



#### IRISH RESEARCH COUNCIL

The Irish Research Council is an associated agency of the Department of Education and Skills and operates under the aegis of the Higher Education Authority. Our mission is to enable and sustain a vibrant research community in Ireland. To address the broad skills and research needs within society, we support excellent researchers in all disciplines from arts to zoology.



#### **Cover photo credits:**

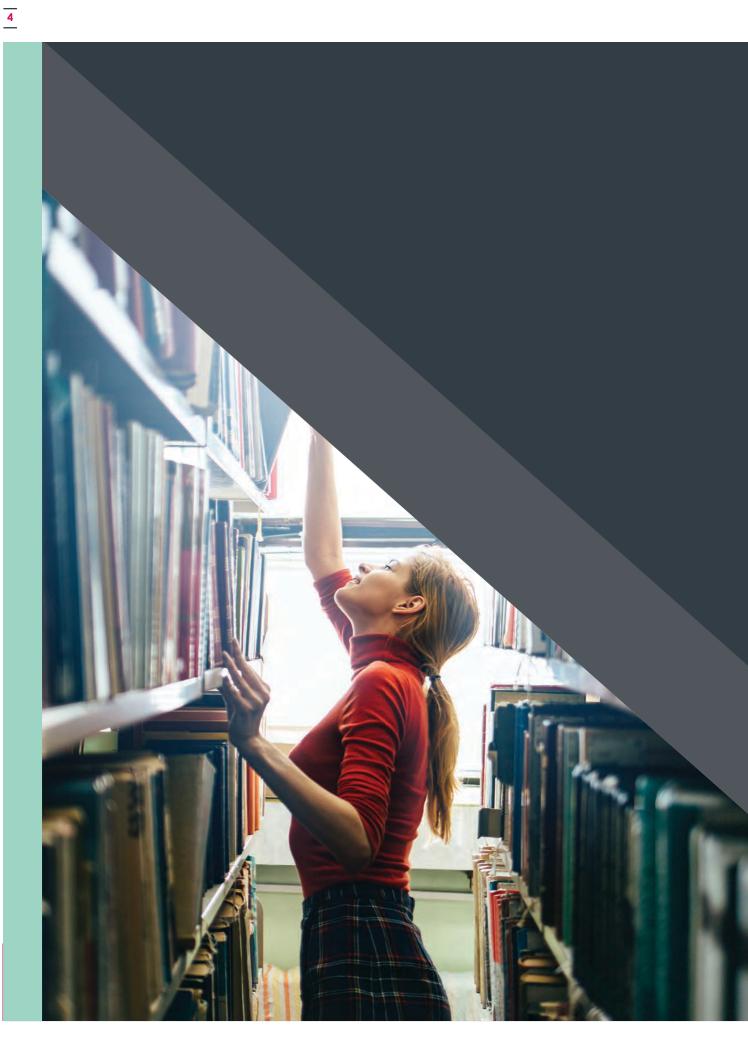
**Above:** Katherine Burns, Government of Ireland Postgraduate Scholarship awardee at UCD with her project "Brilliant Bees: The importance of managed and wild pollinators to Irish natural capital" (see page 29).

**Below:** Post-its representing the yes vote to repeal the eight amendment in the Irish constitution. A close tie to research by Creative Connections awardee Rebecca Anne Barr and her project "Fertility, Feminism and Reproduction: Towards a Progressive Politics".

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The accounts for the Irish Research Council have been published as part of the HEA Annual Report 2018.



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OVERVIEW

### HOW WE FUND

#### PRINCIPAL **INVESTIGATOR-LED** LAUREATE AWARDS PROGRAMME **POSTDOCTORAL** (FRONTIER RESEARCH) COALESCE -COLLABORATIVE ALLIANCES FOR **SOCIETAL CHALLENGES POSTGRADUATE** MSCA COFUND MOBILTY **APPLICATION SUPPORT FELLOWSHIPS** FOR H2020 GOVERMENT OF IRELAND **HUMANITIES IN THE EUROPEAN RESEARCH AREA** ENTERPRISE PARTNERSHIP SCHEME **EMPLOYMENT BASED CHRIST-ERA PROGRAMME** NORFACE LINDAU NOBEL LAUREATE MEETING AWARDS **EUROPEAN SPACE AGENCY FELLOWSHIPS** ULYSSES **NEW FOUNDATIONS**

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## MINISTER'S FOREWORD



Mr John Halligan TD

Minister of State for Training, Skills, Innovation, Research and Development

In 2018, the Council continued to deliver on its important mission to support excellent research across all disciplines. By supporting research excellence, the Council enriches the pool of knowledge, talent and expertise in Ireland, which is of immeasurable value in addressing our current and future needs. Council-funded researchers enable us, as a country, to tackle key societal, cultural and economic challenges.

