including Collaboration and Voice over IP, which he led from number six to the number one market share position worldwide. Barry has spent most of his career in Silicon Valley, joining Cisco in 2002, having previously been General Manager of Nortel's contact centre software business.

He is co-founder of the Irish Technology Leadership Group and holds a Bachelors Degree in electrical engineering from UCC and a Masters Degree in computer science from the University of Limerick, as well as a Masters degree in business administration from Santa Clara University, California.

Dr Pat Duane, Vice President & General Manager of Interventional in Creganna Medical, part of TE Connectivity

A leading expert in the medical device industry, Pat has worked within the sector for over 26 years. Pat is now General Manager for TE Medical's Interventional business, a world leader in the design and supply of minimally invasive delivery systems. Prior to his role of VP & GM of Interventional in Creganna Medical, Pat was VP, Corporate Development and later VP, Global Operations. During this time, Pat led Creganna Medical's integration with TE Connectivity following its acquisition in 2016. Prior to Creganna Medical, Pat spent 12 years with Medtronic and nine years with CR Bard where he held several senior management roles in business development and R&D. Pat is passionate about innovation and is a named inventor on over 12 internationally issued patents.

Pat holds a Doctorate in Business from Henley Management College, London and his area of interest is the post-acquisition integration of small to medium enterprises into multi-national corporations. Pat also holds a Masters in Engineering Design from University College Dublin and a BSc. in Applied Physics from National University of Ireland, Galway.

Mr Dermot Mulligan, Assistant Secretary General, Dept. of Business, Enterprise and Innovation

Dermot Mulligan is Assistant Secretary General/Head of the Innovation and Investment Division of the Department of Business, Enterprise and Innovation. He reports to the Secretary General of the Department and the Minister and his areas of responsibility include formulation and implementation of Government policy on Innovation (including Science, Technology, Research and Development), Foreign Direct Investment and North/South Trade. He has previously worked in a range of Government Departments including the Departments of Health, Finance and Education & Skills. He holds a first degree in Law and an M.Sc. (Economics) in Policy Studies from Trinity College Dublin and an MBA from the University of Warwick.

Dr Rita Colwell, Professor at the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health. Retired from SFI Board in December 2017

Dr Rita Colwell retired from the SFI Board in 2017. She is Professor both at the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health and Chairperson of CosmosID Bioinformatics Inc. Dr Colwell served as the 11th Director of the US National Science Foundation (NSF) from 1998-2004. In her capacity as NSF Director, amongst other initiatives, she broadened the NSF range of programmes including cyber infrastructure and also special interaction in science and mathematics education, graduate science and engineering education and the increased participation of women and minorities in science and engineering.

Board Responsibilities

The work and responsibilities of the Board are set out in the Board Manual, which also contains the matters specifically reserved for Board decision. Standing items considered by the Board include:

- Declaration of interests
- Reports from Board Committees, including circulation of minutes
- Financial reports/management accounts
- Performance reports
- Risk register and
- Matters reserved for the Board

Section 24 of the Act requires the Board keep, in such form as may be approved by the Minister with consent of the Minister for Public Expenditure and Reform, all proper and usual accounts of money received and expended by it.

In preparing these financial statements, the Board of the Foundation 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 it will continue in operation, and
- State whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements.

The Board is responsible for keeping adequate accounting records which disclose, with reasonable accuracy at any time, its financial position and enable it to ensure that the financial statements comply with section 24 of the Act. The maintenance and integrity of the corporate and financial information on the Foundation's website is the responsibility of the Board.

The Board is responsible for approving the annual plan and budget. An evaluation of the performance of the Foundation by reference to the annual plan and budget was carried out at the December 2017 Board meeting.

The Board, principally through the Audit & Risk Committee, has assessed the State body's principal risks including a description of these risks where appropriate and associated mitigation measures or strategies.

The Foundation is adhering to the relevant aspects of the Public Spending Code. 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. The Board considers that the financial statements of Science Foundation Ireland give a true and fair view of the financial performance and the financial position of the Foundation at 31 December 2017.

How the Board Operates

The Chairman leads the Board and ensures its effectiveness. The Chairman also organises its business and sets its agenda with input from the Director General. The Board has approved a schedule of matters reserved to it and its duly authorised Committees for decision. Matters reserved to the Board include the approval of strategic plans, approval of annual plans and budgets, approval of grants in excess of specified financial thresholds, approval of annual reports and financial statements. Matters delegated by the Board to management include implementation of the Board approved strategy, day-to-day management and operation of the business and the implementation of risk management policies and processes.

Board Structure and Committees

The Science Foundation Ireland Board normally consists of a Chairperson, Deputy Chairperson and ten ordinary members appointed by the Minister for Business, Enterprise and Innovation, following consultation with the Minister for Education and Skills, as set out in Section 8 of the Industrial Development (Science Foundation Ireland) Act 2003. The independent non-executive Board Members, national and international, have the necessary and complementary skills and expertise to set the strategy and broad policies for the Foundation and oversee its operation.

Two members of the Board, other than the Chairman and the Director General, retire from office each year as set out in Section 9 of the 2003 Act. The table below details the appointment for Board members in 2017:

Name of Director	Date of Appointment	
Ms Ann Riordan (Chairman)	05/12/2013	
Ms Bernie Cullinan (Deputy Chair)	07/12/2009	reappointed 24/07/2015
Prof Sir Tom Blundell	19/11/2014	
Dr Rita Colwell	31/03/2008	reappointed 25/07/2011 and 23/08/2016. Retired 31/12/2017
Mr Aidan Donnelly	05/12/2013	reappointed 08/06/2017
Ms Mary Doyle	05/12/2012	reappointed 23/08/2016
Dr Pat Duane	29/09/2010	reappointed 24/07/2015
Prof Mark Ferguson (DG)	16/01/2012	reappointed 16/01/2017
Prof Liam Madden	01/02/2013	reappointed 08/06/2017
Mr Barry O'Sullivan	19/11/2014	
Ms Geraldine Ruane	05/12/2013	
Mr Dermot Mulligan	02/09/2015	

The Board reviewed its performance during 2017 in February 2018, with the submission of a report on 2017 activities, which included a review of the Board Committees and a review session with an external facilitator. The Board has established the following Committees:

Audit & Risk Committee

The role of the Audit & Risk Committee (ARC) is to support the Board in relation to its responsibilities for issues of risk, control and governance and associated assurance. The ARC is independent from the financial management of the organisation and monitors the system of internal controls and financial safeguards, oversees the internal audit function and the conduct of audits of Science Foundation Ireland grants made to external institutions.

The Committee ensures a system to monitor risk and provide for mitigating actions is in place and kept up-to-date. The Committee also monitors and reviews Science Foundation Ireland financial reports on a regular basis including the Annual Financial Statements. The Committee is also responsible for overseeing compliance with corporate governance requirements, including with the Code of Practice for the Governance of State Bodies as updated in September 2016. The ARC reports to the Board after each meeting, and formally in writing annually.

The members of the Audit and Risk Committee are: Bernie Cullinan (Chairman), Aidan Donnelly, Geraldine Ruane, Marcus Breathnach and Brendan Harte. (Mr Breathnach and Mr Harte are not Board members). There were eight meetings of the ARC in 2017.

2017 Activities

During 2017, the Science Foundation Ireland Audit & Risk Committee increased its membership from four to five members, with the appointment of Mr Brendan Harte as a Committee member on 11th December 2017.

Membership includes a representative from the Department of Business, Enterprise & Innovation and three of the members are qualified accountants, while one has significant experience and training in the area of risk management. Audit & Risk Committee meetings are attended by the Director General, the Chief Operations Officer, the Finance & Grants Manager and the Chief Risk Officer (also the Secretary to the Committee). At the commencement of each meeting, the Audit &

Risk Committee meets without the members of the management team and the Internal Audit Coordinator being present. Further, the Committee holds an "in camera" session with the Internal Audit Coordinator at the close of each meeting. At each ARC meeting, the Committee received an update report from the Internal Audit Coordinator, including a copy of any audit reports completed for review.

A representative from the C&AG Office attended the December Audit & Risk Committee meeting and the members of the Audit & Risk Committee held a session with the C&AG representative without the management team present as required under the Code of Practice for the Governance of State Bodies. The Committee reviewed the Science Foundation Ireland Risk Register as a standing item at each meeting, including any updates thereto. Also as a standing item, the Committee had regular updates on financial matters through the provision of Monthly Management Accounts and Grants Expenditure Reports. A revised Terms of Reference for the Audit & Risk Committee was approved in June 2017.

The Science Foundation Ireland Audit & Risk Committee receives reports and monitors developments relevant to the Foundation in relation to research integrity and scientific misconduct. The Audit & Risk Committee agreed to appoint an internationally-based consultant to assist Science Foundation Ireland and the committee to monitor developments and otherwise support initiatives in the area.

Board Nominations Advisory Committee

The Board Nominations Advisory Committee (NAC) considers the skill sets required on the Board as well as relevant areas of expertise and advises the Public Appointments Service accordingly when Board vacancies arise. The Terms of Reference of the Committee was changed in February 2017 when the Committee assumed responsibility for reviewing codes of conduct and oversight of the Board induction process. The Committee reports to the Board after each meeting.

The members of the Committee are; Ann Riordan (Chairman), Mark Ferguson and Dermot Mulligan. There was one meeting of the Committee in 2017.

In 2017, the Board Nominations Advisory Committee reviewed Board retirals for the coming 24-month period and beyond. The Skills Matrix outlining the key skills and profiles required on the Board was reviewed in the context of the pending retirements and any gaps in competencies which may arise. Recommendations were made to the Minister in terms of the rotation of Board members, having due regard for the benefits of continuity and harnessing experience as well as of diversity on the Board including gender. The Committee took into account the relevant provisions of the new Code of Practice for the Governance of State Bodies, including those relating to renewal of Board appointments. The Committee also reviewed membership of the Board Committees. The Terms of Reference was reviewed and updated by the Board in June 2017.

Management Development and Remuneration Committee

The Management Development and Remuneration Committee reviews the performance of the senior management team and oversees planning for management development and succession. The Committee reports to the Board after each meeting. The members of the Committee are: Ann Riordan (Chairman), Bernie Cullinan and Aidan Donnelly. There was one meeting of the Committee in 2017.

The Committee reviewed the overall staff annual appraisals process including training that was provided to staff on the process. The process had been reviewed in 2016 with some changes implemented in 2017. The performance of the senior management team and the Director General was reviewed by the Committee and the Committee agreed the objectives for the Director General.

Grant Approval Committee

The SFI Grant Approval Committee (GAC) is delegated the power to approve research grant proposals in line with the delegated authority levels approved by the Board. The Committee reports to the Board after each meeting.

In 2017, the members of the Committee were: Liam Madden (Chairman), Pat Duane, Tom Blundell, Barry O'Sullivan, Rita Colwell, Mark Ferguson and Martin Lyes. Dr Lyes is not a member of the SFI Board. There were six meetings of the Committee in 2017.

A list of awards approved by the Grant Approval Committee in 2017 was circulated to the Board for information in February 2018. The Committee agreed to establish a standing time for GAC meetings to coincide with Board meeting dates. Where required, these meetings are supplemented by telecons during the year. The Committee also commenced a review of its effectiveness in 2017, having agreed a terms of reference for the review. The review included completion of a questionnaire by members of the Committee and other relevant staff.

Strategy Advisory Committee

In June 2017, the Board established a Strategy Advisory Committee in order to lead the review and refresh of SFI's Strategy, Agenda 2020 (adopted in 2012), particularly in view of the Government's five-year strategy on research and development, science and technology; Innovation 2020 (adopted in December 2015) and Brexit challenges. The Committee held one meeting to review a strategy refresh document and this was approved by the Board in September 2017. The Committee was dissolved in December 2017. Membership: Ann Riordan (Chairman), Liam Madden, Barry O'Sullivan, Mark Ferguson, Dermot Mulligan, Tom Blundell, Darrin Morrissey, Ruth Freeman.

Schedule of Attendance, Fees and Expenses

	Board	ARC	MDRC	NAC	GAC	Strategy
No. of Meetings	6	8	1	1	6	1
Ms Ann Riordan (Chairman)	6		1	1		0
Ms Bernie Cullinan (Deputy Chair)	6	7	1			
Prof Sir Tom Blundell	6				4	0
Dr Rita Colwell	3				2	
Mr Aidan Donnelly	6	8	1			
Ms Mary Doyle	6					
Dr Pat Duane	6				3	
Prof Mark Ferguson	6			1	6	1
Prof Liam Madden	5				6	1
Mr Barry O'Sullivan	6			1	4	1
Ms Geraldine Ruane	4	4				
Mr Dermot Mulligan	5					1

Professor Rita Colwell retired from the Board on 31 December 2017.

The details of all Board fees and expenses can be found in the notes to the Financial Statements section of this report. Disclosures required on Employee Short-Term Benefits Breakdown (Accounting Policies, Note H), Consultancy costs (Note 4), Legal Costs and Settlements (Note 4), Travel and Subsistence Expenditure (Note 4a) and Hospitality Expenditure (Note 4) are contained in the Notes to the Financial Statements 2017.

Board Induction and Development

As there were no new Board members appointed in 2017, there were no Board induction sessions held. Mr Brendan Harte, a member of the Audit & Risk Committee, attended an induction training session on 8th September 2017. In 2017 the Board was:

- briefed on the status of the refresh of Research Prioritisation by the Department of Business, Enterprise & Innovation. It noted the importance of highlighting Government commitment to the Research Prioritisation Agenda in terms of securing broad support and implementation;
- briefed on provisions of EU law including state-aid from external lawyers;
- provided with an overview of the Research Centres Programme by the Programmes Team outlining industry collaborations, EU Horizon 2020 successes and their commitment to scientific excellence and addressing strategic needs;
- briefed on the General Data Protection Regulations and the Foundation's implementation plans;
- provided with a briefing by the Director General on the Research and Innovation landscape in Ireland.

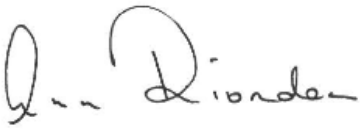
Corporate Governance

The Board is responsible for ensuring that Science Foundation Ireland has complied with the requirements of the Code of Practice for the Governance of State Bodies (2016) and has put procedures in place to ensure compliance with the Code. The Foundation was in compliance with the Code of Practice for the Governance of State Bodies for 2017. Disclosures required by the Code are set out in the SFI Financial Statements 2017.

A gap analysis was conducted for the Audit & Risk Committee of the Foundation's implementation of the Code. The report was submitted to the October meeting of the Audit Committee and circulated to the Board. As required in the 2016 Code, the Chairman, Mr Donnelly and representatives of senior management from Science Foundation Ireland met with the Secretary General and other senior representatives from the Department of Business, Enterprise, and Innovation to discuss the Oversight and Performance Delivery Agreement and the Foundation's performance against targets. This meeting was due to be held in October, but was unavoidably deferred until January 2018 by Storm Ophelia.

Risk Management

The Science Foundation Ireland Board has adopted the SFI Risk Policy & Strategy, which outlines the risk management system in place and sets out the roles and responsibilities of the various stakeholders involved with the management of risk. It is the policy of the Foundation to adhere to risk management best practice. The Policy & Strategy sets out the process by which the Foundation identifies and addresses the key risks attached to its activities. These risks are compiled by the Management Risk Committee with the input and support of the Executive Committee and reported on at regular intervals to the SFI Audit & Risk Committee and to the Board, including associated mitigation measures, controls and updates. The SFI Risk Policy & Strategy was updated by the Board in April 2017 with recommendations from the Audit & Risk Committee and following an external review of the risk management framework and engagement with risk. The Board reviews the Risk Register on a quarterly basis.



