Science Foundation Ireland

Ireland

YOUR PARTNER IN RESEARCH

Science Foundation Ireland
Delivering...

...Excellent Science & Talent

1,441

Post graduate students supported by Science Foundation Ireland

27%

of PhD departures with industry as a first destination

IRELAND IS **10th** *most innovative* **COUNTRY IN THE WORLD**

2nd *for* **KNOWLEDGE IMPACT**

1st *in the world for knowledge diffusion*

(Global Innovation Index 2017)

...Economic Impact

€184m
spend across relevant Science Foundation Ireland programmes

€133m
leveraged non-exchequer funding

directly and indirectly supports
31,000 jobs
in Ireland

€71m EU funding secured

€45m
secured from Private Enterprise in 2016 – up **18%** from 2015

Industry Collaboration
Science Foundation Ireland awards directly supporting

1603
collaborations with industry
(with some companies having more than one individual collaboration)

929 MNC collaborations

674 SME collaborations

Involving

- **399** MNCs
- **491** SMEs
  individual companies

* All figures based on 2016 data

Science Foundation Ireland

Science Foundation Ireland is the Irish government's largest competitive funder of scientific research in Ireland. The foundation is charged with supporting outstanding research that will underpin economic development and assist international and indigenous industry to grow and flourish in Ireland.

The foundation offers a number of funding mechanisms, which help industry and academia build competitive advantage by enhancing their R&D capabilities; enable them to engage in projects of scale, excellence and relevance; and allow them to explore novel opportunities and priorities – all with significant state funding. These funding programmes suit industry-informed research and industry-academic interactions at a number of levels, ranging from seeding an initial engagement with an academic group to large scale collaborative research endeavours. Partnering with academic researchers presents several opportunities for industry including: opportunity to engage in collaborative, highly innovative, co-funded R&D; reduced time to innovation; access to expertise to address an

immediate challenge or long-term need; access to collaborative European research networks and the identification of future talent.

Science Foundation Ireland is also committed to helping Ireland achieve the most engaged and scientifically informed public. The Foundation recognises the importance of this in supporting the national Science, Technology, Engineering and Maths (STEM) talent pipeline. Science Foundation Ireland's education and outreach mission is, therefore, to catalyse, inspire and guide the best in STEM education and public engagement. We actively encourage industry partners to engage with our programmes through their Corporate Social Responsibility programmes.

Case Study

After several years in academic research, I wished to engage more with industry and real-world problems. So, in 2014, I successfully applied for an SFI Industry Fellowship with Idiro Analytics. As a network scientist, I had been interested in the real-world data of human activity, as they are essential in developing and testing predictive mathematical models. Idiro is a pioneering company in data analytics, with extraordinary expertise in predictive modelling and access to rich datasets, in telecommunications and other sectors. Working here has been a wonderful experience. For the first time, I had the opportunity to work with large databases and learn several relevant programming languages. Crucially, I have been working with cutting-edge techniques, on important live questions, and working alongside some of the best experts in data analytics in Dublin. This experience has been so good that I was delighted to take the opportunity to stay in Idiro as a data scientist. I certainly recommend this fellowship to every researcher interested in working across the boundaries between academia and industry.

DAVIDE CELLAI, SENIOR SCIENTIST,
DATA & ANALYTICS ARCHITECT AT IDIRO ANALYTIC

Academic research has always been important to Idiro – that's how we became world leaders in the application of Social Network Analysis (SNA) techniques to telecommunications business problems. That's why we were happy to support Davide's Industry Fellowship. This Fellowship has given us the opportunity to investigate questions and speculative, high-risk methodologies that we did not have the time to address within our current staff. Davide has made valuable contributions to the development of new analytics models (now part of one of our products) and improvements to existing ones. We were so happy with this project that, at the end of the Fellowship, we hired Davide in our analytics team, where he is investigating and developing new innovative solutions for our customers.