In this vein, a notable highlight of 2018 was the launch of COALESCE – the Collaborative Alliances for Societal Challenges Research Fund. This is Ireland's first challenge-based call, developed in response to challenges set out in the Sustainable Development Goals of the United Nations and in Ireland's National Planning Framework. Challenge-based research supported by the Council will supply robust evidence that policy- and decision-makers can utilise to achieve national and international goals.

Such research is best performed through engaged collaboration and knowledge exchange with government departments and agencies, enterprise and civic society. Accordingly, the Council has proactively developed COALESCE in partnership with government departments and agencies. For the 2018 call, partners included the Central Statistics Office, the Irish Human Rights and Equality Commission, HSE Sexual Health and Crisis Pregnancy Programme, the Department of Children and Youth Affairs, the National Parks and Wildlife Service, Geological Survey Ireland, and the Department of Foreign Affairs and Trade.

Another highlight of 2018 was the Council's increasing focus on international-engagement activities. I launched the Council's new international engagement strategy, which aims to support the flow of knowledge and talent that is so important to a healthy research ecosystem. Over the next three years, the Council will put in place formal partnerships with a number of UK, European and other international research funders to encourage and enable research collaboration. This is in addition to the work the Council already carries out to support engagement by Ireland-based researchers in Horizon 2020, the European Union's research framework programme.

It is clear that the international research and innovation landscape is changing, not least arising from Brexit. To address this, the Council co-hosted the inaugural UK-Ireland Research Funders' Forum in Dublin in November. A Statement of Intent was signed with UK Research and Innovation (UKRI) at the Funders' Forum to formalise dialogue into regular meetings where discussions and collaboration will be facilitated.

Looking to the future, the Government continues its commitment to funding ground-breaking research across all disciplines by means of the Council's Laureate Awards. In 2018, the Council awarded 36 Starting and Consolidator Laureate Awards worth €18m and opened a call for Advanced Laureate Awards valued at €12m. The Laureate Awards are vital to the research ecosystem in Ireland, fulfilling Ireland's need to fund exceptional researchers to conduct frontier research at principal investigator level.

I congratulate the Council, its partners and its funded researchers on their significant achievements in 2018 and look forward to welcoming more such achievements in 2019 and beyond.

## 20 PARTNERSHIPS WITH GOVERNMENT DEPARTMENTS AND AGENCIES

#### NATIONAL PARKS AND WILDLIFE SERVICES



An Roinn Cultúir, Oidhreachta agus Gaeltachta Department of Culture, Heritage and the Gaeltacht

















An Roinn Gnóthaí Fostaíochta agus Coimirce Sóisialaí Department of Employment Affairs and Social Protection

















An Roinn Leanaí agus Gnóthaí Óige Department of Children and Youth Affairs





Roinn Cumarsáide, Gníomhaithe ar son na hAeráide & Comhshaoil Department of Communications, Climate Action & Environment OVERVIEW 9

#### INTRODUCTION

#### **Peter Brown**Director of the Irish Research Council

#### **Professor Jane Ohlmeyer**Chair of the Irish Research Council





The Council continued to support excellent research across all disciplines and career levels in 2018. We are proud to have funded 1,698 researchers across a portfolio of awards worth in excess of €154m.

Through our programmes and activities, we set out to fund the brightest minds to further their research ideas, to establish and to develop their careers, and to cultivate their success on the international stage. We do this in recognition that Ireland's greatest asset is its people, their ideas and their talent. In this annual report, we provide selected case studies of their ground-breaking work; these are just a few examples of the brilliant array of researchers who could have featured.

In 2018, we directly funded a total of 1,193 postgraduate scholars and 346 postdoctoral fellows. Our approach recognises that investing in exceptional early career researchers is vital to ensuring a strong pipeline of research talent for Ireland's future benefit and development.

We have a long-standing tradition of funding excellent early career researchers, which continues to form the cornerstone of our approach. As well as providing many researchers with their first award – the initial step on the ladder of their research careers – we are also proud to support researchers as they advance their research ideas.