Ms Ann Riordan
Chairman, Science Foundation Ireland

Organisation Structure 2018

SFI BOARD

- Audit & Risk Committee
- Board Nominations Advisory Committee
- Management Development & Remuneration Committee
- Grant Approval Committee
- Strategy Advisory Committee

Prof Mark Ferguson
Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government

Mr Donal Keane B.Comm, FCA
Chief Operations Officer

- **Ms Joan Hynes** *Finance and Grants Manager*
- **Mr Eric Dowdall** *Chief Information Officer*

Dr Ruth Freeman
Director of Innovation, Communications & Education

- **Dr Lisa Higgins** *Head of Innovation*
- **Ms Margie McCarthy** *Head of Education and Public Engagement*

Ms Kim Lavelle
Board Secretary/ Chief Risk Officer

Dr Ciarán Seoighe
Deputy Director General

Vacant
Head of HR and Organisational Development

- **Dr Marion Boland** *Head of Policy*
- **Ms Alva O'Clerigh** *Head of Corporate Communications*
- **Dr Peter Clifford** *Head of Strategy*

Dr Darrin Morrissey
Director of Programmes and Investments

- **Dr Michael Ryan** *Head of International*
- **Dr Aisling McEvoy** *Head of Enterprise Partnerships*
- **Dr Roisin Cheshire** *Head of Pre-Award & Grants*
- **Dr Siobhan Roche** *Head of Post-Award & Research Centres*

Executive Team

Prof Mark Ferguson, Director General, SFI and Chief Scientific Adviser to the Government of Ireland

See full profile on page 46.

Dr Ciarán Seoighe, Deputy Director General

Dr Ciarán Seoighe joined Science Foundation Ireland as Deputy Director General in January 2018. In his role Ciarán is responsible for organisational strategy, research policy, performance improvement and evaluation, in addition to deputising for the Director General. Ciarán joined Science Foundation Ireland after nearly two decades in management consulting with Accenture. Ciarán holds a BA (Mod) in Natural Science and PhD in Quantum Physics from Trinity College Dublin. In his time with Accenture, in both Ireland and South Africa, Ciarán has worked with some of the world's largest and most successful organisations. He has a wealth of experience across a variety of sectors executing large-scale transformation, business re-engineering, strategic and change initiatives.

Mr Donal Keane, Chief Operations Officer

Mr Donal Keane was appointed Chief Operations Officer at Science Foundation Ireland with effect from 1 November 2005, with responsibility for Grants, IT and Finance. Donal joined SFI from Dun Laoghaire Institute of Art, Design and Technology where he held the position of Secretary/ Financial Controller from 1997 to 2005. Prior to that Donal held senior management positions at Our Lady of Lourdes Hospital Drogheda, GE Capital and Wang Finance in both Dublin and Toronto, Canada. His professional training was undertaken at Coopers & Lybrand from 1978 to 1982. Donal Keane holds a B.Comm degree from University College Dublin and is a Fellow of the Institute of Chartered Accountants in Ireland.

Dr Ruth Freeman, Director of Innovation, Communications & Education

Dr Abigail Ruth Freeman was appointed Director of Strategy and Communications in 2013, and following department restructure in 2017, became Director of Innovation, Communications & Education. Prior to her current appointment Ruth has held a series of positions at Science Foundation Ireland, including Director of Programmes, Enterprise and International Affairs, with responsibility for overseeing all Science Foundation Ireland research funding programmes and management of funded awards, as well as the Foundation's activities in conjunction with industry and international partners. Ruth joined Science Foundation Ireland as a Scientific Programme Manager in November 2006. Prior to joining the Foundation, Ruth worked as a researcher at Trinity College Dublin (TCD). She holds PhD and Bachelor degrees in Genetics from TCD, where she was awarded a Trinity scholarship, the Eli Lilly Chemistry Prize and the Roberts prize for Biology. Ruth's PhD research, on population genetics in hybrid zones, was funded by a prestigious studentship from the Wellcome Trust and was carried out at TCD and ILRI, Nairobi.

Dr Darrin Morrissey, Director of Programmes and Investments

Dr Darrin Morrissey was appointed SFI Director of Programmes in September 2014, Darrin joined SFI from Stiefel, a GlaxoSmithKline (GSK)-owned company that develops and manufactures dermatology products. At Stiefel, he held the role of Business Improvement Director and was responsible for leading strategy deployment, change management and business transformation. Darrin originally joined GSK in 2007 as Head of Oncology for Ireland and led the establishment of GSK's oncology business and the launch of its oncology and haematology therapeutics portfolio. During his time with GSK Darrin also held the role of Global Oncology Marketing Director with responsibility for developing launch strategy for melanoma therapy assets. Prior to his time with GSK, Darrin worked across a number of pharmaceutical and biotech companies – including Sanofi-Aventis, Eli Lilly & Tibotec-Virco – in a variety of commercial and clinical research roles. Darrin qualified with a BSc in Microbiology and he holds a PhD from University College Cork. His PhD research focused on the molecular mechanisms that underlie cancer metastasis. He also worked as a postdoctoral researcher in UCC, where he conducted 'first-in-human' clinical trials of probiotic bacteria containing food products. Darrin also holds a Diploma in Advanced Management Practice awarded by NUI Galway.

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 2016 issued by the Department of Public Expenditure and Reform, both in its activities and in its use of committees. In accordance with these guidelines, Science Foundation Ireland 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

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

3. Freedom of Information Act, 1997, Freedom of Information (Amendment) Act, 2003 and Freedom of Information Act 2014

Science Foundation Ireland became a prescribed body under the Freedom of Information Act, 1997 from 31 May 2006. Science Foundation Ireland complies fully with the Act. Requests for information under this Act should be addressed to the FOI Officer, Science Foundation Ireland, Wilton Park House, Wilton Place, Dublin 2. In 2017 SFI received eight FOI requests.

4. Prompt Payment of Accounts Act, 1997

4.(i) Prompt Payment of Accounts Act, 1997

Science Foundation Ireland 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 7 August 2002. It is the policy of Science Foundation Ireland to ensure that all invoices are paid promptly. Specific procedures are in place that enable SFI 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. Management is satisfied that Science Foundation Ireland complied with the provisions of the Act in all material respects.

4. (ii) Prompt payment to suppliers

Science Foundation Ireland is committed to meeting its obligations under the 15-day Prompt Payment Rule, which came into effect on 1st July 2011. This provision ensures that payments to suppliers in respect of all valid invoices received will be made within 15 calendar days. Science Foundation Ireland reports quarterly in the 'About Us – Governance - Customer Service' section of the website on the implementation of the 15-day Prompt Payments Rule. http://www.sfi.ie/about-us/governance/customer-service/

5. Employment Equality Acts 1998-2015

Science Foundation Ireland 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. Science Foundation Ireland's commitment to implementing equal opportunities is reflected in its policies, practices and procedures, recruitment, promotion, training, use of non-discriminatory language in Foundation 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. Protected Disclosures Act, 2014

There were no protected disclosures made to Science Foundation Ireland in 2017.

7. Safety, Health and Welfare at Work Act 2005 and 2010.

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

8. Clients' Charter

Science Foundation Ireland 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 2017, no complaints were received under the Charter.

9. Reporting by Public Sector Bodies

Under Statutory Instrument (SI) 542, 2009 the public sector has specific energy reporting obligations. SFI's offices are located in Wilton Park House, Wilton Place, Dublin 2. The building facilities are managed by IDA. In each area relevant to energy usage and services to the building, SFI is satisfied that IDA endeavours to employ the most energy efficient and environmentally friendly means available. In compliance with Statutory Instrument (SI) 542, 2009, Science Foundation Ireland has reported details of energy usage for 2017 through the public-sector monitoring and reporting (M&R) website.

Annual Financial Statements

Report of Comptroller & Auditor General

Report for presentation to the Houses of the Oireachtas

Opinion on financial statements for Science Foundation Ireland

I have audited the financial statements of Science Foundation Ireland for the year ending 31 December 2017 as required under the provisions of section 24 of the Industrial Development (Science Foundation Ireland) Act 2003. The financial statements comprise

- the statement of income and expenditure and retained revenue reserves
- the statement of comprehensive income
- the statement of financial position
- the statement of cash flows and
- the related notes, including a summary of significant accounting policies.

In my opinion, the financial statements give a true and fair view of the assets, liabilities and financial position of Science Foundation Ireland at 31 December 2017 and of its income and expenditure for 2017 in accordance with Financial Reporting Standard (FRS) 102 — *The Financial Reporting Standard applicable in the UK and the Republic of Ireland.*

Basis of opinion

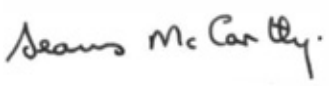
I conducted my audit of the financial statements in accordance with the International Standards on Auditing (ISAs) as promulgated by the International Organisation of Supreme Audit Institutions. My responsibilities under those standards are described in the appendix to this report. I am independent of Science Foundation Ireland and have fulfilled my other ethical responsibilities in accordance with the standards.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Report on information other than the financial statements, and on other matters

Science Foundation Ireland has presented certain other information together with the financial statements. This comprises the annual report including the governance statement and Board members' report and the statement on internal financial control. My responsibilities to report in relation to such information, and on certain other matters upon which I report by exception, are described in the appendix to this report.

I have nothing to report in that regard.



Seamus McCarthy
Comptroller and Auditor General
29 June 2018

Appendix to the report

Responsibilities of Board members

The governance statement and Board members' report sets out the Board members' responsibilities. The Board members are responsible for

- the preparation of financial statements in the form prescribed under section 24 of the Industrial Development (Science Foundation Ireland) Act 2003
- ensuring that the financial statements give a true and fair view in accordance with FRS102
- ensuring the regularity of transactions
- assessing whether the use of the going concern basis of accounting is appropriate, and
- such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Responsibilities of the Comptroller and Auditor General

I am required under section 24 of the Industrial Development (Science Foundation Ireland) Act 2003 to audit the financial statements of Science Foundation Ireland and to report thereon to the Houses of the Oireachtas.

My objective in carrying out the audit is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the ISAs, I exercise professional judgment and maintain professional scepticism throughout the audit. In doing so,

- I identify and assess the risks of material misstatement of the financial statements whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- I obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal controls.
- I evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures.
- I conclude on the appropriateness of the use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material uncertainty exists related to events or conditions that may cast significant doubt on Science Foundation Ireland's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my report. However, future events or conditions may cause the Science Foundation Ireland to cease to continue as a going concern.
- I evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Information other than the financial statements

My opinion on the financial statements does not cover the other information presented with those statements, and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, I am required under the ISAs to read the other information presented and, in doing so, consider whether the other information is materially inconsistent with the financial statements or with knowledge obtained during the audit, or if it otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

Reporting on other matters

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation. I report if there are material matters relating to the manner in which public business has been conducted.

I seek to obtain evidence about the regularity of financial transactions in the course of audit. I report if there is any material instance where public money has not been applied for the purposes intended or where transactions did not conform to the authorities governing them.

I also report by exception if, in my opinion,

- I have not received all the information and explanations I required for my audit, or
- the accounting records were not sufficient to permit the financial statements to be readily and properly audited, or
- the financial statements are not in agreement with the accounting records.

Statement on Internal Control

Scope of Responsibility

On behalf of the Board of Science Foundation Ireland I acknowledge our responsibility for ensuring that an effective system of internal control is maintained and operated. The responsibility takes account of the requirements of the Code of Best Practice for the Governance of State Bodies (2016).

Purpose of the System of Internal Control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore provide only 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 way.

The system of internal control, which accords with guidance issued by the Department of Public Expenditure and Reform has been in place in Science Foundation Ireland for the year ended 31 December 2017 and up to the date of approval of the financial statements.

Capacity to handle risk

Science Foundation Ireland has an Audit and Risk Committee (ARC) comprising four Board members with financial and audit expertise, one of whom is the Chair. The ARC met eight times in 2017.

Science Foundation Ireland has also established an internal audit function which is adequately resourced and conducts a programme of work agreed with the ARC.

The ARC has developed a risk management policy which sets out its risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been issued to all staff who are expected to work within Science Foundation Ireland's risk management policies, to alert management on emerging risks and control weaknesses and assume responsibility for risks and controls within their own area of work.

Risk and Control Framework

Science Foundation Ireland has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

A risk register is in place which identifies the key risks facing Science Foundation Ireland and these have been identified, evaluated and graded according to their significance.

The register is reviewed and updated by the ARC on a bi-monthly basis. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level.

The risk register details the controls and actions needed to mitigate risks and responsibility for operation of controls assigned to specific staff. I confirm that a control environment containing the following elements is in place:

- procedures for all key business processes have been documented,
- financial responsibilities have been assigned at management level with corresponding accountability,
- there is an appropriate budgeting system with an annual budget which is kept under review by senior management,
- there are systems aimed at ensuring the security of the information and communication technology systems,
- there are systems in place to safeguard the assets, and
- control procedures over grant funding to outside agencies are in place to ensure adequate control over approval of grants and monitoring and review of grantees to ensure grant funding has been applied for the purpose intended.

Ongoing Monitoring and Review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action and to management and the Board, where relevant, in a timely way. I confirm that the following ongoing monitoring systems are in place:

- key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies,
- reporting arrangements have been established at all levels where responsibility for financial management has been assigned, and
- there are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/ forecasts.
- External Peer review of all Research proposals by scientific experts to adjudicate whether the proposal is worthwhile from an educational and scientific research viewpoint and that it meets the criteria for funding;

Statement on Internal Control

- Monitoring and control of all Research Grants awarded, with annual grant payments based on budget projections provided for each award with option to defer grant payments if expenditure is below budget
- Annual systems based Internal audit reviews in respect of Research Grants awarded carried out at the Eligible Research Bodies
- Setting targets to measure financial and other performance
- Formal project management disciplines

Procurement

I confirm that Science Foundation Ireland has procedures in place to ensure compliance with current procurement rules and guidelines and that during 2017 Science Foundation Ireland complied with those procedures.

Review of Effectiveness

I confirm that Science Foundation Ireland has procedures to monitor the effectiveness of its risk management and control procedures. Science Foundation Ireland's monitoring and review of the effectiveness of the system of internal control is informed by the work of the internal and external auditors, the Audit and Risk Committee which oversees their work, and the senior management within Science Foundation Ireland responsible for the development and maintenance of the internal control framework.

The Department of Public Expenditure and Reform (DPER) Circular 13/2014 Management of and Accountability of Grants from Exchequer Sources (the Circular) outlines the public financial management principles, procedures and additional reporting requirements to be followed in the management of grant funding provided from public money. Sanction was obtained from DPER to pre fund grant payments to eligible research bodies on 11th May 2017. With regard to *Section 5 – Grantees Responsibilities*, SFI has notified all Grantees of their responsibilities under this circular.

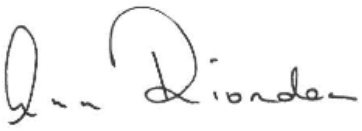
SFI was in correspondence with the Higher Education Authority who confirmed that they have issued instructions and a standard template to the Higher Education Institutes (HEIs) (Grantees) in respect of the required disclosures / responsibilities under the Circular. The effective date of implementation of the Circular for the HEIs is 1st October 2015, i.e. their 2015/2016 Financial Statements.

I confirm that the Board conducted an annual review of the effectiveness of the internal controls for 2017 on 22nd March 2018.

Internal Control Issues

No weaknesses in internal control were identified in relation to 2017 that require disclosure in the financial statements.

On behalf of the Board of Science Foundation Ireland:



Ms Ann Riordan
Chairman

Date: 29 June 2018

Statement of Income and Expenditure and Retained Revenue Reserves

For the year ended 31 December 2017

	Notes	2017 €'000	2016 €'000
Income			
Oireachtas Grant	2	**182,933**	**193,469**
Other Income	3	**2,679**	**896**
Net Deferred Retirement Benefit Funding	5(c)	**1,581**	1,271
		187,193	195,636
Expenditure			
Administration, Operations & Promotion Expenses	4	**10,198**	9,570
Depreciation	6	**146**	155
Retirement Benefit Costs	5(a)	**1,400**	1,149
Grants Payable	9(a)	**175,426**	184,776
		187,170	195,650
Excess/(Deficit) of Income over Expenditure		**23**	(14)
Transfer (to) / from the Capital Account	7	**(27)**	(15)
Surplus /(Deficit) for the Year		**(4)**	(29)
Balance Brought Forward at 1 January 2017		**597**	626
Balance Carried Forward at 31 December 2017		**593**	597

The Statement of Cash Flows and Notes 1 to 16 form part of these Financial Statements

.