BRIAN SULLIVAN,
CHIEF ANALYTICS OFFICER, IDIRO ANALYTICS

Ireland
11th
in global scientific ranking

⭐ **2nd** for Nanotechnology

⭐ **2nd** for Animal & Dairy

⭐ **2nd** for Immunology

⭐ **4th** for Agricultural Sciences

⭐ **4th** for Mathematics

⭐ **5th** for Materials Science

⭐ **6th** for Chemistry

Science Foundation Ireland
Programmes for Industry

Science Foundation Ireland Research Centres

WHAT IS IT? SFI Research Centres help link scientists and engineers in partnerships across academia and industry. These partnerships address crucial research questions, foster the development of new and existing companies to create innovative products leading to job creation, attract industry that could make an important contribution to Ireland and its economy, and expand educational and career opportunities in Ireland in science and engineering. Projects can be formed with a single research centre or across a number of relevant centres.

KEY FOCUS OF RESEARCH World-leading, large scale SFI Research Centres focus on thematic areas of research that are considered to be of major economic impact for Ireland. These areas include pharmaceuticals, software, digital content, big data, telecommunications, photonics, medical devices, nano-technology, marine and renewable energy, functional foods, perinatal research, applied geosciences, Agri-Food, Advanced and Smart Manufacturing, Neurological Diseases, and the Bioeconomy.

WHO IS IT FOR? SFI Research Centres can form collaborations with both Irish and international companies (SMEs and MNCs). There is no requirement for the company to have an operating base in Ireland. Companies can engage directly in applications for new Research Centres or can join an existing Research Centre by engaging directly with the Centre Director or through the Spokes Programme (see below).

FUNDING SFI Research Centres are co-funded by Science Foundation Ireland and industry with Science Foundation Ireland contributing a maximum of 70% of the overall budget of the Centre. The cost share required for each collaborative research project with a company will depend on the nature of the project and should be agreed with the Centre director. Funding from Science Foundation Ireland may be from €1m to €5m per annum in direct costs.

DURATION Up to six years.

WHAT HAPPENS AT THE END OF A CENTRE COLLABORATION? This is flexible. Centres may be expanded or new Centres proposed; both subject to satisfactory international peer review of the new proposal.

APPLICATION PROCESS A two-stage application and review process, normally taking 12 months, is required for evaluation of applications for new SFI Research Centres. Direct company engagement with a current SFI Research Centre may not require an application for funding unless engaging through the Spokes Programme.

Science Foundation Ireland Spokes Programme

WHAT IS IT? A flexible mechanism for industry to engage with SFI Research Centres.

KEY FOCUS OF RESEARCH This Programme can fund areas of STEM that are aligned with the research areas of one or more SFI Research Centres. The current Research Centres are focused on: pharmaceutical manufacture, software, digital content, big data, telecommunications, photonics, medical devices, nanotechnology, marine and renewable energy, functional foods, perinatal research, applied geosciences, Agri-Food, Advanced and Smart Manufacturing, Neurological Diseases, and the Bioeconomy.

WHO IS IT FOR? Any research-active company is eligible to apply, regardless of their size, scale or location.

FUNDING Funding is always open, applications are reviewed internationally against a high standard (but not in competition with other applications) and the review process is fast tracked. The proposed research programme is funded 50/50 by the company and Science Foundation Ireland.

DURATION The minimum project duration is 1 year running up to 5 years maximum.

WHAT HAPPENS AT THE END OF THE SPOKES AWARD? This is flexible. Projects may be expanded or new projects proposed; both subject to satisfactory international peer review of the new proposal.

APPLICATION PROCESS The Spokes Programme is always open and applications can be submitted at any time throughout the year. Proposals are first evaluated as a simple expression of interest, following which a full proposal is submitted which undergoes international peer review.

Science Foundation Ireland Industry Fellowships

WHAT IS IT? The Industry Fellowship award supports a post-doctoral researcher or academic member of staff in an Irish Research Body to go from academia to industry, or an industrial researcher to spend time in academia, on either a full-time or part-time basis for up to a year (24 months if part-time) to work on an industrially relevant research project.

KEY FOCUS OF RESEARCH Supports collaborative research activities that span most areas of STEM, and is open to all industry sectors.

WHO IS IT FOR? It is open to Irish or internationally based research-performing companies and academic institutions in Ireland. There is no requirement for the company to have an existing Irish base and if the researcher is moving to the company they can go anywhere in the world.

FUNDING The maximum Science Foundation Ireland contribution to an Industry Fellowship award is €100,000 (which typically funds the salary and other costs of the researcher working in the company). Industry is required to support direct research costs (i.e., materials and consumables) which are not funded by SFI.