Several new calls for principal investigators opened in 2018. For example,

- > The Advanced Laureate Awards (valued at €12m): This new call funds outstanding senior researchers, providing an additional strand of the funding programme that began in 2017 with the Starter and Consolidator Laureate Awards. The investment was designed to support 12 researchers at an advanced stage in their careers to conduct ground-breaking, world-class research across a wide range of disciplines.
- > COALESCE (valued at €4.8m): This newly launched call partnered with seven government departments and agencies in 2018, benefitting not least from a significant investment from the Department of Foreign Affairs and Trade. As COALESCE evolves to add new partners in 2019 and beyond, it is envisaged that we will become the research partner of choice for policy- and decision-makers.
- > GENDER-NET Plus (with total funding of €1.7m): This call builds on our track record in the areas of gender equality, challenge-based research and international engagement. In 2018, the GENDER-NET Plus consortium opened a call that was specifically designed to welcome proposals for research that integrates gender in addressing urgent societal challenges. This resulted in 13 projects being approved for funding, 7 of which have Irish partners.

In the Council, we consider it our priority to showcase to the wider public the excellent research conducted by our awardees. Through our ongoing #LoveIrishResearch campaign, we endeavour to raise public awareness of the important research that is being carried out in Irish higher education institutions.

This report provides a snapshot of our activities in 2018. We appreciate your interest in our work and invite you to email us or visit our website if you require further information.

- m research.ie
- info@research.ie
- @IrishResearch, #LoveIrishResearch

#### **OVERVIEW OF ACTIVE AWARDS IN 2018**

directly funded researchers





€154m value of award portfolio in 2018

postgraduate scholars



postdoctoral fellows

research assistants



principal investigator-led projects



**Awards** 

Research Projects

**ERA-NET/** other awards

## knowledge exchange and networking awards



16
Ulysses

New Foundations

**12** 

European Space Agency Traineeships Lindau Nobel Laureate Meeting Awards

3



**20** 

partnerships with government departments and agencies



€34m
exchequer budget in 2018





## OVERVIEW OF NEW AWARDS IN 2018

208 / €15.1 m GOI Postgraduate Scholarship Programme











**97** Male 109 Female **2** Other **186** European **22** Rest of world

**104** STEM

**104** AHSS

**16** Institutions

**79** /  $\in$  7.1 m GOI Postdoctoral Fellowship Programme









**37** Male **42** Female

**51** European

**28**Rest of world

**39** STEM

**40** AHSS

**10** Institutions

 $31 / \overline{\in} 2.5 \text{M}$  Employment-Based Postgraduate Programme









17 Male 14 Female **29** European

Rest of world

**19** STEM

**12** AHSS

11 Institutions

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#### 22 / €4.6M CAROLINE MSCA COFUND Programme\*









15 Male

**7** Female **6** European 16 Rest of world

6 STEM

16 AHSS

8 Institutions

### $36 / \in 18$ Starting & Consolidator Laureate Awards









	22
	Male

14

Female

**34** European

Rest of world

**24** STEM

**12** AHSS

**7** Institutions

GOI: Government of Ireland

AHSS: Arts, humanities and social sciences

STEM: Science, technology, engineering and mathematics

MSCA: Marie Skłodowska-Curie Actions

<sup>\*</sup> This project received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 713279.

## A YEAR IN THE LIFE OF THE IRISH RESEARCH COUNCIL

New infographic highlights achievements of funded researchers in 2017.





In 2018 we sponsored a special award at the BT Young Scientist and Technology Exhibition in the RDS, Dublin. The winning project by Dylan Bagnall and Richard Beattie from The King's Hospital

School was entitled "Identifying bats from the roost using an inexpensive raspberry pi bat detector and PCR".



We announced details of our Employment-Based Postgraduate Programme funding call that facilitates partnerships between researchers, employers and higher education institutions in Ireland.

#### **January**

#### July

#### **February**

#### **August**



We announced an initiative enabling some of Ireland's most promising researchers to shadow an Oireachtas member. The first to avail were NUI Galway doctoral scholar Morag Taite and Hildegarde Naughton TD.

#### SUSTAINABLE GALS



We announced an investment of €4.4m to support 21 research projects progressing the UN's sustainable development goals under CAROLINE, which is co-funded by the European Union.