On behalf of the Board of Science Foundation Ireland:

Ms Ann Riordan
Chairman

Date: 29 June 2018

Prof Mark Ferguson
Director General

Date: 29 June 2018

Statement of Comprehensive Income

For the year ended 31 December 2017

	2017 €'000	2016 €'000
Surplus/(Deficit) before Appropriations	**23**	(14)
Experience (losses)/gains on retirement benefit obligations	**(828)**	161
Change in assumptions underlying the present value of retirement benefit obligations	**4**	(3,927)
Total Actuarial Gain/(Loss) in the period	**(824)**	(3,766)
Adjustment to Deferred retirement benefits funding	**824**	3,766
Other Comprehensive Income/(Loss) for the year	**23**	(14)

The Statement of Cash Flows and Notes 1 to 16 form part of these Financial Statements.

On behalf of the Board of Science Foundation Ireland:

Ms Ann Riordan
Chairman

Date: 29 June 2018

Prof Mark Ferguson
Director General

Date: 29 June 2018

Statement of Financial Position

For the year ended 31 December 2017

	Notes	2017 €'000	2016 €'000
Fixed Assets			
Property, Plant & Equipment	8	**262**	235
Current Assets			
Receivables	10	**897**	633
Cash and Cash Equivalents		**402**	382
		1,299	1,015
Current Liabilities (Amounts Falling due within one year)			
Payables	11	**(706)**	(418)
Net Current Assets		**593**	597
Long term Liabilities (Amounts falling due after one year)		**-**	-
Retirement benefits			
Retirement Benefit Liability	5(b)	**(17,518)**	(15,113)
Deferred Retirement Benefit Funding Asset	5(b)	**17,518**	15,113
		-	-
Total Net Assets		**855**	832
Representing:			
Capital Account	7	**262**	235
Accumulated Surplus at end of Year		**593**	597
		855	832

The Statement of Cash Flows and Notes 1 to 16 form part of these Financial Statements.

On behalf of the Board of Science Foundation Ireland:

Ms Ann Riordan
Chairman

Date: 29 June 2018

Prof Mark Ferguson
Director General

Date: 29 June 2018

Statement of Cash Flows

For the year ended 31 December 2017

	Notes	2017 €'000	2016 €'000
Net Cash Flows from Operating Activities			
Excess Expenditure over Income		**23**	(14)
Depreciation of Fixed Assets	6	**146**	155
(Increase)/Decrease in Receivables	10	**(264)**	90
Increase/(Decrease) in Payables	11	**288**	(12)
Net Cash Flow from Operations		**193**	219
Cash Flows from Investing Activities			
Payments to acquire Property, Plant and Equipment	8	**(173)**	(170)
Net Cash Flows from Investing Activities		**(173)**	(170)
Cash Flows from Financing Activities		**-**	-
Net Increase/(Decrease) in Cash and Cash Equivalents		**20**	49
Cash and Cash Equivalents at 1 January 2017		**382**	333
Cash and Cash Equivalents at 31 December 2017		**402**	382

Notes to the Financial Statements

For the year ended 31 December 2017

1 Accounting Policies

The basis of accounting and significant accounting policies adopted by Science Foundation Ireland are set out below. They have been applied consistently throughout the year and for the preceding year.

(a) General Information
Science Foundation Ireland was set up under the Industrial Development (Science Foundation Ireland) Act 2003, and by the Industrial Development (Science Foundation Ireland) (Amendment) Act, 2013, with its Head Office at Wilton Park House, Wilton Place, Dublin 2.

Science Foundation Ireland's primary objectives as set out under section 7 of the Industrial Development (Science Foundation Ireland) Act 2003, as amended by the Industrial Development (Science Foundation Ireland) (Amendment) Act, 2013, are as follows:

Science Foundation Ireland funds oriented basic and applied research in the areas of science, technology, engineering, and mathematics (STEM) which promotes and assists the development and competitiveness of industry, enterprise and employment in Ireland. The Foundation also promotes and supports the study of, education in and engagement with, STEM and promotes an awareness and understanding of the value of STEM to society and in particular to the growth of the economy.

Science Foundation Ireland is a Public Benefit Entity (PBE).

(b) Statement of Compliance
The financial statements of Science Foundation Ireland for the year ended 31 December 2017 have been prepared in accordance with FRS 102, the financial reporting standard applicable in the UK and Ireland issued by the Financial Reporting Council (FRC), as promulgated by Chartered Accountants Ireland.

(c) Basis of Preparation
The financial statements have been prepared under the historical cost convention, except for certain assets and liabilities that are measured at fair values as explained in the accounting policies below. The financial statements are in the form approved by the Minister for Business, Enterprise and Innovation with the consent of the Minister for Public Expenditure and Reform under the Industrial Development (Science Foundation Ireland) Act 2003, and by the Industrial Development (Science Foundation Ireland) (Amendment) Act, 2013. The financial statements reflect the requirements of the Code of Practice for the Governance of State Bodies 2016, which came into effect for accounting periods commencing on or after the 1st September, 2016.

The following accounting policies have been applied consistently in dealing with items which are considered material in relation to Science Foundation Ireland's Financial Statements.

(d) Revenue
Revenue is recognised on an accruals basis except in the case of Oireachtas Grants which are recognised on a cash receipts basis.

(e) Property, Plant and Equipment
Property, Plant and Equipment are stated at cost less Accumulated Depreciation, adjusted for any provision for impairment. Depreciation is provided on all property, plant and equipment, at rates estimated to write off the cost less the estimated residual value of each asset on a straight-line basis over their estimated useful lives, as follows:

(i)	Computer Equipment & Computer Software	3 years
(ii)	Fixtures & Fittings	5 years

Residual value represents the estimated amount which would currently be obtained from disposal of an asset, after deducting estimated costs of disposal, if the asset were already of an age and in the condition expected at the end of its useful life.

(f) Capital Account
The Capital Account represents the unamortised funds utilised for the acquisition of Property, Plant and Equipment and is written down in line with the depreciation policy for these assets.

(g) Foreign Currency
Monetary assets and liabilities denominated in foreign currencies are translated at the exchange rates ruling at the end of the Financial Year. Revenues and costs are translated at the exchange rates ruling at the dates of the underlying transactions. The resultant surpluses or deficits are dealt with in the Statement of Income and Expenditure and Retained Revenue Reserves.

(h) Employee Benefits

Short term benefits
Short term benefits such as holiday pay are recognised as an expense in the year, and benefits that are accrued at year-end are included in the Payables figure in the Statement of Financial Position.

Retirement Benefits
The Industrial Development (Forfás Dissolution) Act 2014 (No 13 of 2014) which was passed into law on 16th July 2014 made provision for the dissolution of Forfás and provided for the establishment of Science Foundation Ireland as a separate legal employer. Under the legislation:

- Science Foundation Ireland is responsible for the establishment of its own pension scheme.

Notes to the Financial Statements

For the year ended 31 December 2017

- SFI Staff who were members of the Forfás Pension scheme join the new scheme on superannuation terms no less favourable than those they enjoyed under the Forfás scheme immediately before the date of transfer.
- SFI is responsible for the pensions of staff who retire after 16th July 2014.
- The Department of Jobs, Enterprise and Innovation assumes legal responsibility for the existing Forfás pension scheme and existing SFI pensioners and former staff with preserved benefits.
- Employee pension contributions are paid to the Exchequer.

Science Foundation Ireland also operates the Single Public Services Pension Scheme ("Single Scheme"), which is a defined benefit scheme for pensionable public servants appointed on or after 1 January 2013. Single Scheme members' contributions are paid over to the Department of Public Expenditure and Reform (DPER).

Pension costs reflect pension benefits earned by employees, and are shown net of staff pension contributions which are remitted to the Department for Business, Enterprise and Innovation in respect of Science Foundation Ireland's retirement benefit scheme and to DPER in respect of the Single Scheme. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable.

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Comprehensive Income, and a corresponding adjustment is recognised in the amount recoverable from the Department of Business, Enterprise and Innovation.

The Financial Statements reflect, at fair value, the assets and liabilities arising from Science Foundation Ireland's pension obligations and any related funding, and recognise the costs of providing pension benefits in the accounting periods in which they are earned by employees. Retirement benefit scheme liabilities are measured on an actuarial basis using the Projected Unit Credit method. Deferred pension funding represents the corresponding asset to be recovered in future periods from the Department of Business, Enterprise and Innovation.

(i) Operating Leases
Rental expenditure under operating leases is recognised in the Statement of Income and Expenditure and Retained Revenue Reserves as they fall due.

(j) Research Grant Payments
Amounts paid to Research Bodies on foot of research grants awarded are charged to the Statement of Income and Expenditure and Retained Revenue Reserves in the year of payment.

(k) Critical Accounting Judgements and Estimates
The preparation of the financial statements requires management to make judgements, estimates and assumptions that affect the amounts reported for assets and liabilities as at the balance sheet date and the amounts reported for revenues and expenses during the year. However, the nature of estimation means that actual outcomes could differ from those estimates. The following judgements have had the most significant effect on amounts recognised in the financial statements.

Depreciation and Residual Values
The Directors have reviewed the asset lives and associated residual values of all fixed asset classes, and in particular, the useful economic life and residual values of fixtures and fittings, and have concluded that asset lives and residual values are appropriate.

Retirement Benefit Obligation
The assumptions underlying the actuarial valuations for which the amounts recognised in the financial statements are determined (including discount rates, rates of increase in future compensation levels, mortality rates and healthcare cost trend rates) are updated annually based on current economic conditions, and for any relevant changes to the terms and conditions of the pension and post-retirement plans.

The assumptions can be affected by:

(i) The discount rate, changes in the rate of return on high-quality corporate bonds

(ii) Future compensation levels, future labour market conditions

(iii) Changes in Demographics

Notes to the Financial Statements

For the year ended 31 December 2017

2 Oireachtas Grant

The Oireachtas Grants voted to Science Foundation Ireland from Vote 32 (Subhead B.4), Science and Technology Development Programme by Department of Jobs, Enterprise and Innovation as shown in the financial statements consist of:

		2017	2016
		€'000	€'000
Grants for Current Expenditure			
Pay - Note 1*	Subhead B.4.2	**4,048**	3,989
Administration Expenses	Subhead B.4.2	**5,785**	5,480
Grants for Capital Expenditure			
Research Grants	Subhead B.4.2	**173,100**	184,000
		182,933	193,469

* Note 1 - The Pay Allocation is stated net of employee pension contributions of €198,000 (2016: €183,000) remitted to the Exchequer. These include deductions of €54,809 in 2017 (2016: €36,824) in respect of members of The Single Pension Scheme which were remitted to the Department of Public Expenditure and Reform.

Under Section 11 of the Industrial Development Act, 1993, as amended by Section 4(a) of the Industrial Development Act, 2009, the aggregate amount of grants made by the Minister to Enterprise Ireland, IDA and Science Foundation Ireland to enable them to discharge their Capital obligations and liabilities shall not exceed €7,000,000,000. At 31 December, 2017 the aggregate amount made available to the three Agencies was €6.223 billion (2016 €5.88 billion).

3 Other Income

	2017	2016
	€'000	€'000
Research Grant Funding:		
Contributions from other funding agencies to awards made by SFI		
Teagasc [Note (i)]	**184**	291
Marine Institute [Note (ii)]	**393**	386
Environmental Protection Agency [Note (iii)]	**207**	28
Geological Society of Ireland [Note (iv)]	**184**	28
Health Research Board [Note (v)]	**115**	43
Sustainable Energy Authority of Ireland [Note (vi)]	**693**	-
Irish Cancer Society [Note (vii)]	**345**	-
Sub-Total	**2,121**	776
Contributions from other funding sources		
Contribution towards ERA NET funding calls [Note (viii)]		
ERA-HDHL	**267**	-
ERA CoSysMed	**107**	-
M-ERANET2	**85**	-
EU NanoMed III	**7**	-
QuantERA	**2**	-
INROAD-EU Horizon 2020 funded Project awarded to SFI	**10**	-
Repayment to EU in respect of final settlement of EU Marie-Curie fund which was a Contribution towards SIRG awards made in 2012 [Note (ix)]	**(120)**	-
Contribution from Pfizer Corporation towards awards made SFI under the SFI-Pfizer Biotherapeutics Innovation Award Programme 2014 [Note (x)]	**78**	-
European Space Agency [Note (xi)]	**122**	120
Total	**2,679**	896

Notes to the Accounts

For the year ended 31 December 2017

3 Other Income (continued)

(i) Contribution from Teagasc for 50% co-funding of two awards made by SFI in 2014 under the 2013 Investigator Programme (IVP).

(ii) Contributions from the Marine Institute for Co-Funding for four awards made by SFI in 2016 and 2017 under the 2015 and 2016 IVP programmes.

(iii) Contributions from the Environmental Protection Agency for Co-Funding of three awards made under the 2015 and 2016 IVP programmes.

(iv) Contributions from the Geological Society of Ireland for Co-Funding of three awards made under the 2015 and 2016 IVP programmes.

(v) Contribution from the Health Research Board in respect of one US/Ireland R&D Partnership award.

(vi) Contribution from the Sustainable Energy Authority of Ireland for two Career Development Awards made in 2017.

(vii) Contribution from the Irish Cancer Society towards the ICS-SFI Collaborative Cancer Research Centre (CCRC) Programme awarded 2015.

(viii) SFI participates in a number of different ERA Net funding calls in conjunction with the other European funding agencies and the EU. As part of its participation in these activities, SFI receives funding towards both the capital cost of awards made and towards the programme management costs of running these activities.

(ix) A final refund made to the EU on completion of the EU Marie Curie scheme which co-funded 12 Starting Investigator Research Grant awards made by SFI in 2012. This refund arose as 3 of the initial grant awards terminated early, while full payment had been received by the EU for all 12 awards.

(x) Contribution from Pfizer Corporation towards awards made under the SFI-Pfizer Biotherapeutics Innovation Award Programme 2014.

(xi) Funding arising from an annual contract between Science Foundation Ireland and European Space Agency (ESA) for the implementation of a European Space Education Resource Office (ESERO) in Ireland.

4 Administration, Operations & Promotion Expenses

	Notes	**2017 €'000**	2016 €'000
Remuneration and other pay costs	4(a)	**4,506**	4,410
Programme Management		**1,228**	936
Accommodation		**850**	854
Professional & Support Services (Note 1)		**360**	449
Accounting & Internal Audit Services		**257**	145
Marketing & Supports (Note 2)		**1,695**	1,534
Specialist & Education Services		**168**	182
IT Support & Infrastructure		**650**	622
HR Management (Note 3)		**86**	60
Administration Expenses		**371**	353
Statutory Audit Fee		**27**	25
Total		**10,198**	9,570

Note 1: Included in Professional & Support services is legal fees of €172k (2016: €82k) which are general in nature, tax and financial advisory fees of €12k (2016: €11k) and other consultancy fees of €90k (2016: €106k). There were no legal cases or settlements made in 2017. SFI defines consultancy fees as specific finite tasks involving expert skills or capabilities that would not normally reside within SFI.

Note 2: Included in Marketing & Supports is public engagement consultant fees of €120k (2016: €120k)

Note 3: Included in the HR Management figure is Staff Hospitality related expenditure of €3,068 (2016: €4,679). This primarly relates to the Christmas Board and staff lunch plus miscellaneous staff departure lunches.

