Science Foundation Ireland
sfi
For what's next

# Science Foundation Ireland

# Ireland

YOUR PARTNER IN RESEARCH

# Science Foundation Ireland
# Delivering...

## ...Excellent Science & Talent

**1,610**
Postgraduate students supported by Science Foundation Ireland

**33%**
of PhD departures with industry as a first destination


**5th** for **KNOWLEDGE IMPACT**
(from SFI Annual Report 2018)

**1st** *in the world for knowledge diffusion*
(Global Innovation Index 2018)

## ...Economic Impact

**€188m**
spend across Science Foundation Ireland programmes

**€230m**
leveraged non-exchequer funding

**€98m** EU funding secured

directly and indirectly supports
**39,823 jobs**
**in Ireland**

**€46m**
secured from Private Enterprise in 2018 – up by **43%**

**Industry Collaboration**
**Science Foundation Ireland awards directly supporting**

**1715**
collaborations with industry
*(with some companies having more than one individual collaboration)*

**1003** MNC collaborations
**712** SME collaborations

Involving
- **548** MNCs
- **527** SMEs

*individual companies*

*** All figures based on 2018 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**

**12th**

in global scientific ranking

- **1st** for Immunology
- **2nd** for Agricultural Sciences
- **3rd** for Nanotechnology
- **5th** for Materials Sciences
- **7th** for Microbiology
- **8th** for Neuroscience and Behaviour
- **8th** for Molecular Biology and Genetics

# 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 gut microbiome, pharmaceuticals, software, digital media technology, data analytics, future networks and communications, photonics, medical devices, energy, climate and marine research, applied geosciences, agri-food, advanced and smart manufacturing, neurological diseases, bioeconomy, and advanced materials and bioengineering.

**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. 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.

**AWARD DURATION** Up to six years.

**WHAT HAPPENS AT THE END OF A RESEARCH CENTRE AWARD?** An existing Research Centre can apply for second term of funding for the Centre. This Centre will be 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 an existing 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: gut microbiome, pharmaceuticals, software, digital media technology, data analytics, future networks and communications, photonics, medical devices, energy, climate and marine research, applied geosciences, agri-food, advanced and smart manufacturing, neurological diseases, bioeconomy, and advanced materials and bioengineering.

**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, and if successful, the applicants are invited to submit a full proposal which undergoes international peer review.

## Science Foundation Ireland Industry Fellowships

**WHAT IS IT?** The Industry Fellowship award supports a postdoctoral 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.

**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 and proposals are subject to international peer review.

## Science Foundation Ireland Partnerships

**WHAT IS IT?** A flexible mechanism for industry, funding agencies, charities, philanthropic organisations or higher education institutes 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 provide an opportunity to build strategic collaborations that may develop into opportunities for future funding programmes.

**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

## IPIC SFI Research Centre
*www.ipic.ie*

- Monolithic and Heterogeneous Integration
- Packaging and Hybrid Integration
- Optical Communications
- BioMedical

## Insight SFI Research Centre for Data Analytics
*www.insight-centre.org*

- Personal Sensing
- Machine Learning and Statistics
- Optimisation and Decision Analysis
- Media Analytics
- Natural Language Processing
- Linked Data/Semantic Web
- Recommender Systems

## SSPC, SFI Research Centre for Pharmaceuticals
*www.sspc.ie*

- Molecules (new methodologies for asymmetric synthesis, automated and in flow generation of targeted drug hybrids, toxicity and biological efficacy testing)
- Materials (single- and multi-component crystal materials to improve orally delivered drug products)
- Medicines (development, production and safety and effectiveness)
- Manufacturing
- Modelling to design and predict behaviour

## ADAPT, SFI Research Centre for Digital Media Technology
*www.adaptcentre.ie*

- Image and video processing
- Virtual and augmented reality
- Social media content analysis

## AMBER, SFI Research Centre for Advanced Materials and BioEngineering Research
*www.ambercentre.ie*

- ICT Technologies and devices
- Sustainable Materials and Technologies
- Medical devices
- Sensors and diagnostics
- Industrial materials and manufacture

## APC Microbiome Ireland SFI Research Centre
*www.apc.ucc.ie*

- Discovery of molecules for therapeutics and functional foods
- Designing functional ingredients/foods across the lifespan
- Links between diet, microbes and mental health
- Signalling, host immune-inflammatory responses
- Phage as regulators of the microbiome in health and disease

## CONNECT, SFI Research Centre for Future Networks & Communications
*www.connectcentre.ie*

- Dependable networks
- Sustainable Internet of Things
- Link performance
- Data-drive optimisation and management
- Customised networks
- The New Operators

## iCRAG SFI Research Centre 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 SFI Research Centre for Medical Devices
*www.curamdevices.ie*

- Biomaterials
- Drug Delivery
- Tissue Engineering
- Regenerative Medicine
- Device Design
- Glycoscience

## Lero, the SFI Research Centre for Software
*www.lero.ie*

- Methods and Standards for High-Integrity Systems
- Autonomous and Adaptive Systems
- Software Performance
- Security and Privacy

## MaREI, SFI Research Centre for Energy, Climate and Marine
*www.marei.ie*

- Marine Renewable Energy technologies
- Observation and Operations
- Coastal and marine systems
- Bioenergy
- Energy Policy and Modelling
- Energy Management
- Materials and Structures

**CONFIRM, SFI Research Centre for Smart Manufacturing**
*www.confirm.ie*

- Data Analytics: AI, Predictive Modelling,
- Decision Analytics
- Enterprise Modelling & Simulation
- Networking Systems & Internet of Things
- Product & Process Modelling
- Robotics & Control
- Sensors
- Software Systems
- Material Processing

**FutureNeuro, the SFI Research Centre for Chronic and Rare Neurological Diseases**
*www.futureneurocentre.ie*

- Connected Health
- Diagnostics/Biomarkers
- Electronic Patient Records
- Epigenetics
- Human Genetics
- Neurology
- Neuroscience and Behaviour
- Pharmacogenomics
- Precision Medicine
- Sensors and Monitoring
- Therapeutics

**biOrbic, SFI Bioeconomy Research Centre**
*www.biorbic.com*

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

**I-Form, the SFI Research Centre for Advanced Manufacturing**
*www.I-form.ie*

- Process digitalisation, for optimisation and control
- Process simulation, for shorter development times
- Data analytics, enabling real-time process feedback
- Augmented reality, for enhanced operator decision-making
- Cognitive computing/artificial intelligence/machine learning
- Additive manufacturing (3D printing)
- Surface engineering
- Precision engineering
- Cyber physical systems
- Bonding/Joining
- Casting/Moulding

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

- Agri-Food
- Human health, Animal welfare
- Environmental sustainability
- High granularity, real-time sensing technologies in the Agri-Food domain
- Integrated communication technologies
- Advanced multi-level analytics
- Value-creating decision support tools

# 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 555,942 people across approx. 1,300 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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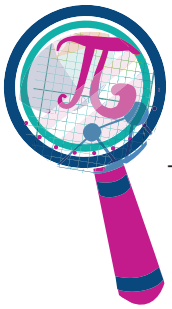

## Finding a Research Partner

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***.