We congratulated alumna Dr Junsi Wang on winning the 2017 Royal Irish Academy's Young Chemist Prize for her doctoral research. Dr Wang was funded through our Government of Ireland Postgraduate Scholarship Programme for her studies at Trinity College Dublin under the supervision of Professor Sylvia Draper.

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We celebrated International Women's Day with a specially commissioned infographic highlighting women's suffrage and social change. The infographic marked the 100th anniversary of women winning the right to vote.

Richard Bruton TD, Minister for Education and Skills, and John Halligan TD, Minister of State for Training, Skills, Innovation, Research and Development, announced a €29.6m investment by the Irish Research Council in "frontier research" projects.



We announced a new podcast series called Cool Science & Curious Minds to showcase the best of Irish research.



We welcomed the publication of *The Cambridge History of Ireland*, a four-volume series documenting the story of Ireland from 600 AD to the present day. In addition to featuring almost 40 Irish Research



Council alumni, Volume 2 of the series was edited by Professor Jane Ohlmeyer, Chair of the Irish Research Council.

#### March

#### September

We announced our programme for Culture Night 2018, featuring traditional music, experimental poetry readings and interactive demonstrations.



October

**April** 

Additional annual funding of €7m was secured for our Laureate Awards Programme.



A €22m investment in early-career researchers under our Government of Ireland programmes was announced by Minister Halligan. Senator Maria Byrne and Dr Maura Adshead, Associate Professor at the Department of Politics and Public Administration, University of Limerick, were paired as part of the our Oireachtas shadowing scheme.



#### **RTÉ** Brainstorm

We became the first research funding agency to be a strategic partner of RTÉ's Brainstorm initiative. Brainstorm seeks to enable the academic and research community to contribute to public debate and put forward new perspectives on a broad range of issues



Three researchers were selected to represent Ireland at the 68<sup>th</sup> Lindau Nobel Laureate Meeting, which was dedicated to physiology and medicine.



Minister Halligan launched the Irish Research Council's International Engagement Strategy.

With the Embassy of France in Ireland, we announced details of new strategic partners for the Ulysses funding scheme, which is designed to support collaborations between Ireland- and France-based researchers across all disciplines.



We announced a pilot call for the COALESCE Research Fund for research that addresses national and global societal challenges.

May

November

June

**December** 



We welcomed the launch of the Gender Equality Taskforce report alongside funding agencies Science Foundation Ireland and the Health Research Board.

We partnered with Science Foundation Ireland to co-host the inaugural UK-Ireland Research Funders' Forum. The annual forum will explore ways to deepen alliances between the two nations.



We celebrated the tenth recipient of the Andrew Grene Postgraduate Scholarship in Conflict Resolution. The award was named in honour of Irish United Nations staff member, Andrew Grene, following his death in the Haiti earthquake of 2010.

We welcomed the announcement that six Irish research projects were granted a total of €12m by the European Research Council.



For the second year, we marked Science Week by lighting up Barnardo's Square with projections onto Dublin City Hall. These featured a selection of topical questions that our funded researchers are seeking to answer.



Our second annual Researcher of the Year awards were held at the Royal Irish Academy. The awards recognise the very best of our current awardees or alumni working in academia, industry, civic society, or the public

sector. The 2018 awardees were Professor Anna Davies of Trinity College Dublin (Researcher of the Year); Dr Karen English of Maynooth University (Early-Career Researcher of the Year); and Dr Brian Egan, Senior Engineer at Wood plc (Alumnus of the Year).

We announced the winners of a national competition to train at the European Space Agency. Irish scientists Amy Joyce and Cillian Murphy will gain practical experience in high-tech space activities.





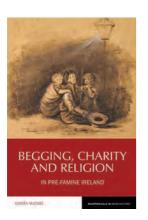
Senator Grace O'Sullivan hosted Waterford IT researcher Dr Ray Griffin as part of our Oireachtas shadowing scheme (pictured). Likewise, TD Eoin Ó Broin hosted Maynoothbased researcher Grace Halpin in December.

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#### SELECTION OF 2018 PUBLICATIONS AND WEBSITES

Our awardees are continuously publishing the outputs of their research, contributing to the development of Ireland's international standing in research and the knowledge base of their disciplines as well as enhancing their track record. Below is a small snapshot of some of the articles and outputs that our current and former awardees have delivered in 2018.