Notes to the Accounts

For the year ended 31 December 2017

4 Administration, Operations & Promotion Expenses (continued)

(a) Remuneration and other pay costs

	Notes	2017 €'000	2016 €'000
Staff Salaries		**3,705**	3,673
Employers' contribution to Social Welfare		**348**	318
Increase/(reduction) in holiday pay accrual		**13**	(30)
Staff Training and Development		**111**	149
Staff travel and subsistence costs (Note 1)		**181**	163
Board Members' Remuneration and Expenses	4(b)	**147**	137
Total		**4,506**	4,410
Actual employed as at year end		**58**	47

The total Key Management personnel compensation for 2017 was €642,226 (2016: €621,163). This includes the compensation for the Board members, the Director General and three Executives who report to him. Science Foundation Ireland deducted pension levies from staff of €198,382 (2016: €213,238) which were paid over to the Department for Enterprise, Business and Innovation.

Note 1 - Of the total staff travel and subsistence costs of €181k, €96k relates to international travel and subsistence and €85k relates to national travel and subsistence.

Employee benefits breakdown

Range of Key Management Personnel Remuneration			Number of Employees 2017	2016
From		To		
€60,000	-	€69,999	**12**	18
€70,000	-	€79,999	**10**	5
€80,000	-	€89,999	**3**	1
€90,000	-	€99,999	**5**	7
€100,000	-	€109,999	**3**	0
€120,000	-	€129,999	**2**	2
€140,000	-	€149,999	**1**	1
€170,000	-	€179,999	**1**	1

Notes to the Accounts

For the year ended 31 December 2017

4 Administration, Operations & Promotion Expenses (continued)

(b) Board Members' Emoluments

	Board Fees 2017 €	Vouched Expenses 2017 €	Meetings attended 2017	Board Fees 2016 €	Vouched Expenses 2016 €	Meetings attended 2016
Board Member						
Ann Riordan (Chairman)	20,520	319	6 out of 6	20,520	547	6 out of 6
Bernie Cullinan (Deputy Chair)	11,970	-	6 out of 6	11,970	-	5 out of 6
Sir Tom Blundell	11,970	2,326	6 out of 6	11,970	2,562	6 out of 6
Barry O Sullivan	-	29,163	6 out of 6	-	18,154	6 out of 6
Mark Ferguson	-	-	6 out of 6	-	-	6 out of 6
Rita Colwell	11,970	-	3 out of 6	11,970	5,205	3 out of 6
Geraldine Ruane	-	143	4 out of 6	-	-	5 out of 6
Pat Duane	11,970	803	6 out of 6	11,970	-	4 out of 6
Dermot Mulligan	-	-	5 out of 6	-	-	5 out of 6
Aidan Donnelly	11,970	-	6 out of 6	11,970	-	6 out of 6
Mary Doyle	-	-	6 out of 6	-		5 out of 6
Liam Madden	-	23,508	5 out of 6	-	23,513	5 out of 6
General Board Expenses	-	10,511	n/a	-	6,385	n/a
Total	**80,370**	**66,773**		**80,370**	**56,366**	

Board members are paid fees as determined by the Minister for Business, Enterprise and Innovation with the consent of the Minister for Public Expenditure and Reform. Certain Board members are excluded from receiving fees from SFI under the "One Person One Salary" remuneration arrangements whereby public servants cannot receive Board fees in addition to a salary. These are Prof Mark Ferguson, Ms Geraldine Ruane, Ms. Mary Doyle and Mr. Dermot Mulligan. In addition, two Board members, Prof Liam Madden and Mr. Barry O'Sullivan, have waived their Board fees.

The following Board members are based overseas: Prof. Sir Tom Blundell is UK based while Dr. Rita Colwell, Mr. Barry O'Sullivan and Prof. Liam Madden are US Based.

The Director General's remuneration package for 2017 was as follows: annual basic salary €178,938 (2016: €175,554) and standard public sector pension arrangements apply. No performance related bonus was applicable.

Prof. Ferguson is also Chief Scientific Advisor (CSA) to the Government, a role formerly under the administration of Forfás. There is no remuneration for this role and all administration costs for the office are absorbed by SFI. Total expenses for the year incurred by the Director General in the discharge of both roles amounted to €30,402 (2016: €30,674) of which €3,803 (2016: €2,339) related to CSA activities.

Of the total Board vouched expenses costs of €66,773 (2016: €56,366), €54,884 (2016: €49,200) relates to international travel and subsistence and €11,889 (2016: €7,166) relates to national travel and subsistence. The following Board members are based overseas: Prof. Sir Tom Blundell is UK based while Dr. Rita Colwell, Mr. Barry O'Sullivan and Prof. Liam Madden are US Based.

General Board expenses for 2017 include accommodation and meal costs for Board meetings held off site. During 2017 six Board meetings were held. The following appointments to and resignations from the Board took place in 2017.

1. Prof. Liam Madden retired and was reappointed on June 8th, 2017
2. Mr. Aidan Donnelly retired and was reappointed on June 8th, 2017
3. Prof. Rita Colwell retired with effect from 31st December 2017.

Notes to the Accounts

For the year ended 31 December 2017

5 Retirement Benefit Costs

(a) Analysis of total retirement benefit costs charged to the Statement of Income and Expenditure and Retained Revenue Reserves

	2017	2016
	€'000	€'000
Current Service Cost	**1,296**	1,045
Interest on Retirement Benefit Scheme Liabilities	**302**	287
Employee Contributions	**(198)**	(183)
	1,400	1,149

(b) Movement in net Retirement benefit obligation during the financial year

	2017	2016
	€'000	€'000
Net retirement benefit obligation at 1 January	**15,113**	10,076
Current service Costs	**1,296**	1,045
Interest Costs	**302**	287
Payments to Pensioners	**(17)**	(61)
Actuarial	**824**	3,766
Net retirement benefit obligation at 31 December	**17,518**	15,113

The Board recognises these amounts as an asset corresponding to the unfunded deferred liability for retirement benefits on the basis of the set of assumptions described above and a number of past events. These events include the statutory basis for the establishment of the retirement benefit scheme, and the policy and practice currently in place in relation to funding public service pensions including contributions by employees and the annual estimates process. The Board has no evidence that this funding policy will not continue to meet such sums in accordance with current practice.

The net deferred funding for retirement benefits recognised in the Statement of Income and Expenditure and Retained Revenue Reserves is as follows:

(c) Deferred Funding Retirement Benefits

	2017	2016
	€'000	€'000
Funding recoverable in respect of Current Year Retirement benefit costs	**1,598**	1,332
Less State Grant applied to pay retirement benefits	**(17)**	(61)
	1,581	1,271

Notes to the Accounts

For the year ended 31 December 2017

5 Retirement Benefit Costs (continued)

(d) General Description of the scheme

Science Foundation Ireland has responsibility for the pension costs of:

1. staff with effect from 16th July 2014, under the Industrial Development (Forfás Dissolution) Act 2014. Staff who are/were members of the Forfás Pension Scheme joined the new Science Foundation Ireland pension scheme on superannuation terms no less favourable than those they enjoyed under the Forfás scheme immediately before the date of transfer from Forfás to SFI.
2. staff who are members of the Single Public Service pension scheme.

Both schemes are defined benefit pension schemes and are fully funded annually on a pay as you go basis from monies provided by the Department of Business, Enterprise and Innovation.

The scheme is a defined benefit final salary scheme with retirement benefits linked to final salary and length of service. The valuation used for FRS 102 disclosures are based on an actuarial review of the Science Foundation Ireland Superannuation scheme for the financial year ending 31 December 2017 carried out by a qualified independent actuary, taking account of the requirements of the FRS in order to assess the scheme liabilities at 31 December 2017.

The principal actuarial assumptions were as follows:

Liabilities shown in the Financial Accounts are computed using the Projected Unit Credit method.

	2017	2016
Financial Assumptions		
Discount Rate	**2.05% p.a**	**2.00% p.a.**
Future Salary Increases	**3.50% p.a**	**3.45% p.a.**
Future State Pension increases	**3.50% p.a**	**3.45% p.a.**
Future Pension Increases	**3.00% p.a**	**2.95% p.a.**
Future inflation	**2.00% p.a**	**1.95% p.a.**
Revaluation in deferment	**3.00% p.a**	**2.95% p.a.**

** discount rate reflects a duration of liabilities of approximately 31 years in 2017 (31 years in 2016)*

Demographic Assumptions		
Mortality pre-Retirement	**62% PNMLOO (Males)**	**62% PNMLOO (Males)**
	70% PNFLOO (Females)	**70% PNFLOO (Females)**
Mortality post-Retirement	**58% ILT15 (Males)**	**58% ILT15 (Males)**
	62% ILT15 (Females)	**62% ILT15 (Females)**
Retirement age		
New entrants	**Age 65**	**Age 65**
Other members	**Age 62**	**Age 62**

The Mortality basis explicitly allows for improvements in life expectancy over time, so that life expectancy at retirement will depend on the year in which a member attains retirement age (age 65). The table below shows the life expectancy for members attaining age 65 in 2017 and 2037.

Year of attaining age 65	**2017**	2037
Life expectancy - Male	**21.2**	23.7
Life expectancy - Female	**23.7**	25.8

Notes to the Accounts

For the year ended 31 December 2017

5 Retirement Benefit Costs (continued)

Prior Year Comparatives

Year ending December 31st	**2017** €'000	2016 €'000	2015 €'000	2014 €'000	2013 €'000
Closing pension liability	**17,518**	15,113	10,076	7,873	-
Experience (loss)/gain arising on the plan Liabilities	**(828)**	161	(469)	164	-
% Liabilities	**4.7%**	1.1%	-4.6%	2.1%	-
Total (loss)/Gain recognised in Statement of Total Recognised Gains & losses	**(824)**	(3,766)	(1,058)	38	-
% Liabilities	**4.7%**	24.9%	-10.5%	0.5%	-

6 Depreciation

	Note	**2017 €'000**	2016 €'000
Depreciation of property, plant and equipment	8	**146**	155
		146	155

7 Capital Account

	2017 €'000	2016 €'000
Opening Balance as at 1 January	**235**	220
Transfer from Statement of Income and Expenditure and Retained Revenue Reserves		
- To fund Fixed Asset acquisitions	**173**	170
- Amortised in line with asset depreciation	**(146)**	(155)
Net Movement	**27**	15
Closing balance as at 31 December	**262**	235

Notes to the Accounts

For the year ended 31 December 2017

8 Property, Plant & Equipment

	Computer Equipment €'000	Computer Software €'000	Fixtures & Fittings €'000	**Total €'000**
Cost				
At 1 January 2017	767	722	176	**1,665**
Additions	127	46	-	**173**
Disposals	(64)	-	(11)	**(75)**
At 31 December 2017	830	768	165	**1,763**
Depreciation				
At 1 January 2017	680	640	110	**1,430**
Charge for Year	66	61	19	**146**
Disposals	(64)		(11)	**(75)**
At 31 December 2017	682	701	118	**1,501**
Net Book Amount				
At 1 January 2017	87	82	66	**235**
Net Movement for Year	61	(15)	(19)	**27**
At 31 December 2017	**148**	**67**	**47**	**262**

9 Grants

		2017 €'000	2016 €'000
(a)	**Analysis of Grants Paid**		
	Priority Area A - Future Networks & Communications	**17,960**	14,878
	Priority Area B - Data Analytics, Management, Security & Privacy	**14,177**	19,028
	Priority Area C - Digital Platforms, Content & Applications	**7,994**	5,445
	Priority Area D - Connected Health and Independent Living	**587**	1,902
	Priority Area E - Medical Devices	**15,784**	7,128
	Priority Area F - Diagnostics	**14,541**	16,791
	Priority Area G - Therapeutics: Synthesis, Formulation, Processing and Drug Delivery	**19,646**	23,335
	Priority Area H - Food for Health	**9,399**	8,102
	Priority Area I - Sustainable Food Production and Processing	**6,400**	8,144
	Priority Area J - Marine Renewable Energy	**4,917**	4,235
	Priority Area K - Smart Grids & Smart Cities	**3,494**	1,812
	Priority Area L - Manufacturing Competitiveness	**7,246**	1,898
	Priority Area M - Processing Technologies and Novel Materials	**29,506**	33,230
	Priority Area N - Innovation in Services and Business Processes	**576**	483
	Basic Biomedical Science (BBS)	**8,048**	11,768
	Other	**15,151**	11,260
	Research Infrastructure Opportunistic fund awards to Research Bodies	**-**	15,337
	Total	**175,426**	184,776

The analysis of grants paid reflects the results of the National Research Prioritisation Strategy adopted by Government following input from the research community, the enterprise sector and research funding departments and agencies.

Notes to the Accounts

For the year ended 31 December 2017

9 Grants (continued)

(b) Grant Commitments

	2017 €'000	2016 €'000
Outstanding Grant Commitments as at 1 January	**427,595**	426,828
Grants Approved during the year	**212,674**	194,343
De-commitments during the year	**(8,958)**	(9,576)
Grant Payments made in the year - Gross	**(175,426)**	(184,776)
Amounts received other funding agencies for Co-Funding of SFI awards		
Teagasc	**184**	291
Irish Cancer Society	**345**	-
Environmental Protection Agency	**207**	28
Marine Institute	**393**	386
Geological Society of Ireland	**184**	28
Sustainable Energy Authority of Ireland	**693**	-
Health Research Board	**115**	43
Outstanding Commitments as at 31 December	**458,006**	427,595

10 Receivables

	2017 €'000	2016 €'000
Debtors	**2**	3
Prepayments	**895**	630
Total	**897**	633

11 Payables

	2017 €'000	2016 €'000
General Creditors	**122**	86
Deferred Income*	**302**	120
Accruals	**263**	197
Interagency Balance - IDA**	**19**	15
Total	**706**	418

* *Deferred income represents monies received from the EU in respect of three awards funded by SFI as part of the ERA-CoSysMed Co-funded call, which will be amortised against Research Grant income over the lifetime of the research awards.

**Interagency Balances relate to the balances owed by Science Foundation Ireland to IDA at 31 December 2017, being the difference between the amount of money paid to IDA by Science Foundation Ireland and the actual money spent by IDA on behalf of Science Foundation Ireland.

Notes to the Accounts

For the year ended 31 December 2017

12 Commitments under Operating Leases

Science Foundation Ireland is a tenant of IDA (formerly under Forfás tenancy) in Wilton Park House and currently has no commitments under operating leases on the building, but pays rent to IDA as a contribution to the lease costs incurred by IDA.

13 Taxation

Section 227 of the Taxes Consolidation Act, 1997, provides an exemption from tax on the income of non-commercial state bodies except where interest is subject to tax at source (e.g. DIRT). The net amount of such income is credited to the Statement of Income and Expenditure and Retained Revenue Reserves.

SFI is liable to employer taxes in Ireland and complies with related withholding, reporting and payment obligations.

14 Related Party Disclosures

Science Foundation Ireland adopts procedures in accordance with the guidelines issued by the Department of Public Expenditure and Reform covering the personal interests of Board members. In the normal course of business, Science Foundation Ireland may approve grants or enter into other contractual arrangements with entities in which Science Foundation Ireland Board members are employed or are otherwise interested.

In cases of potential conflict of interest, Board members do not receive Board documentation or otherwise participate in or attend discussions regarding these transactions. A register is maintained and available on request of all such instances.

15 Contingencies and Legal Actions

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

16 Approval of Financial Statements

The Financial Statements were approved by the Board of Science Foundation Ireland on 29 June, 2018.