DURATION Full-time: between one and 12 months; part-time: between two and 24 months

WHAT HAPPENS AT THE END OF THE FELLOWSHIP? There are no restrictions. In the case of academic researchers moving to industry, the company can employ the person, the individual can move to another company or academia, the individual can remain in any overseas country (subject to legal regulations). There is no limit to the number of projects a company can apply for and new applications can be made at any time, in line with the programme calls.

APPLICATION PROCESS There are two fixed call deadlines annually, one mid-year and one at the end of the year. Submitted proposals are subject to international peer review.

Science Foundation Ireland Partnerships

WHAT IS IT? A flexible mechanism for industry to engage with world-class academic researchers, and have access to infrastructure and generate intellectual property.

KEY FOCUS OF RESEARCH Supports collaborative research activities that span most areas of STEM, and is open to all industry sectors. It is particularly suitable for, but not limited to, pioneering research. It is aimed at supporting stand-alone initiatives of scale with strong potential for economic and societal impact for Ireland.

WHO IS IT FOR? Any company is eligible to apply, regardless of their size, scale or location.

FUNDING Funding is always open, applications are reviewed internationally against a high standard (but not in competition with other applications) and the review process is fast tracked. The proposed research programme is funded 50/50 by the company and Science Foundation Ireland.

DURATION There is no minimum or maximum project duration. It is up to the applicants to propose the most suitable duration for their project.

WHAT HAPPENS AT THE END OF A PARTNERSHIP? This is flexible. Partnerships may be expanded or new partnerships proposed; both subject to satisfactory international peer review of the new proposal.

APPLICATION PROCESS This Programme is always open and applications can be submitted at any time. Proposals are first evaluated as a simple expression of interest, following which a full proposal is submitted which undergoes international peer review.

Science Foundation Ireland
Research Centres

The Science Foundation Ireland Research Centres form a key pillar in our ambitious Agenda 2020 plan

Irish Photonic Integration Research Centre (I-PIC)
www.ipic.ie

> Photonic Device and System Integration
> Highly compact instrumentation for point-of-care diagnostics and wearable devices
> Advanced telecommunications networks
> Photonic Integration for Cell and Tissue Analysis

Centre for Data Analytics (Insight)
www.insight-centre.org

> Machine Learning and Statistics
> Optimisation and Decision Analytics
> Linked Data
> Semantic Web
> Personal Sensing and Connected Health
> Recommender Systems

Institute of Fetal and Neonatal Translational Research (INFANT)
www.infantcentre.ie

> Perinatal research
> Novel screening and diagnostic tests
> Novel methods of monitoring pregnancy and newborns
> Connected Health
> Maternal and Infant Nutrition

Synthesis & Solid State Pharmaceutical Centre (SSPC)
www.sspc.ie
> New frontiers in pharmaceutical synthesis
> Crystal growth and design
> Drug product formulation & manufacture
> Advanced biopharmaceutical technologies
> Development of advanced modelling methodologies to maximise manufacturing competitiveness

ADAPT – Centre for Digital Content Technology
www.adaptcentre.ie

> Analysis of media, content and customer interactions to enhance communication, customer engagement and satisfaction
> Machine translation
> Personalised Content
> Localisation
> Financial Services/eCommerce

Advanced Materials and BioEngineering Research Centre (AMBER)
www.ambercentre.ie

> 2D materials and composites
> Thermoelectric and energy harvesting devices
> Mechanically, electrically and optically enhanced polymers
> Polymer nanocomposites and membranes
> Semiconductor and memory devices
> Biomaterials and regenerative tissue engineering
> Medical devices
> Food, pharmaceutical packaging and sensing applications
> Drug encapsulation and delivery systems

APC Microbiome Institute
www.ucc.ie/research/apc

> Gut microbiota and health status
> Health-promoting bacteria and food constituents for incorporation into 'functional foods' for improved health
> Novel bioactives to treat intestinal and infectious diseases
> Links between diet, microbes and mental health
> Phage as regulators of the microbiome in health and disease

Centre for Future Networks & Communications (CONNECT)
www.connectcentre.ie

> Future Networks and Communications
> The Internet of Things
> National Testbeds
> Service Aware Networks
> Network Aware Services
> Wireless and optical technologies/architectures
> 5G
> Networking services and security

iCRAG - Irish Centre for Research in Applied Geosciences
www.icrag-centre.org

> Raw Materials- mineral/aggregate geoscience
> Marine – marine geoscience
> Groundwater – hydrogeology/hydrology
> Energy Security – petroleum geoscience
> Geohazards – protection from Earth's hazards
> Geochemistry, geophysics, 3D geological modelling, public perception and understanding of geosciences