#### **Publications**



BEGGING, CHARITY AND RELIGION IN PRE-FAMINE IRELAND

Ciarán McCabe

Liverpool University Press, 2018

**Ciarán McCabe** was awarded a Government of Ireland Postgraduate Scholarship in 2012 and a Postdoctoral Fellowship on the Enterprise Partnership Scheme in 2017, working with Dublin City Council – Dublin Tenement Museum.

'ASSOCIATION OF EFFICACY OF RESISTANCE EXERCISE TRAINING WITH DEPRESSIVE SYMPTOMS: META-ANALYSIS AND META-REGRESSION ANALYSIS OF RANDOMIZED CLINICAL TRIALS'

**JAMA Psychiatry** 

Brett R. Gordon, Cillian P. McDowell, Mats Hallgren, Jacob D. Meyer, Mark Lyons and Matthew P. Herring *JAMA Psychiatry*, 75.6, June 2018, pp. 566-576

Brett R. Gordon was awarded a Government of Ireland Postgraduate Scholarship in 2018.



"THE CAT'S PAW": HELEN ARTHUR, THE ACT OF RESUMPTION AND THE POPISH PRETENDERS TO THE FORFEITED ESTATES IN IRELAND, 1700-03'

Frances Nolan

Irish Historical Studies, 42.162, Nov. 2018, pp. 225-243

**Frances Nolan** was awarded a Government of Ireland Postgraduate Scholarship in 2012 and Postdoctoral Fellowship in 2018.

#### **Publications**

'NONCONJUGATED HYDROCARBONS AS RIGID-LINEAR MOTIFS: ISOSTERES FOR MATERIAL SCIENCES AND BIOORGANIC AND MEDICINAL CHEMISTRY'



Gemma M. Locke, Stefan S. R. Bernhard and Mathias O. Senge

Chemistry: A European Journal, 25.18, Nov. 2018, pp. 4590-4647

Gemma M. Locke was awarded a Government of Ireland Postgraduate Scholarship in 2015.

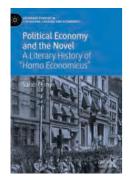
'THE MULTI-SCALE IMPACT OF THE ALZHEIMER'S DISEASE ON THE TOPOLOGY DIVERSITY OF ASTROCYTES MOLECULAR COMMUNICATIONS NANONETWORKS'



Michael Taynnan Barros, Walisson Silva and Carlos Danilo Miranda Regis

IEEE Access, 6, Dec. 2018, pp. 78904-78917

Michael Barros was awarded a Government of Ireland Postdoctoral Fellowship in 2016.



POLITICAL ECONOMY AND THE NOVEL: A LITERARY HISTORY OF "HOMO ECONOMICUS"

Sarah Comyn

Palgrave MacMillan, 2018

Sarah Comyn was awarded a Government of Ireland Postdoctoral Fellowship in 2018.

'A NOVEL STATISTICAL METHOD FOR ASSESSING EFFECTIVE ADHERENCE TO MEDICATION AND CALCULATING OPTIMAL DRUG DOSAGES'

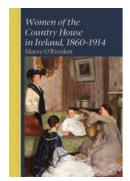


Garrett Greene, Richard W. Costello, Breda Cushen, Imran Sulaiman, Elaine Mac Hale, Ronan M. Conroy and Frank Doyle

PLOS One, 13.4, April 2018, 17 pp.

Ronan M. Conroy was awarded a New Horizons grant in 2015.

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WOMEN OF THE COUNTRY HOUSE IN IRELAND, 1860-1914

Maeve O'Riordan

Liverpool University Press, 2018

**Maeve O'Riordan** was awarded a Government of Ireland Postgraduate Scholarship in 2011 and Postdoctoral Fellowship in 2014, followed by a New Foundations award in 2016.

#### **Websites**

#### MAKING VICTORIAN DUBLIN

https://makingvictoriandublin.com

**Professor Christine Casey** was awarded a New Horizons grant in 2016.





DIGITAL DERG - 'DEEP MAPPING THE SPIRITUAL WATERSCAPE OF IRELAND'S LAKES: THE CASE OF LOCH DERG, DONEGAL'

https://digitalderg.hcommons.org/

**James Smith** was awarded a Government of Ireland Postdoctoral Fellowship in 2018.

#### **OUR AWARDEES IN THE NEWS**



Peter Crooks, 2016 New Horizons

'Researchers aim to recreate history lost in 1922 "war crime", *The Irish Times*, 8 February 2018