Grant Commitments and Payments Analysis 2017

2017 Payments by Programme	
	€'000
Research Centres	67,083
Investigator Programme	37,033
Research Infrastructure Awards	10,536
Career Development Award	6,640
SFI Research Centres – Spokes (Rolling & Fixed Call)	7,193
Research Professorship Programme	6,761
Strategic Partnership Programme	6,206
Technological Innovation Development Award (TIDA)	4,277
SFI Discover Programme	3,976
Starting Investigator Research Grant (SIRG)	3,878
US-Ireland R&D Partnership	3,564
Industry Fellowship Awards	2,535
Centres for Science Engineering & Technology (CSET)	2,398
President of Ireland Future Research Leaders	1,551
SFI ERC Development Programme	1,452
SFI - ERC Support Programme	1,162
RS-SFI University Research Fellow	1,030
SFI Fellowship Programme	973
EU Joint Programme Initiatives	953
Conference & Workshop Awards	705
President of Ireland Young Researcher Award (PIYRA)	596
SFI Science Policy Research Programme	568
BBSRC-SFI Joint Funding of Research	536
SFI-HRB-Wellcome Trust Biomedical Research Partnership	492
Maternity Supplement	402
SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	255
Translational Research Awards	227
Research Frontiers Programme	172
Strategic Research Centres (SRCs)	112
Centres of Excellence in Neurodegeneration	50
NSF/SFI Graduate Research opportunities Worldwide (GROW) Programme	23
Advance Award Programme	-11
International Strategic Cooperation Award	-13
Investigator Catalyst Award	-13
Grand Total	**173,304**

2017 Payments by Institution	
	€'000
Trinity College Dublin	40,810
University College Dublin	27,829
National University of Ireland, Galway	26,813
University College Cork	26,805
University of Limerick	18,193
Tyndall National Institute	9,820
Royal College of Surgeons in Ireland	7,403
Dublin City University	5,110
National University of Ireland, Maynooth	3,263
Teagasc	1,840
The Royal Society	1,030
Health Research Board	696
Dublin Institute of Technology	696
The National Institute for Bioprocessing Research and Training	618
RTÉ	585
Waterford Institute of Technology	457
Dublin Institute for Advanced Studies	418
Cork Institute of Technology	278
Kite Entertainment	272
The Festival of Curiosity Ltd	200
The Institution of Engineers of Ireland	200
Scifest Ltd	170
Cosmos Education T/A - Blackrock Castle Observatory	151
Junior Achievement Ireland	145
Royal Society of Chemistry	116
Athlone Institute of Technology	116
National Youth Council of Ireland	98
Irish Universities Association	88
Mary Immaculate College	66
I Wish STEM Company Limited by Guarantee	64
British Council Ireland	55
Gallomanor Communications Limited	53
The Cork Electronic Industries Association	50
Fingal County Council	45
The National Concert Hall	39
Glenosheen Ltd	35
Monaghan County Council - Library Service	35
Atlantic Corridor t/a Midlands Science	35
Feilte Dhuibh Linne Teoranta t/a St Patrick's Day Festival	35
Institute of Technology Tralee	33
The Cool Planet Experience	32

2017 Payments by Institution	
	€'000
Institute of Technology Sligo	29
Lifetime Lab	25
Institute of Technology Carlow	25
Learning Hub Limerick Ltd	24
Whipsmart Media Ltd	22
Galway Science & Technology Forum	20
ECDL Ireland Ltd T/A ICS Skills	18
National College of Ireland	17
Tile Films	15
DunLaoghaire Rathdown County Council	13
Galway Education Centre	12
Galway Film Resource Centre	10
Fighting Blindness	10
The Ark	8
The Rediscovery Centre Ltd	8
LarkinLennox Ltd T/a Foodoppi	7
Learn it Educational Solutions Ltd	7
Rokit Entertainment Ltd	7
Trinity College (Science Gallery)	7
Wexford County Council	7
Dublinia Heritage Centre	7
Cork Co Co t/a Lifetime Lab	5
Screentime Shinawil	3
Hello World Foundation t/a CoderDojo Foundation	3
Brigit's Garden	2
Galway Atlanaquaria	2
Mayo County Council	2
Crossing the Line Productions	1
National Museum of Irl, Archaeology & Natural History	0
Scouting Ireland	-13
Royal Dublin Society RDS	-59
Geological Survey of Ireland*	-184
Environmental Protection Agency*	-207
Marine Institute*	-306
Irish Cancer Society*	-345
Sustainable Energy Authority of Ireland*	-694
Grand Total	**173,304**

** Represents the Co-Funding by these Funding Agencies of awards made by SFI in 2017*

2017 Grant Commitments by Programme	
	€'000
SFI Research Centres	73,240
Investigator Programme	40,242
SFI Research Centres – Spokes (Rolling & Fixed Call)	21,495
Career Development Award	12,969
Research Infrastructure	10,562
SFI-NSF China Partnership	8,490
President of Ireland Future Research Leaders	7,727
Strategic Partnership Programme	6,190
SFI Discover	5,387
TIDA	4,595
Industry Fellowship	3,087
SFI Science Policy Research Programme	2,817
SFI Research Centre - Supplement award	2,416
SFI Fellowship	1,903
RS-SFI University Research Fellow	1,784
BBSRC-SFI Joint Funding of Research	1,700
US-Ireland R&D Partnership	1,681
SFI - ERC Support	1,237
SFI ERC Development	1,230
SFI-HRB-Wellcome Trust Biomedical Research Partnership	1,022
EU Joint Programme Initiatives	699
Conference & Workshop	669
Maternity Supplement	563
SFI-Pfizer Biotherapeutics Innovation Award Programme 2014	516
SFI-NSF I-Corps™@SFI Entrepreneurial Training Programme	335
Research Professorship (Recruitment) awards	90
NSF/SFI Graduate Research Opportunities Worldwide (GROW) Programme	23
US-Irl R&D Partnership Planning Programme	7
Grand Total	**212,674**

2017 Number of Awards by Programme	
SFI Discover	65
Conference & Workshop	51
Industry Fellowship	38
Technological Innovation Development Award (TIDA)	37
Investigator Programme	34
Career Development Award	24
Maternity Supplement	21
SFI Fellowship	16
SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	10
SFI-NSF China Partnership	8
SFI Research Centres – Spokes (Rolling & Fixed Call)	7
President of Ireland Future Research Leaders	5
SFI Science Policy Research Programme	5
SFI - ERC Support	5
SFI Research Centres	4
RS-SFI University Research Fellow	4
BBSRC-SFI Joint Funding of Research	4
US-Ireland R&D Partnership	4
NSF/SFI Graduate Research Opportunities Worldwide (GROW) Programme	4
Strategic Partnership Programme	3
SFI-HRB-Wellcome Trust Biomedical Research Partnership	3
EU Joint Programme Initiatives	3
Research Professorship (Recruitment) Awards	3
US-Irl R&D Partnership Planning Programme	3
Research Infrastructure	2
SFI ERC Development	2
SFI-Pfizer Biotherapeutics Innovation Award Programme 2014	1
SFI Research Centre - Supplement Award	1
Grand Total	**367**

2017 Number of Awards by Institution	
Trinity College Dublin	65
University College Dublin	63
National University of Ireland, Galway	37
University College Cork	26
Dublin City University	25
Royal College of Surgeons in Ireland	21
University of Limerick	19
Tyndall National Institute	17
National University of Ireland, Maynooth	10
Waterford Institute of Technology	7
Teagasc	6
Cork Institute of Technology	5
Health Research Board	4
The Royal Society	4
Dublin Institute of Technology	3
The National Institute for Bioprocessing Research and Training	3
British Council Ireland	2
Dublin Institute for Advanced Studies	2
Environmental Protection Agency	2
Gallomanor Communications Limited	2
Geological Survey of Ireland	2
Marine Institute	2
The Festival of Curiosity Ltd	2
Mary Immaculate College	2
Sustainable Energy Authority of Ireland	2
Atlantic Corridor t/a Midlands Midlands Science	1
Cosmos Education T/A - Blackrock Castle Observatory	1
Dublinia Heritage Centre	1
Dundalk Institute of Technology	1
Feilte Dhuibh Linne Teoranta t/a St Patrick's Day Festival	1
Galway Science & Technology Forum	1
Glenosheen Ltd	1
Institute of Technology Carlow	1
Institute of Technology Sligo	1

2017 Number of Awards by Institution	
Institute of Technology Tralee	1
Junior Achievement Ireland	1
Kite Entertainment	1
LarkinLennox Ltd T/a Foodoppi	1
Learn it Educational Solutions Ltd	1
Learning Hub Limerick Ltd	1
Lifetime Lab	1
Monaghan County Council - Library Service	1
National College of Ireland	1
Rokit Entertainment Ltd	1
Royal Dublin Society RDS	1
Royal Society of Chemistry	1
RTÉ	1
The Ark	1
The Cork Electronic Industries Association	1
The National Concert Hall	1
The Rediscovery Centre Ltd	1
Trinity College (Science Gallery)	1
Wexford County Council	1
DunLaoghaire Rathdown County Council	1
CoderDojo Ireland Foundation	1
Scifest Ltd	1
The Institution of Engineers of Ireland	1
The Cool Planet Experience	1
Fingal County Council	1
Grand Total	**367**

List of SFI awards made in 2017

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Adrian Bracken	BBSRC-SFI Joint Funding of Research	Understanding the impact of divergent Sin3A/HDAC1 complex assemblies in gene regulation	Trinity College Dublin	€536,132
Andrew Bowie	BBSRC-SFI Joint Funding of Research	Innate immune signalling underpinning Klebsiella-host interaction	Trinity College Dublin	€364,311
Anne Parle-McDermott	BBSRC-SFI Joint Funding of Research	Deciphering the function of the human Dihydrofolate reductase 2 gene	Dublin City University	€612,534
Cormac Murphy	BBSRC-SFI Joint Funding of Research	Investigation of Fengycin Mechanism Using Biological, Chemical and Biophysical Tools	University College Dublin	€187,200
Andrew Parnell	Career Development Award	Industrial supervised learning	University College Dublin	€530,160
Annie Curtis	Career Development Award	MacroCLOCK - Circadian Control of Macrophage Mitochondria: A New Approach in the treatment of Chronic Inflammatory Disease	Royal College of Surgeons in Ireland	€642,073
Brian Rodriguez	Career Development Award	Electrochemical force microscopy and quantum sensing of the solid-liquid interface: improving batteries through nanoscale electrochemical imaging	University College Dublin	€628,349
Brian Rodriguez	Career Development Award	Electrochemical force microscopy and quantum sensing of the solid-liquid interface: improving batteries through nanoscale electrochemical imaging	Sustainable Energy Authority of Ireland	-€314,175
Brijesh Tiwari	Career Development Award	Novel technological interventions for biofilm	Teagasc	€638,317
Conor Murphy	Career Development Award	HydroCast: Seasonal Hydrological Forecasting for Ireland	National University of Ireland, Maynooth	€627,442
Dara Stanley	Career Development Award	Food in the future; sustainable crop pollination in a changing world	National University of Ireland, Galway	€572,699
Gavin Collins	Career Development Award	Next-generation trace elements exploitation (TEX) in microbial communities at the scales of genomes, cells, biofilms and new biotechnology	National University of Ireland, Galway	€649,965
Georgios Iosifidis	Career Development Award	SoftEdge: Architectures and Algorithms for Software-Defined Edge Systems	Trinity College Dublin	€606,088
Kieran Hodnett	Career Development Award	(bio)Pharma Europe High Level Seminar	University of Limerick	€11,250
Kieran Meade	Career Development Award	The Bovine Epigenome and Susceptibility to Mycobacterial Disease	Teagasc	€615,900
Le Nam Tran	Career Development Award	Green and Secure Transmission Techniques for Future Wireless Networks	University College Dublin	€536,410
Marcus Claesson	Career Development Award	A translational 'omics' approach for predicting treatment outcome in newly-diagnosed children with ulcerative colitis	University College Cork	€651,253
Matthias Moebius	Career Development Award	2D nanosuspensions for printed electronics – how small can you go?	Trinity College Dublin	€614,054
Ning Liu	Career Development Award	Electrically pumped all-inorganic LEDs and lasers by colloidal nanorod heterogeneous assembly	University of Limerick	€628,637
Oran Kennedy	Career Development Award	Subchondral Bone Microdamage in Post Traumatic OA: Novel Subchondral-Specific Therapies	Royal College of Surgeons in Ireland	€611,988
Padraig Cantillon Murphy	Career Development Award	Intelligent Magnets for Surgery 4.0	Tyndall National Institute	€589,591
Ronan Courtney	Career Development Award	Ecological engineering solutions for the long-term and sustainable management of mine processing wastes	University of Limerick	€631,401
Russell McLaughlin	Career Development Award	Detecting the dark matter of neurodegeneration: repeat expansions in amyotrophic lateral sclerosis	Trinity College Dublin	€607,800

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Sharon Glynn	Career Development Award	A New Dimension to Ancient Enemies: Targeting Nitrosative Stress and Human Endogenous Retrovirus K Improved Diagnosis, Chemoprevention and Treatment of High Grade Breast and Prostate Cancer	National University of Ireland, Galway	€640,473
Sheila McBreen	Career Development Award	Gamma-ray Investigation of the Full Transient Sky (GIFTS)	University College Dublin	€619,383
Stefan Schulz	Career Development Award	Nitride-based light emitters: From carrier localization and non-radiative recombination processes to quantum transport and device design	Tyndall National Institute	€759,010
Stefan Schulz	Career Development Award	Nitride-based light emitters: From carrier localization and non-radiative recombination processes to quantum transport and device design	Sustainable Energy Authority of Ireland	-€379,505
Tobias Engel	Career Development Award	The ATP-gated purinergic P2X7 receptor as a novel target for the treatment of drug-refractory epilepsy	Royal College of Surgeons in Ireland	€625,532
Tomasz Piwonski	Career Development Award	Novel widely tunable swept sources, based on synchronized multi-section slotted semiconductor lasers for Optical Coherence Tomography	Tyndall National Institute	€636,578
Alan Davy	Conference & Workshop	2nd Workshop on Molecular Communications	Waterford Institute of Technology	€5,800
Andreea Nicoara	Conference & Workshop	3th William Rowan Hamilton Geometry and Topology Workshop	Trinity College Dublin	€8,625
Andrew Parnell	Conference & Workshop	Conference on Applied Statistics in Ireland 2017	University College Dublin	€5,000
Aoife Morrin	Conference & Workshop	New Frontiers in Skin Physiology Assessment using Wearables	Dublin City University	€2,500
Brian Harvey	Conference & Workshop	DOCTRID V Conference	Royal College of Surgeons in Ireland	€7,500
Cameron Hall	Conference & Workshop	European Study Group with Industry 128 at MACSI UL	University of Limerick	€3,000
Catherine Godson	Conference & Workshop	Keystone Symposia Conference on The Resolution of Inflammation in Health and Disease	University College Dublin	€38,606
Conor O'Byrne	Conference & Workshop	Microbial Stress: From systems to molecules and back	National University of Ireland, Galway	€12,610
David Finn	Conference & Workshop	17th Annual Scientific Meeting of the Irish Pain Society	National University of Ireland, Galway	€6,200
David MacHugh	Conference & Workshop	36th International Society for Animal Genetics Conference	University College Dublin	€14,610
David Malone	Conference & Workshop	Network Traffic Measurement and Analysis Conference	National University of Ireland, Maynooth	€2,870
Denis Shields	Conference & Workshop	8th Annual Computational and Molecular Biology PhD Symposium	University College Dublin	€4,255
Dermot Brabazon	Conference & Workshop	20th International ESAFORM Conference on Material Forming	Dublin City University	€10,820
Dieter Degrijse	Conference & Workshop	Groups in Galway 2017	National University of Ireland, Galway	€4,750
Eamonn Delahunt	Conference & Workshop	Annual Congress of the European College of Sport Science	University College Dublin	€35,000
Ed Lavelle	Conference & Workshop	Irish Society for Immunology 2017 meeting	Trinity College Dublin	€7,000
Eilís Dowd	Conference & Workshop	27th Annual Meeting of the Network for European CNS Transplantation & Repair (NECTAR)	National University of Ireland, Galway	€15,830
Eoin Casey	Conference & Workshop	10th International Conference on Biofilm Reactors	University College Dublin	€15,500
Fergal O'Brien	Conference & Workshop	World Congress of Biomechanics	Royal College of Surgeons in Ireland	€50,000