CÚRAM - Centre for Research in Medical Devices
www.curamdevices.ie

> 'Smart' medical devices and implants for chronic ailments such as cardiovascular, musculoskeletal, neural, soft tissue, renal, urological and respiratory diseases
> Biomaterials and Drug Delivery
> Tissue Engineering and Regenerative Medicine

LERO – The Irish Software Research Centre
www.lero.ie

> Software for manufacturing, medical devices, financial services, cloud computing, analytics, and smart cities
> Software for large-scale, pervasive, physically-integrated, highly interconnected, evolving, and continuously-available systems

Marine Renewable Energy Ireland (MaREI)
www.marei.ie

> Marine Renewable Energy technologies
> Observation and Operations
> Coastal and marine systems
> Bioenergy
> Energy Policy and Modelling
> Energy Management

Confirm Smart Manufacturing

CONFIRM Research Centre for Smart Manufacturing
www.confirm.ie

> Smart manufacturing
> ICT-enabled production
> Virtual industrialisation
> Right-first-time decisions
> Optimised processes /products

> Sensor-enabled tools
> Adaptive data-analytics for manufacturing
> Test-Bed & Prototype lines

future neuro

FutureNeuro
www.sfi.ie/sfi-research-centres/ futureneuro/

> Connected Health
> Diagnostics/Biomarkers
> Electronic Patient Records
> Epigenetics
> Human Genetics
> Neurology

> Neuroscience and Behaviour
> Pharmacogenomics
> Precision Medicine
> Sensors and Monitoring
> Therapeutics

BEACON

BEACON Bioeconomy Research Centre
www.bioeconomybeacon.ie

> Bioeconomy
> Agri-Food
> Marine
> Advanced Materials
> Renewable biological resources
> Biotechnology/Biologics
> Resilient and Resource-Efficient Value Chains
> Rural Renaissance

I-Form
Advanced Manufacturing Research Centre

I-Form Advanced Manufacturing Research Centre
www.deantus.ie

> Materials Processing
> Additive Manufacturing
> Process-Structure-Property Modelling
> In-process Monitoring and Data Analytics

> Predictive Process Feedback
> Operator-Machine Interactions

VistaMilk

VistaMilk SFI Research Centre for Digitalising Dairy Production and Processing
www.vistamilk.ie

> Agri-Food technology
> Agri-Tech
> Improved processability
> Pasture-based dairy production

Education & Public Engagement

Initiatives to support Corporate Social Responsibility programmes

Science Foundation Ireland has an *active education and public engagement programme* with initiatives across the primary and second level school system and for general public engagement.

Platforms include:

> **SFI Research Centre** outreach and education programmes

> **SFI Discover:** An annual competitive funding call that supports projects which engage or educate the public and young people in STEM

> **Smart Futures:** A government-industry partnership providing information and role models in STEM to students, teachers, guidance counsellors and parents in Ireland to help support further adoption of STEM subjects by students and ultimately fill the pipeline of STEM graduates for rewarding careers in industry

> **Science Week:** Ireland's biggest annual promotion of science to the general public, reach of over 318,000 people across approx. 1,200 events

> Smart Futures offers IBM and other industry partners the opportunity to coordinate and strengthen our STEM careers messaging under the Smart Futures umbrella, providing schools with high quality resources, access to role models and importantly, a process for evaluating outreach activity in this space.
>
> **Deirdre Kennedy**
> *(Corporate Citizenship and Corporate Affairs, IBM Ireland)*

Get in touch...

If you would like to find out more about the opportunities available to you through Science Foundation Ireland, please contact:

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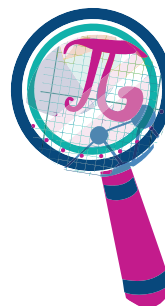
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Finding a Research Partner

To find a Science Foundation Ireland researcher with expertise of relevance to your needs please search our Researcher Database of over 2,000 researchers by name, award type, year, institution, industry sector and/or scientific category at *www.sfi.ie*.