#### Here's what researchers at DCU and UCD say is the secret to healthy ageing

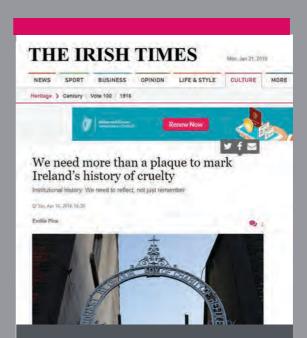
A new Irish study has found 'concurrent training', combining cardio and resistance workouts, is most effective, writes Celine Naughton



Irish researchers in DCU and UCD say it is within our own power to prevent creaky bones, wobbly waistlines and even ward off life-threatening conditions like heart disease and stroke. Stock image

**James Timmons**, 2014 Employment-Based Postgraduate

'Here's what researchers at DCU and UCD say is the secret to healthy ageing', *Irish Independent*, 19 July 2018



**Emilie Pine**, 2001 Government of Ireland Postgraduate Scholarship, 2012 and 2014 New Foundations and 2015 New Horizons

'We need more than a plaque to mark Ireland's history of cruelty', *The Irish Times*, 14 April 2018



Larisa-Elena Florea, 2009 EMBARK; Riona Nic Congail, 2010 Government of Ireland Postdoctoral Fellowship, 2013 New Foundations and 2014 ELEVATE Postdoctoral Fellowship; **Ted Vaughan**, 2007 EMBARK

'These six Irish-based researchers just won €8.7m in funding', *siliconrepublic*, 27 July 2018

OVERVIEW 2 1



**Mark Evans,** 2016 Enterprise Partnership Scheme Postgraduate Scholarship

'Irish researchers have developed a "gamechanger" for tired sportspeople', thejournal.ie, 3 August 2018



**Alison Garden**, 2016 Government of Ireland <u>Postdoctoral Fellowship</u>

'Black '47: the cowboys of the western world', *RTÉ Brainstorm*, 14 September 2018



**Saorla Kelly Kavanagh**, 2014 Government of Ireland Postgraduate Scholarship

'Irish heather honey shares health benefits of manuka', *Irish Examiner*, 3 September 2018



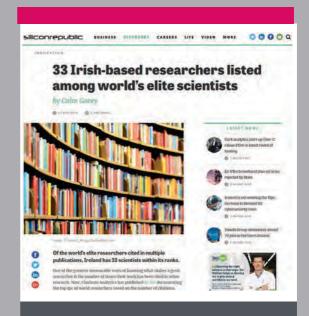
Maeve Lesley Doyle, 2018 Government of Ireland Postgraduate Scholarship; Joseph Thompson, 2014 Government of Ireland Postgraduate Scholarship

'Go boldly: Students build prototype for first Irish satellite', *The Irish Times*, 24 September 2018



**Áine Roddy**, 2013 Government of Ireland Postgraduate Scholarship

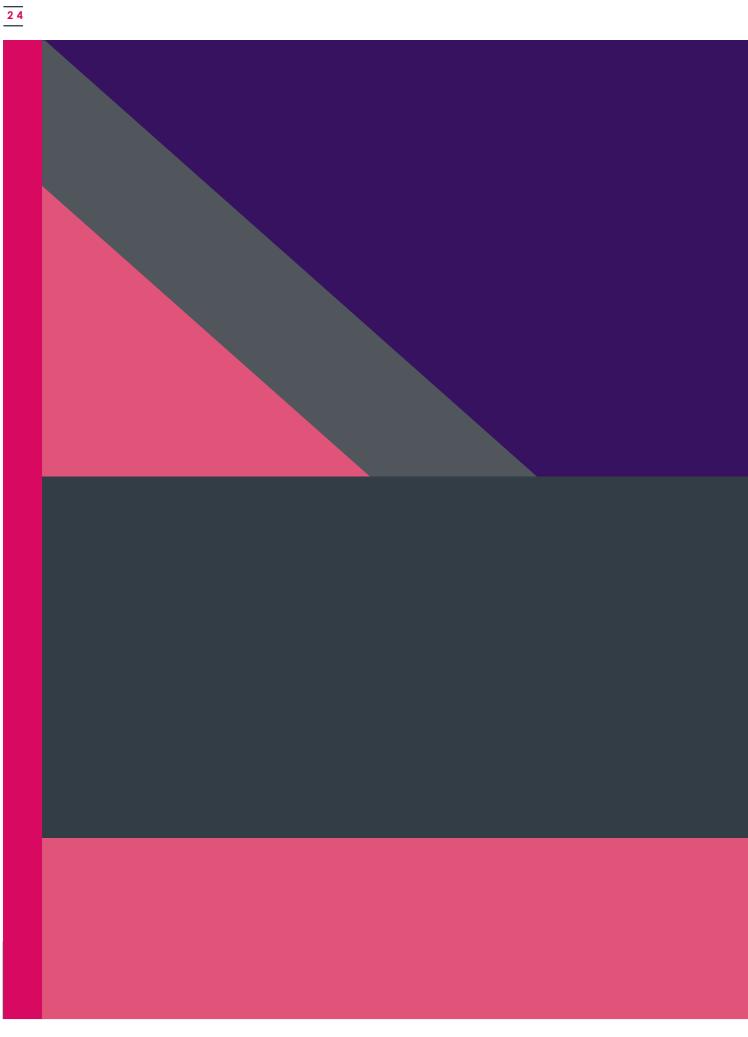
'Parents of children with autism face extra €28,000 bill annually', *The Irish Times*, 3 October 2018