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Fionnuala Ni Ainle	Conference & Workshop	Venous Thromboembolism (VTE) Dublin 2017	University College Dublin	€5,000
Gareth Jones	Conference & Workshop	CLEF 2017 Conference and Labs of the Evaluation Forum with MediaEval 2017 Workshop	Dublin City University	€10,698
Geraldine Boylan	Conference & Workshop	10th International Conference on Brain Monitoring and Neuroprotection in the Newborn (BMN2017)	University College Cork	€21,149
Gerard Clarke	Conference & Workshop	NeuroGASTRO 2017	University College Cork	€30,570
Grace McCormack	Conference & Workshop	10th World Sponge Conference 2017	National University of Ireland, Galway	€10,000
Helen O'Shea	Conference & Workshop	7th European Rotavirus Biology Meeting (ERBM)	Cork Institute of Technology	€7,780
Jacques Huyghe	Conference & Workshop	Interfacial Phenomena in Industry and Health	University of Limerick	€3,850
Jan Manschot	Conference & Workshop	Indefinite Theta Functions and Applications in Physics and Geometry	Trinity College Dublin	€6,000
John O'Halloran	Conference & Workshop	Cork Ornithological Research Conference 2017	University College Cork	€2,000
Karsten Rode	Conference & Workshop	The IEEE International Magnetics Conference, INTERMAG Europe 2017	Trinity College Dublin	€55,000
Keelin O'Donoghue	Conference & Workshop	International Stillbirth Alliance Annual Conference Cork 2017	University College Cork	€15,000
Kumlesh Dev	Conference & Workshop	FINN7 (Frontiers in Neurology & Neuropsychiatry)	Trinity College Dublin	€5,000
Lizbeth Goodman	Conference & Workshop	VSMM2017: Through the Looking Glass- Back to the Future of VR	University College Dublin	€10,000
Lorraine Morgan	Conference & Workshop	The International Symposium on Open Collaboration (OpenSym 2017)	National University of Ireland, Galway	€2,920
Louise Kenny	Conference & Workshop	INFANT Research Workshop 2017: "Translating Innovation for the Next Generation"	University College Cork	€3,195
Luke O'Neill	Conference & Workshop	Keystone Symposia Conference on Integrating Metabolism and Immunity running concurrent the to the conference on Cell Death and Inflammation	Trinity College Dublin	€45,976
Michael O'Dwyer	Conference & Workshop	Advances in translational and early clinical blood cancer research	National University of Ireland, Galway	€3,700
Niall Madden	Conference & Workshop	SIAM UK and Ireland National Student Chapter Conference 2017	National University of Ireland, Galway	€2,560
Padraig Dunne	Conference & Workshop	Quantum Molecular Dynamics - Extended Software Developent Workshop	University College Dublin	€5,000
Paul Buitelaar	Conference & Workshop	1st International Conference on Language, Data and Knowledge (LDK 2017)	National University of Ireland, Galway	€2,000
Peter Dockery	Conference & Workshop	Anatomists on The Edge	National University of Ireland, Galway	€12,170
Robert Elmes	Conference & Workshop	Supramolecular Chemistry Ireland 2017	National University of Ireland, Maynooth	€1,300
Robert Lahue	Conference & Workshop	Neuroscience Ireland 2017 Conference	National University of Ireland, Galway	€10,060
Sinead Ryan	Conference & Workshop	HMI Workshop and Conference Series	Trinity College Dublin	€47,500
Tewfik Soulimane	Conference & Workshop	Frontiers in Materials Characterisation towards Industrial Translation (FRIMACHAT) 2017	University of Limerick	€5,000
Thomas Newe	Conference & Workshop	12th International Conference on Sensing Technology	University of Limerick	€2,640

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Timothy McCarthy	Conference & Workshop	Irish Earth Observation Symposium and EU Copernicus Workshop	National University of Ireland, Maynooth	€2,000
Tomas Ryan	Conference & Workshop	Schrödinger at 75: What is Life? - The Future of Biology	Trinity College Dublin	€60,000
Victoria Lebed	Conference & Workshop	Geometry and combinatorics of associativity (HMI workshop)	Trinity College Dublin	€7,200
Vladimir Lobaskin	Conference & Workshop	State of the art in mesoscale and multiscale modelling	University College Dublin	€5,000
Yvonne Buckley	Conference & Workshop	PLANTPOPNET Workshop: Environmental & climatic drivers of grassland plant performance	Trinity College Dublin	€7,000
Kenneth A Dawson	ERC Development	HYBRID- The Cell as a Programmable Factory for Hybrid Nanomaterials	University College Dublin	€612,667
Rachel McLoughlin	ERC Development	Delineating immune memory to Staphylococcus aureus	Trinity College Dublin	€616,934
Alfonso Martin Ruano	Industry Fellowship	Advanced optical characterization of intraocular lenses	Tyndall National Institute	€73,732
Aran Rafferty	Industry Fellowship	Anti-microbial TiO2-based coatings for glass and ceramic substrates	Trinity College Dublin	€117,656
Arsalan Saljoghei	Industry Fellowship	Multi-Tb/s capable Optical Transceiver with Joint Nonlinear Processing Enabled by a PIC Based Digital Optical Engine	Dublin City University	€82,696
Cian Cummins	Industry Fellowship	Integrating 2D Materials and Block Copolymers for Low Cost Nanodevices	Trinity College Dublin	€76,098
Colm Glynn	Industry Fellowship	Micro- and Nano-structuring of Sensor Electrode Surfaces for Integrated Manufacturing of High Performance Sensing Technology	University College Cork	€66,162
Deborah Cluxton	Industry Fellowship	Altered synovial metabolic pathways in anti-inflammatory inadequate responders in rheumatoid arthritis	Trinity College Dublin	€38,944
Deirdre Kilbane	Industry Fellowship	'AI for Life'	Waterford Institute of Technology	€115,449
Devendraprakash Gautam	Industry Fellowship	Optimized contact electrode materials for Bi2Te3-based thermoelectric alloys	Tyndall National Institute	€102,604
Eamonn Culligan	Industry Fellowship	Bioinformatic identification of biosynthetic gene clusters from metagenomic data which encode novel antimicrobials	Cork Institute of Technology	€63,146
Ehsan Rezvani	Industry Fellowship	Multifunctional TiO2 materials - Synthesis and applications towards antibacterial transparent conducting coatings	Trinity College Dublin	€78,866
Elizabeth Minogue	Industry Fellowship	Rapid Culture Independent Nucleic Acid Diagnostics Assays for the Detection of Mycoplasma for the Biopharmaceutical Industry	National University of Ireland, Galway	€74,180
Enrico Tatti	Industry Fellowship	Development of an antimicrobial technology to eradicate persistent biofilms in dairy processing systems	National University of Ireland, Galway	€68,143
Graham Hughes	Industry Fellowship	Elucidating the genomic basis of exceptional ageing and immunity	University College Dublin	€66,813
Ian Godwin	Industry Fellowship	Advanced Electrochemistry of Titanium for Biomedical Implant Applications	Trinity College Dublin	€91,069
Ian Wood	Industry Fellowship	Investigation into network community structures, to better identify social processes	National University of Ireland, Galway	€82,695
Jane English	Industry Fellowship	Biomarker Verification and Validation for PreEclampsia	Royal College of Surgeons in Ireland	€69,980
Jinhua Du	Industry Fellowship	Deep Learning-based Entity Resolution and Entity Relation Analysis for Anti-Money Laundering	Dublin City University	€90,503

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Karen Twomey	Industry Fellowship	'There's no fire without smoke! An electrochemical gas sensor with enhanced performance through incorporating state-of-art advances in micro- and nano-technology for early phase fire detection'	Tyndall National Institute	€119,220
Karrina McNamara	Industry Fellowship	Identification, Characterisation and Integration of new alloys for MEMS switch	University of Limerick	€85,347
Katie Crowley	Industry Fellowship	Application of Affective Computing in VR/AR Consumer Devices	Trinity College Dublin	€92,445
Lara Cutlar	Industry Fellowship	Developing the manufacturing strategy and formulation of a polymeric gene therapy for the skin	University College Dublin	€70,677
Michelle Cronin	Industry Fellowship	Improving the consenting and environmental monitoring of commercial scale marine renewable energy projects	University College Cork	€66,615
Mingjia Yan	Industry Fellowship	Organisational Life Cycle Assessment of the agri food industry: methodological development and validation	University College Dublin	€80,148
Nitheen Kaperi Sanyal	Industry Fellowship	Clear to Gradient Polarised Photochromic Lens	Trinity College Dublin	€74,924
Parikshit Rameshwar Sawdekar	Industry Fellowship	"Demineralisation of Dairy By-products"	Trinity College Dublin	€80,479
Plamen Petkov	Industry Fellowship	nvestigating Approaches for Data Flows Analysis to mitigate the risk of leaks and misuse of personal information aligned with EU's General Data Protection Regulation	Dublin City University	€67,816
Pooria Varahram	Industry Fellowship	Design and Development of Cost Effective Energy Efficient Enhancements for Broadband Power Amplifiers	National University of Ireland, Maynooth	€80,666
Ronald Jabangwe	Industry Fellowship	Validating a Lightweight Security Requirements Engineering Framework for Sports Analytics Mobile Apps	Dundalk Institute of Technology	€86,714
Ronan Shaughnessy	Industry Fellowship	Development of microRNA based assays applicable to the RapiPlex point-of-care diagnosis system to enable validation of known infection biomarkers from the circulation of Mycobacterium bovis infected cattle	University College Dublin	€68,936
Sean Maher	Industry Fellowship	Functional Materials Processing for Integrated Manufacturing of High-Performance Sensor Technology	Dublin City University	€80,752
Seyedmohammad Mousaviagah	Industry Fellowship	Novel Control Scheme for Wind Farms to Enhance Smart Grid Flexibility	University College Dublin	€94,257
Simone Albrecht	Industry Fellowship	Enhanced analytical workflows for the rapid detection of protein posttranslational modification quality attributes across the Biopharmaceuticals manufacturing process	The National Institute for Bioprocessing Research and Training	€95,341
Srinivasa Rao Suda	Industry Fellowship	CHO cell process characteristic profiling and modelling in fed-batch and continuous perfusion cell culture platforms	The National Institute for Bioprocessing Research and Training	€94,392
Swetha Rathan	Industry Fellowship	Development of a new device to deliver islet-containing biomaterial to abdomen to treat insulin-dependent diabetes.	Trinity College Dublin	€81,790
Tony Donnelly	Industry Fellowship	Market led development of high resolution chemical mapping enabled by a tuneable soft x-ray light source	University College Dublin	€82,272
Ultan McCarthy	Industry Fellowship	FReSHield	Waterford Institute of Technology	€75,341
Vitaly Panov	Industry Fellowship	Molecular self-assembly patterns in liquid crystal coatings and novel alignment materials for gradient photochromic lenses.	Trinity College Dublin	€80,397
William Finnegan	Industry Fellowship	Improving the efficiency of manufacturing wind and tidal turbine blades	National University of Ireland, Galway	€69,702

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Adrian Bracken	Investigator Programme	Understanding the role of EZH2 deregulation in B-Cell Lymphomas and Malignant Rhabdoid Tumors: a novel approach to stratifying patient treatment	Trinity College Dublin	€1,651,277
Anding Zhu	Investigator Programme	5GMMPA: Digitally Linearized High Efficiency Millimetre Wave Power Amplifiers for Next Generation High Speed Wireless Communications	University College Dublin	€1,111,498
Andrew Bowie	Investigator Programme	Modulation of innate immune responses by SARM, a new therapeutic target in inflammatory disease	Trinity College Dublin	€2,530,700
Andrew Wheeler	Investigator Programme	Mapping, Modelling and Monitoring Key Processes and Controls on Cold-water Coral Habitats in Submarine Canyons (MMMonKey_Pro)	University College Cork	€1,046,884
Ciaran Kelly and A Wheeler	Investigator Programme	Mapping, Modelling and Monitoring Key Processes and Controls on Cold-water Coral Habitats in Submarine Canyons (MMMonKey_Pro)	Marine Institute	-€348,961
Ciaran Kelly and S Lebedev	Investigator Programme	Structure, evolution and seismic hazard of the Irish offshore: An investigation using the first broadband, ocean-bottom seismometer deployment offshore Ireland	Marine Institute	-€533,029
Corrado Santocanale	Investigator Programme	Uncovering the fundamental roles of the CDC7 kinase and of its regulatory subunits through genome editing technology	National University of Ireland, Galway	€1,705,338
David Kenny	Investigator Programme	An integrated multidisciplinary approach to revolutionise dairy cattle breeding, through the application of state-of-the-art technology to advance the identification, sexual maturation, fertility and availability of semen from genetically elite sires	Teagasc	€1,940,261
David Kenny	Investigator Programme	An integrated multidisciplinary approach to revolutionise dairy cattle breeding, through the application of state-of-the-art technology to advance the identification, sexual maturation, fertility and availability of semen from genetically elite sires	Teagasc	-€970,131
Dermot Brougham	Investigator Programme	NANO-MAG-FACTORY: Multi-functional Magnetic Nanocomposite Materials for Biomedicine	University College Dublin	€1,556,195
Frank Wellmer	Investigator Programme	A new avenue for crop protection: generating Brassica cultivars with supernumerary trichomes	Trinity College Dublin	€1,150,036
Frank Wellmer	Investigator Programme	A new avenue for crop protection: generating Brassica cultivars with supernumerary trichomes	Environmental Protection Agency	-€450,911
James Gleeson	Investigator Programme	Mathematical Modelling of Social Spreading Phenomena	University of Limerick	€1,156,844
Jane Farrar	Investigator Programme	Exploration of therapeutic strategies for ocular disorders	Trinity College Dublin	€2,537,308
Johannes Klaas Slingerland	Investigator Programme	Topological Order, Entanglement and Quantum Information Processing	National University of Ireland, Maynooth	€649,268
John Boland	Investigator Programme	Understanding, controlling and exploiting the structure and properties of nanoscale metal films	Trinity College Dublin	€2,326,391
Kingston Mills	Investigator Programme	Understanding the role of T cells in sustained protective immunity to Bordetella pertussis to inform the design of third generation vaccines against pertussis	Trinity College Dublin	€2,588,359
Koen Verbruggen and A Wheeler	Investigator Programme	Mapping, Modelling and Monitoring Key Processes and Controls on Cold-water Coral Habitats in Submarine Canyons (MMMonKey_Pro)	Geological Survey of Ireland	-€348,961
Koen Verbruggen and S Lebedev	Investigator Programme	Structure, evolution and seismic hazard of the Irish offshore: An investigation using the first broadband, ocean-bottom seismometer deployment offshore Ireland	Geological Survey of Ireland	-€533,029
Louise Bradley	Investigator Programme	Dynamic tuning of plasmonic structures	Trinity College Dublin	€1,125,309
Marcel Jansen	Investigator Programme	Exploiting narrow-band UV-LEDs for Sustainable, Innovative, Technology-Enabled Cropping (UV-SINTEC)	University College Cork	€1,139,052
Martin Caffrey	Investigator Programme	A High-Resolution Crystal Structure Approach To Targeting Bacterial Lipoprotein Post-translational Processing Enzymes For Antibiotic Design And Discovery	Trinity College Dublin	€2,597,669