Jonathan Coleman, 2004 Basic Research Grant; Paula Bourke, 2016 New Foundations; Paul Cotter, 2010 Government of Ireland Postdoctoral Fellowship; Kenneth Dawson, 2009 Ulysses; Georg Duesberg, 2012 Ulysses; Colin Hill, 2002 Basic Research Grant and 2010 Ulysses; Paul O'Toole, 2002 Basic Research Grant; Henry Curran, 2008 Ulysses; Colin O'Dowd, 2012 New Foundations

'33 Irish-based researchers listed among world's elite scientists', *siliconrepublic*, 27 November 2018





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### FUNDING EXCELLENT EARLY CAREER RESEARCHERS



## GOVERNMENT OF IRELAND POSTGRADUATE SCHOLARSHIP PROGRAMME

# €15.1m committed to the next generation of Irish researchers



The aim of our flagship Government of Ireland Postgraduate Scholarship programme is to support exceptional research master's and doctoral candidates pursuing, or intending to pursue, full-time research in any discipline.

In 2018, we awarded 208 new scholarships to researchers from 27 countries on the basis of the excellence of their projects, with an associated commitment of €15.1m.

Green infrastructure, spinal cord regeneration, inclusion of children with special educational needs and disabilities in physical education lessons, and novel therapeutic treatment for intraocular inflammation are just a sample of the new research topics selected for funding in 2018.

This brings the total number of active Government of Ireland Postgraduate Scholarship awards in 2018 to 861.

A number of other agencies support this programme by partnering with us as a mechanism to deliver on our shared national objectives. Our strategic funding partners in 2018 were the Department of Foreign Affairs and Trade, the Department of Children and Youth Affairs, and the Environmental Protection Agency.

Case Studies

#### **Awardee: David Moore**

**Project title:** Emotive language and conspiratorial beliefs: A case study of the American Alt-Right

David, a postgraduate researcher at Trinity College Dublin, is examining the impact of emotive language employed in the messages of conspiracy theorist communities. His research takes the rise of the American Alt-Right as a case study in how negative emotive language is used by conspiracy theorist groups to undermine democratic values and advance themes such as authoritarianism, anti-Semitism and xenophobia. Through the creation of a comprehensive database of the Alt-Right's language, David seeks to better understand how these groups affect individuals' acceptance of conspiracy theories to develop more effective strategies of combatting these groups and their negative societal effects.



#### **Awardee: Katherine Burns**

**Project title:** Brilliant bees: The importance of managed and wild pollinators to Irish natural capital

Katherine is a postgraduate researcher based at University College Dublin. She is assessing whether pollinators managed by humans, such as honeybees, are as effective at pollinating crops and wild plants as the pollination services provided by wild pollinators. Gathering data from across Ireland, Katherine's research is funded by the Environmental Protection Agency. Her research will determine the ecological contributions of both wild and managed pollinators, calculate the economic value of pollinators in Ireland, and observe possible interactions between managed and wild pollinators. She also plans to distribute a citizen survey to assess the current public understanding of pollinators' role and value in Ireland. The results from her research seek to influence public policy and pollinator management techniques in agricultural and natural systems, ensuring the sustainable protection of Ireland's natural capital into the future.