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Michael Coey	Investigator Programme	Zero moment spin electronics (ZEMS)	Trinity College Dublin	€1,774,388
Michael Zaworotko	Investigator Programme	Green Adsorbents for Clean Energy (GrACE)	University of Limerick	€2,335,037
Michael Zaworotko	Investigator Programme	Green Adsorbents for Clean Energy (GrACE)	Environmental Protection Agency	-€349,090
Miles Turner	Investigator Programme	Novel plasma technology for valorisation of organic manures and carbon-free fertiliser manufacturing	Dublin City University	€654,899
Miles Turner	Investigator Programme	Novel plasma technology for valorisation of organic manures and carbon-free fertiliser manufacturing	Teagasc	-€327,450
Paolo Guasoni	Investigator Programme	Stationary Financial Risks	Dublin City University	€1,107,856
Paul Moynagh	Investigator Programme	Discovering and Exploiting novel regulatory pathways in inflammation for therapeutic advantage	National University of Ireland, Maynooth	€2,619,808
Paul Murphy	Investigator Programme	Enhancing the scientist's toolbox using synthetic carbohydrate chemistry	National University of Ireland, Galway	€1,335,176
Rosemary O'Connor	Investigator Programme	Targeting regulators of cellular metabolism to promote healthy ageing	University College Cork	€1,881,000
Sergei Lebedev	Investigator Programme	Structure, evolution and seismic hazard of the Irish offshore: An investigation using the first broadband, ocean-bottom seismometer deployment offshore Ireland	Dublin Institute for Advanced Studies	€1,599,087
Stephen Keely	Investigator Programme	Pharmaceutical and nutraceutical targeting of the farnesoid X receptor for treatment of chroinc intestinal diseases	Royal College of Surgeons in Ireland	€1,373,636
Ulla Knaus	Investigator Programme	Impact of ROS on intestinal health in inflammatory bowel disease	University College Dublin	€2,610,157
Andreas Heise	Maternity Supplement	Functional polymers for (nano)medical devices	Royal College of Surgeons in Ireland	€24,614
Andrew Keane	Maternity Supplement	Energy Systems Integration Partnership Programme (ESIPP)	University College Dublin	€36,327
Annemarie McCarthy	Maternity Supplement	Multimode RGBIR-d Sensor for Optical Mapping of Basal Cell Carcinomas	Cork Institute of Technology	€7,422
Elaine Dunleavy	Maternity Supplement	Epigenetic Mechanisms of Stem Cell Maintenance	National University of Ireland, Galway	€23,126
Fergus Shanahan	Maternity Supplement	APC Alimentary Pharmabiotic Centre	University College Cork	€44,545
Jochen Prehn	Maternity Supplement	Development of personalised medicine approaches for the clinical application of IAP antagonists in metastatic and high risk early stage colorectal cancer	Royal College of Surgeons in Ireland	€18,659
Kingston Mills	Maternity Supplement	New immunotherapeutic approaches based on the Th1/Th17 axis and its regulation - Caroline Sutton	Trinity College Dublin	€34,417
Leonie Young	Maternity Supplement	SRC-1 mediation of cancer cell reprogramming in endocrine resistant breast cancer	Royal College of Surgeons in Ireland	€24,062
Louise Kenny	Maternity Supplement	COMBINE	University College Cork	€30,409
Lynette Keeney	Maternity Supplement	Memories are made of this; Multiferroics Research for Future Generation Memories	Tyndall National Institute	€34,900
Michael Morris	Maternity Supplement	AMBER	Trinity College Dublin	€25,506
Naomi Walsh	Maternity Supplement	Functional application of genomic variants to deliver personalized strategies for pancreatic cancer patients	Dublin City University	€28,947

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Oliver Daniels	Maternity Supplement	ICRAG - Irelands Big Data & Analytics Research Centre	National University of Ireland, Galway	€20,048
Oliver Daniels	Maternity Supplement	INSIGHT	National University of Ireland, Galway	€8,145
Oliver Daniels	Maternity Supplement	INSIGHT	National University of Ireland, Galway	€21,121
Paul Moynagh	Maternity Supplement	Defining the roles and mechanisms of action of Pellino proteins in immunity and inflammatory diseases	National University of Ireland, Maynooth	€20,213
Paul Townsend	Maternity Supplement	I-PIC Irish Photonic Integration Research Centre	Tyndall National Institute	€20,221
Sara Farrona	Maternity Supplement	Enhancing plant growth and resilience by Ensifer-mediated seed priming	National University of Ireland, Galway	€37,432
Susan Kelleher	Maternity Supplement	Polymeric nanoneedle arrays for injecting drugs into cells for localised gene therapy (GeneInject)	University College Dublin	€37,432
Vincent Wade	Maternity Supplement	ADAPT; Centre for Digital Content Platform Research	Trinity College Dublin	€38,272
Vincent Wade	Maternity Supplement	ADAPT; Centre for Digital Content Platform Research	Trinity College Dublin	€27,533
Fergal O'Brien	EU Joint Initiatives	Dressing4scars - New 4D printing dressing to treat skin scars	Royal College of Surgeons in Ireland	€199,979
Kevin Ryan	EU Joint Initiatives	NEILLSBAT - Nanostructured Electrodes and Ionic Liquid Electrolytes for Ultra High Energy Density Lithium Sulfur Batteries	University of Limerick	€249,493
Simon Elliott	EU Joint Initiatives	RATOCAT - Rational design of highly effective photocatalysts with atomic-level control	Tyndall National Institute	€249,969
Brian Rodriguez	NSF/SFI Graduate Research opportunities Worldwide (GROW) Programme	Brian Rodriguez GROW Supplement	University College Dublin	€5,950
Douwe van Sinderen	NSF/SFI Graduate Research opportunities Worldwide (GROW) Programme	Douwe van Sinderen GROW Supplement	University College Cork	€6,800
Jens Ducree	NSF/SFI Graduate Research opportunities Worldwide (GROW) Programme	Jens Ducree GROW Supplement	Dublin City University	€5,100
John Walsh and Peter Haughton	NSF/SFI Graduate Research opportunities Worldwide (GROW) Programme	Peter Haughton GROW Supplement	University College Dublin	€5,100
Christina Kiel	President of Ireland Future Research Leaders	Quantitative and systems analysis of (patho)physiological signalling networks	University College Dublin	€1,570,342
Claire McCoy	President of Ireland Future Research Leaders	microRNA-155 as a master regulator of macrophage plasticity in multiple sclerosis	Royal College of Surgeons in Ireland	€1,549,814
Deirdre O'Carroll	President of Ireland Future Research Leaders	Green Photonics: Metasurface Photonic Materials for Thin-Film Energy Efficiency and Energy Harvesting Applications	Trinity College Dublin	€1,530,214
John Laffey	President of Ireland Future Research Leaders	Restoring immune homeostasis with mesenchymal stromal cells to attenuate late sepsis	National University of Ireland, Galway	€1,548,208
Lydia Lynch	President of Ireland Future Research Leaders	Immunometabolic and epigenetic changes in obesity leading loss of immune surveillance: Prospects for novel therapeutics for obesity-related diseases	Trinity College Dublin	€1,527,989
Seamus Davis	Research Infrastructure	Infrastructure for Atomic-Scale Visualization of Electronic and Magnetic Quantum Matter	University College Cork	€5,660,730

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Faisal Sharif	Research Infrastructure	A national academic-led hybrid interventional catheterisation and non-invasive imaging facility for the evaluation of medical devices and device-based therapies in human subjects	National University of Ireland, Galway	€4,900,975
John Boland Dean of Research	Research Professorship	Recruitment Costs	Trinity College Dublin	€30,000
Lokesh Joshi	Research Professorship	Recruitment costs	National University of Ireland, Galway	€30,000
Lokesh Joshi	Research Professorship	Recruitment costs	National University of Ireland, Galway	€30,000
David Wilson	RS-SFI University Research Fellow	Excited charm resonances from Quantum Chromodynamics	The Royal Society	€519,463
Marius de Leeuw	RS-SFI University Research Fellow	Symmetries in Solvable Models	The Royal Society	€540,438
Neils Warburton	RS-SFI University Research Fellow	Accurate waveforms for extreme- and intermediate-mass-ratio inspirals	The Royal Society	€528,112
John Goold	RS-SFI University Research Fellow Start up Grant	Thermoelectric potential of interacting, disordered quantum wires.	The Royal Society	€196,096
John Boland	SFI - ERC Support	SFI ERC Support Programme - Prof Ruth Britto (TCD)	Trinity College Dublin	€200,000
John Boland Dean of Research	SFI - ERC Support	SFI ERC Support Programme - Dr Thomas Ryan (TCD)	Trinity College Dublin	€150,000
Mary Shire - VP for Research	SFI - ERC Support	SFI ERC Support Programme - Dr Michael Scancon (UL)	University of Limerick	€150,000
Raymond Stallings	SFI - ERC Support	SFI ERC Support Programme - Prof Mary Cannon (RCSI)	Royal College of Surgeons in Ireland	€150,000
VP Research	SFI - ERC Support	SFI ERC Support Programme - Professor Neil O'Connell (University College Dublin)	University College Dublin	€587,225
Adrian Lynch	SFI Discover	SFI RTE Joint Initiative	RTE	€585,000
Alexandra Boyd	SFI Discover	Science Apprentice Series 2018	University College Dublin	€169,266
Alison Eldridge	SFI Discover	Spectroscopy in a Suitcase	Royal Society of Chemistry	€193,600
Ann Butler	SFI Discover	Futurewize	Junior Achievement Ireland	€299,184
Aoibheann Bird	SFI Discover	Suite Science 2018	University College Dublin	€14,700
Aoibhinn Ni Shuilleabhain	SFI Discover	Maths Sparks: Problem Solving Workshops	University College Dublin	€16,620
Clair McSweeney	SFI Discover	Engaging Space	Cosmos Education T/A - Blackrock Castle Observatory	€286,769
Clare McInerney	SFI Discover	Computer Science at Leaving Certificate CPD Programme	University of Limerick	€291,264
Daniel Vincent McCarthy	SFI Discover	The Festival of Curiosity 2018 & 2019 - Reconnecting	The Festival of Curiosity Ltd	€300,000
Daniel Vincent McCarthy	SFI Discover	Curiosity Studio 2018	The Festival of Curiosity Ltd	€50,000
Deirdre Butler	SFI Discover	IGGIES - Irish Girl Guides Innovatively Engaging with STEM	Dublin City University	€49,940

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Edelle Moss	SFI Discover	Science Foundation Ireland Science Zone at the Big Day Out	Feilte Dhuibh Linne Teoranta t/a St Patrick's Day Festival	€35,738
Eilish McLoughlin	SFI Discover	Physics Busking	Dublin City University	€32,600
Elizabeth Mathews	SFI Discover	Irish Sign Language STEM Glossary Pilot Project	Dublin City University	€48,815
Enda O'Connell	SFI Discover	ReelLIFE SCIENCE Video Competition	National University of Ireland, Galway	€12,500
Eoin Gill	SFI Discover	Maths Ireland incorporating Maths Week Ireland	Waterford Institute of Technology	€290,163
Gordon Chambers	SFI Discover	Irish Micro Plastic Awareness and Coastal Threats - IMPACT	Dublin Institute of Technology	€50,000
Jessamyn Fairfield	SFI Discover	Bright Club	National University of Ireland, Galway	€49,244
Karen Sheeran	SFI Discover	RDS Primary Science Fair - Dublin and Limerick 2018/2019	Royal Dublin Society RDS	€150,000
Karl Reinhardt	SFI Discover	CoderDojo Ireland Foundation Community and Events Co-Ordination	CoderDojo Ireland Foundation	€123,000
Lilian Whelan	SFI Discover	Steam through Fingal libraries	Fingal County Council	€50,000
Liz McBain	SFI Discover	FameLab Ireland 2018	British Council Ireland	€49,700
Maeve Liston	SFI Discover	STEAM-ED	Mary Immaculate College	€46,150
Maeve McElligott	SFI Discover	Teen Entrepreneur STEM Camp	DunLaoghaire Rathdown County Council	€14,410
Mairead Whelan	SFI Discover	Big Life Fix	Kite Entertainment	€295,579
Mervyn Horgan	SFI Discover	MathsWorks Mobile 2.0	Lifetime Lab	€25,000
Niamh O'Meara	SFI Discover	Career Mathways	University of Limerick	€37,789
Nigel Flegg	SFI Discover	Music and Science: Quavers to Quadratics	The National Concert Hall	€40,300
Nina Bresnihan	SFI Discover	OurKidsCode	Trinity College Dublin	€49,953
Pramod Pathak	SFI Discover	ELI Afterschool Coding Club	National College of Ireland	€19,050
Sean O'Brien	SFI Discover	Science Hub at Learning Hub Limerick	Learning Hub Limerick Ltd	€25,000
Shane McCracken	SFI Discover	I'm a Scientist and I'm an Engineer Ireland	Gallomanor Communications Limited	€29,000
Shane McCracken	SFI Discover	I'm a Scientist/Engineer, Get me out of here!	Gallomanor Communications Limited	€25,722
Sharon Lawton	SFI Discover	VEX Robotics	Cork Institute of Technology	€298,053
Sheila Donegan	SFI Discover	Calmast STEM Outreach Hub for Southeast	Waterford Institute of Technology	€50,000
Sheila Porter	SFI Discover	SciFest	Scifest Limited	€340,000
Simon Elliott	SFI Discover	Tyndall MakerDojo at Festivals	Tyndall National Institute	€50,000
Susan Schreibman	SFI Discover	eDuCaTE: The Decade of Commemorations through Technology	National University of Ireland, Maynooth	€22,033

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Sylvia Leatham	SFI Discover	Engineers Ireland STEPS programme - 2018 & 2019: Engineering Futures	The Institution of Engineers of Ireland	€300,000
Tiernan Henry	SFI Discover	Our Places and Landscapes (OPAL)	National University of Ireland, Galway	€39,139
Tomas Ward	SFI Discover	Dublin Maker 2018	Dublin City University	€50,000
Valerie Cowman	SFI Discover	STEM++	The Cork Electronic Industries Association	€50,000
Vicky Brown	SFI Discover	Planeteers	The Cool Planet Experience	€35,400
Aideen Howard	SFI Discover Science Week	Science Week at The Ark 2017	The Ark	€8,000
Aisling Larkin	SFI Discover Science Week	Culinary Alchemy : A Multi-Sensory, Interactive, Molecular Gastronomy Experience	LarkinLennox Ltd T/a Foodoppi	€8,000
Bernie Quilligan	SFI Discover Science Week	Limerick Festival of Science	University of Limerick	€32,190
Catriona Boyle	SFI Discover Science Week	Festival of Farming and Food - SFI Science Week at Teagasc	Teagasc	€12,032
Darren F. Kavannagh	SFI Discover Science Week	i3 Carlow SFI Festival	Institute of Technology Carlow	€27,500
Deirdriu McQuaid	SFI Discover Science Week	Cavan Monaghan Science Festival	Monaghan County Council - Library Service	€35,000
Donal Leech	SFI Discover Science Week	Galway Science and Technology Festival	Galway Science & Technology Forum	€20,000
Eileen Morrissey	SFI Discover Science Week	Wexsci. Science Week Events organised by Wexford County Council and Wexford Public Library Service	Wexford County Council	€8,000
Gordon Hayden	SFI Discover Science Week	The Science of Horror Movies	Rokit Entertainment Limited	€8,000
Ian Brunswick	SFI Discover Science Week	MAKESHOP on the road for Science Week: lowering barriers to STEM engagement through hands-on community workshops	Trinity College (Science Gallery)	€8,000
Jackie Gorman	SFI Discover Science Week	Midlands Science Festival	Atlantic Corridor t/a Midlands Midlands Science	€35,000
Jeremy Bird	SFI Discover Science Week	M.A.R.S. Motivating and Advancing Regional Science	Institute of Technology Sligo	€30,000
Jonathan Mackey	SFI Discover Science Week	Dunsink Observatory Science Week 2017	Dublin Institute for Advanced Studies	€850
Joseph Walsh	SFI Discover Science Week	Kerry Science Festival	Institute of Technology Tralee	€33,500
Liz McBain	SFI Discover Science Week	Art in Mind	British Council Ireland	€7,460
Maeve Liston	SFI Discover Science Week	Tipperary Festival of Science	Mary Immaculate College	€26,671
Mervyn Horgan	SFI Discover Science Week	Cork Science Festival	Glenosheen Ltd	€35,000
Owen Conlan	SFI Discover Science Week	Irish Mental Health Legacies of the Great Famine	Trinity College Dublin	€3,003
Ross Maguire	SFI Discover Science Week	Build a Better Future with STEM - North / South Dublin	Learn it Educational Solutions Ltd.	€8,000
Sarah Miller	SFI Discover Science Week	"Let's Talk Science" festival	The Rediscovery Centre Ltd	€8,000

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Sheila Donegan	SFI Discover Science Week	Southeast Science Festival	Waterford Institute of Technology	€35,000
Sheila Dooley	SFI Discover Science Week	Hi-Tech History: Experience the Digital Age of the Past	Dublinia Heritage Centre	€7,010
Alan Smeaton	SFI Fellowship	SFI Fellowship	Dublin City University	€1,886
Brian O'Neill	SFI Fellowship	SFI Fellowship	Dublin Institute of Technology	€227,709
Greg Hughes	SFI Fellowship	SFI Fellowship	Dublin City University	€284,718
John Boland	SFI Fellowship	SFI Fellowship	Trinity College Dublin	€54,044
John Boland	SFI Fellowship	SFI Fellowship	Trinity College Dublin	€2,002
John Boland	SFI Fellowship	SFI Fellowship	Trinity College Dublin	€12,151
John Boland	SFI Fellowship	SFI Fellowship	Trinity College Dublin	€116,392
Michael Butler	SFI Fellowship	SFI Fellowship	The National Institute for Bioprocessing Research and Training	€271,587
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€1,944
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€69,997
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€209,145
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€215,151
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€3,465
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€65,866
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€188,742
Orla Feely	SFI Fellowship	SFI Fellowship	University College Dublin	€178,347
Conor McCarthy	SFI Research Centres	Confirm Centre for Smart Manufacturing	University of Limerick	€32,171,331
David Hensahll	SFI Research Centres	FutureNeuro	Royal College of Surgeons in Ireland	€10,337,285
Denis Dowling	SFI Research Centres	I-Form Advanced Manufacturing Research Centre	University College Dublin	€15,709,451
Kevin O'Connor	SFI Research Centres	Bioeconomy Research Centre (BEACON)	University College Dublin	€15,021,703
John Walsh	SFI Research Centres Supplement	ICRAG	University College Dublin	€2,416,154
Alma McCarthy	SFI Science Policy Research Programme	Achieving Scientific Excellence and Impact in Ireland: The Role of Talent and Human Capital Management in National Science Foundations	National University of Ireland, Galway	€255,956
Dieter Franz Kogler	SFI Science Policy Research Programme	Science Technology Space (SciTechSpace)	University College Dublin	€643,869
Helena Lenihan	SFI Science Policy Research Programme	Evaluating the impact of science policy on the economy and society: A national evaluation and international benchmarking of science policy in Ireland	University of Limerick	€577,423

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
John McHale	SFI Science Policy Research Programme	The Impact of International Star Scientists on Irish Science	National University of Ireland, Galway	€856,264
Kalpana Shankar	SFI Science Policy Research Programme	A Mixed-Methods Examination of Reviewer Recruitment, Assessment Criteria, and Workflow in the Peer Review Process	University College Dublin	€483,349
Ciaran Morrisson	SFI-HRB-Wellcome Trust Biomedical Research Partnership	Primary cilia and cellular senescence	Health Research Board	€27,728
Daniel Bradley	SFI-HRB-Wellcome Trust Biomedical Research Partnership	Ancient genomics and the Atlantic burden - Dan Bradley	Health Research Board	€409,961
Mani Ramaswami	SFI-HRB-Wellcome Trust Biomedical Research Partnership	Inhibitory representations: their formation, modulation and function in memory circuits	Health Research Board	€584,064
Andy Way	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Improving Customer Experience	Dublin City University	€34,623
Bruce Murphy	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Selio: A novel medical device to improve the safety of lung biopsy procedures by preventing a pneumothorax and thereby eliminating the healthcare costs of treating this common and dangerous complication.	Trinity College Dublin	€35,000
Cathal Gurrin	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Lifelogging for Disruptive Consumer Analytics	Dublin City University	€27,500
Deirdre Murray	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	NeuroMiR – A microRNA platform for the diagnosis and stratification of brain injury in neonatal encephalopathy and neurodevelopmental outcome.	University College Cork	€35,000
Ivan O'Connell	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Development of a handheld sensor for Bovine Viral Diarrhoea for animal diagnostics	Tyndall National Institute	€35,000
Kevin Ryan	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Continuous manufacturing method for the production of pharmaceutical drug nanoparticles dispersed in polymeric micron-sized granules	University of Limerick	€33,200
Mark Keane	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Footprint: the gamification of energy saving.	University College Dublin	€34,930
Martin O'Halloran	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Treating hypertension caused by Primary Aldosteronism (PA) using a novel microwave ablation system.	National University of Ireland, Galway	€35,000
Michael Morris	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Zeroptica: Making Light Work	Trinity College Dublin	€35,000

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Ted Dinan	SFI-NSF I-Corps@SFI Entrepreneurial Training Programme	Development and commercialisation of “psychobiotics” for the treatment of depression and anxiety	University College Cork	€29,350
Anding Zhu	SFI-NSFC Partnership	ADAPMW: High Efficiency Adaptive Millimetre Wave Transceivers for High Speed Wireless Communications with Unmanned Aerial Vehicles	University College Dublin	€1,090,779
Brian Ó Gallachóir	SFI-NSFC Partnership	Multi-model innovations in Integrated Assessment Modelling of Global, Chinese, and Irish energy-economy-environment-climate systems investigating deep decarbonisation pathways from the Paris Agreement to the United Nations sustainable development goals	University College Cork	€985,195
John Donegan	SFI-NSFC Partnership	Chip-scale Optical Frequency Synthesizer	Trinity College Dublin	€1,221,316
Kenneth A Dawson	SFI-NSFC Partnership	Precision Engineering of Nanostructure Surface Architecture for Biological and Biomedical Applications	University College Dublin	€1,242,020
Luiz DaSilva	SFI-NSFC Partnership	Smart Networking in the Era of Artificial Intelligence	Trinity College Dublin	€887,683
Niall English	SFI-NSFC Partnership	Molecular-simulation-led studies of photoelectrochemical water-splitting: the mechanistic role of doping and surface defects in promoting the efficiency of cost-effective light-absorbing metal oxides	University College Dublin	€885,875
Plamen Stamenov	SFI-NSFC Partnership	Analysis Under Strong Magnetic fields of Advanced Spintronic and Functional Magnetic Materials for Autonomous Low-Power Communications	Trinity College Dublin	€1,224,950
Simon Elliott	SFI-NSFC Partnership	Process development and mechanistic investigation of barrier materials for advanced interconnect technology	Tyndall National Institute	€952,002
Margaret McGee	SFI-Pfizer Biotherapeutics Innovation Award	Development of a novel cancer biotherapeutic targeting extracellular CypA with anti-proliferative and anti-metastatic activity	University College Dublin	€515,609
Fergus Shanahan	Spokes Fixed programme	Determinants of Mother-to-Infant Transfer of Microbiota	University College Cork	€2,916,040
Jerry Murphy	Spokes Fixed programme	Sustainable Energy and Fuel Efficiency Spoke	University College Cork	€2,824,492
Linda Doyle	Spokes Fixed programme	ENABLE: Connecting communities to smart urban environments through the Internet of Things	Trinity College Dublin	€10,224,761
Michael Morris	Spokes Fixed programme	PPSAD: Plasma Processes for Selective Area Deposition	Trinity College Dublin	€1,515,390
Fergus Shanahan	Spokes Rolling Programme	BacTrans – Natural DNA Transfer Systems for Bacterial Starter Cultures	University College Cork	€1,082,411
John Walsh	Spokes Rolling Programme	Geohzards and Geotechnical Engineering	University College Dublin	€360,872
Michael Morris	Spokes Rolling Programme	Delivering Innovative Materials for Medical Devices	Trinity College Dublin	€2,571,151
James O'Donnell	Strategic Partnership Programme	Irish Personalized Approach to the Treatment of Haemophilia (Ipath)	Royal College of Surgeons in Ireland	€2,275,041
John Cotter	Strategic Partnership Programme	Valuation AND Risk (VAR) Partnership Programme	University College Dublin	€2,098,903
Timothy McCarthy	Strategic Partnership Programme	Drone Research and Innovation	National University of Ireland, Maynooth	€1,815,761
Alan Davy	TIDA	Auto-scaling Virtual Service Function Chains	Waterford Institute of Technology	€121,679
Alan Hibbitts	TIDA	An implantable device based on enhanced Hyaluronic acid Induced Protection of Post-Operative Stress (HIPPOS) for Patients following Glaucoma Filtration Surgery	Royal College of Surgeons in Ireland	€128,833

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Alison Reynolds	TIDA	DNM4DED: Developing Novel Molecules for Dry Eye Disease	University College Dublin	€128,362
Andriy Temko	TIDA	EarlySigns: Toward Investigational Device for Listening to the Newborn Brain	University College Cork	€120,940
Aoife Morrin	TIDA	Non-invasive portable diagnostic platform for early-stage cutaneous melanoma screening (VolScreen)	Dublin City University	€107,899
Bincy Jose	TIDA	Ultra-sensitive lab-on-a-disc platform for miRNA detection	Trinity College Dublin	€108,667
Breandan Kennedy	TIDA	Developing Drugs that Prevent Loss of Vision	University College Dublin	€130,621
Celine Marmion	TIDA	Breaking the cancer drug resistance paradigm: a novel prodrug strategy for multi-modal chemotherapeutics	Royal College of Surgeons in Ireland	€125,407
Colm O'Dwyer	TIDA	Low Temperature High Mobility Oxide Integration Process for Thin Film Transistor Technologies	University College Cork	€116,856
Cristina Ruedell Reschke	TIDA	MicroRNA-22 as a novel disease-modifying treatment for epilepsy	Royal College of Surgeons in Ireland	€128,357
Daniela Iacopino	TIDA	Hybrid nanoparticle infused laser activated carbon capillary microelectrodes for point-of-use multimodal sensing (ELSER)	Tyndall National Institute	€119,030
David FitzPatrick	TIDA	Minimally-Invasive Cartilage-Sparing Device for the Knee to Limit Progression of Osteoarthritis	University College Dublin	€130,694
Dermot Cox	TIDA	Lead optimisation of FcγRIIa antagonists	Royal College of Surgeons in Ireland	€127,677
Donal O'Shea	TIDA	NIR-Fluorescence Imaging: New Agents with Dual Market Potential as Research Tools and Clinical Markers for Image Guided Surgery	Royal College of Surgeons in Ireland	€130,569
Eoin O'Cearbhaill	TIDA	The Development of Self-Anchoring Microneedle Electrodes (SAMEs) for Wearable Sensing Applications	University College Dublin	€120,273
Eric Moore	TIDA	A smart needle device that will improve the safety of ultrasound-guided peripheral nerve block for medical procedures which facilitate surgical operations or to treat acute or chronic pain.	Tyndall National Institute	€119,393
Farzan Gity	TIDA	SiC/Si 3D integration for the first time by CMOS- and BEOL-compatible direct wafer bonding process	Tyndall National Institute	€125,506
Fionnuala Ní Áinle	TIDA	Interrogating the in vivo antimetastatic action of LMWH tinzaparin and simvastatin in an orthotopic surgical resection mouse model of triple negative breast cancer: towards novel metastasis prevention strategies	University College Dublin	€128,635
Helen Sheridan	TIDA	Validation of the therapeutic potential of two lead anti-inflammatory molecules with a novel carbon scaffold in ex-vivo colonic explant tissue.	Trinity College Dublin	€120,457
Igor Shvets	TIDA	Sensing the composition of a multi-component fluid flowing in a pipe for non-contact real-time analysis	Trinity College Dublin	€130,866
James Rohan	TIDA	Ultrasoft magnetic alloy thin films using low cost electrochemical techniques to fabricate magnetic core microinductor prototype demonstrators for Power-Supply-On-Chip electronics applications.	Tyndall National Institute	€127,797
Jiafu Wang	TIDA	Evaluation of anti-arthritic and anti-nociceptive activities of a novel long-acting SNARE-inactivating biotherapeutic	Dublin City University	€129,966
Lynne O'Shea	TIDA	Development of a non-invasive follicular fluid biomarker assay to accurately determine embryonic developmental competence following human assisted reproduction technologies.	University College Dublin	€130,773

SFI Research Scientist	Programmes	Research Title	Research Body	Total value of award including overheads
Martin O'Halloran	TIDA	Leanbh – A disruptive intrapartum fetal monitor capable of detecting hypoxia for better clinical outcomes	National University of Ireland, Galway	€116,044
Padraic Fallon	TIDA	Proof of concept for a novel immunomodulator for the treatment of fatty liver diseases.	Trinity College Dublin	€125,322
Padraig Cantillon Murphy	TIDA	Image-guided Liver Therapy using Wireless Tracking	University College Cork	€129,130
Paul McLoughlin	TIDA	A novel perfusion solution for use in organ transplant programmes	University College Dublin	€125,762
Prince Anandarajah	TIDA	Laser Integrated with Soa Transmitter for Enterprise Networks (LISTEN)	Dublin City University	€109,923
Robert Forster	TIDA	Food Safe: High Sensitivity Detection of Pathogens in Food	Dublin City University	€125,463
Stephen Connon	TIDA	Extending the therapeutic indication of a novel patent-protected druggable pathway and small-molecule therapeutics for autoimmune disorders	Trinity College Dublin	€131,049
Stephen Keely	TIDA	Unlocking the Therapeutic Potential of Quinoa as Nutraceutical Modulator of the Farnesoid X Receptor	Royal College of Surgeons in Ireland	€126,801
Stephen Pennington	TIDA	Development of Multiplexed Affinity-MRM Assays for Personalised Healthcare Decisions in Inflammatory Arthritis	University College Dublin	€127,611
Susan Kennedy	TIDA	Overcoming treatment resistance to chemoradiation therapy in oesophageal adenocarcinoma using a novel patented small molecule radiosensitiser drug, CC8.	Trinity College Dublin	€118,257
Tia Keyes	TIDA	Next Generation Luminescent Probes for Super-Resolution Imaging.	Dublin City University	€129,597
Tom Moore	TIDA	Use of PSG1 as a therapy for neurological disorders.	University College Cork	€126,993
Vitaly Zubialevich	TIDA	Process for low dislocation density deep-ultraviolet transparent AlN templates on foreign substrates by means of coalescence of nanoscale structures	Tyndall National Institute	€131,197
Werner Blau	TIDA	GSAM - BROADBAND GRAPHENE SATURABLE ABSORBER MIRRORS FOR ULTRAFAST LASER TECHNOLOGY	Trinity College Dublin	€112,467
Arturo Gonzalez	US-Ireland R&D Partnership	MARS-Fly: Mobile Automated Rovers Fly-By (MARS-FLY) for Bridge Network Resiliency	University College Dublin	€437,537
Jochen Prehn	US-Ireland R&D Partnership	Systems Modeling of Tumor Heterogeneity and Therapy Response in Colorectal	Health Research Board	€393,920
Paul Leahy	US-Ireland R&D Partnership	Re-use and Recycling of Decommissioned Composite Material Wind Turbine Blades	University College Cork	€415,414
Ursel Bangert	US-Ireland R&D Partnership	Domain Wall Engineering for Novel Nanoelectronics	University of Limerick	€433,914
Brian Norton	US-Irl R&D Partnership Planning Programme	Integrating Thermoelectric materials and cement batteries into an internal Concrete building heating system (ThermoConc)	Dublin Institute of Technology	€2,126
Martin Leahy	US-Irl R&D Partnership Planning Programme	Development of novel optical coherence (OCT) system for probing 3D structure of biomedical objects at nanoscale	National University of Ireland, Galway	€2,250
Stephen Hegarty	US-Irl R&D Partnership Planning Programme	A Portable Multi-function Optical Sensing System	Cork Institute of Technology	€2,480
Total				**€212,674,327**

Science Foundation Ireland
Wilton Park House
Wilton Place
Dublin 2
Ireland

t: + 353 1 607 3200

e: info@sfi.ie
w: www.sfi.ie
@scienceirel

Science Foundation Ireland sfi For what's next