Katherine Burns handpollinating an apple flower



## GOVERNMENT OF IRELAND POSTDOCTORAL FELLOWSHIP PROGRAMME

# €7.1m committed to encourage rigorous and independent researchers



The Government of Ireland Postdoctoral Fellowship programme supports researchers during this crucial stage of their career paths. These fellowships are aimed at excellent early career researchers who want to undertake a period of guided research before going on to lead their own independent research.

By supporting the development of rigorous and independent researchers, we are priming the pipeline for future success.

In 2018, 79 new researchers from 26 countries were awarded these prestigious and highly competitive fellowships, with an associated commitment of €7.1m.

The industry of Napoleonic war writing, autonomic neurosecurity to avoid brain hacking and novel miRNA therapeutics for the treatment of multiple sclerosis are some examples of the new projects selected for funding in 2018.

This brings the total number of active Government of Ireland Postdoctoral Fellowship awards in 2018 to 189.

Case Studies

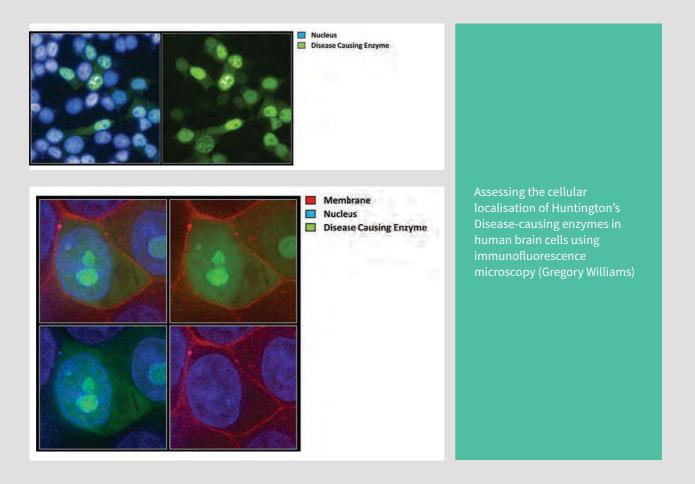


Housing protest in Dublin, December 2018 (Valesca Lima)

#### Awardee: Dr Valesca Lima

**Project title:** Housing activism: The fight against homelessness in Dublin and Lisbon

Due to the global financial crisis, homelessness and national housing markets have caused major shifts in the politics surrounding housing policy and movements in cities around the world. Valesca, a postdoctoral researcher at Maynooth University, is comparing how housing movements in Dublin and Lisbon interacted with the state and other social actors during times of austerity. She will map housing movements in Lisbon and Dublin, as well as the stakeholders they engage with, examining how and to what effect housing activists have addressed the 'marketisation' and 'financialisation' of housing. Valesca's study will contribute to the wider literature on the welfare state, housing, social movements and comparative politics.

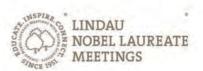


#### **Awardee: Dr Gregory Williams**

**Project title:** Linking histone deacetylases to disease-causing mutations in Huntington's disease

Gregory, a postdoctoral researcher at the National University of Ireland, Galway, is undertaking research that examines how inhibiting a brain enzyme called histone deacetylase 3 with an innovative drug effectively combats Huntington's disease. Currently incurable, Huntington's disease is a debilitating brain disorder that causes severe physical, emotional and cognitive symptoms and, in addition to the ineffable suffering, costs the Irish economy about €17m annually. Gregory is researching the link between this enzyme and disease-causing mutations in the Huntington's disease gene in the hope of providing a clear picture of how it accelerates the progression of Huntington's disease and how inhibiting it may pave the way for an effective treatment

#### LINDAU NOBEL LAUREATE MEETING AWARDS





Pictured (left to right): David Burns, Shuai Shuai Hu and Emer Duffy

Once every year, up to forty Nobel Laureates convene at Lindau to meet the next generation of postgraduate and postdoctoral researchers from all over the world to foster scientific exchange between different generations, cultures and disciplines.

In 2018, three Ireland-based researchers were chosen to take part in the 68<sup>th</sup> Lindau Meeting, dedicated to the fields of physiology and medicine.

Following their nomination by the Council, the researchers went through a highly competitive multi-stage international application process, managed by the Lindau Nobel Meeting Foundation. These researchers then spent the week attending prestigious masterclasses with some of the best-known scientists in the world.

The nominees who represented Ireland at the 68<sup>th</sup> Lindau Meeting dedicated to the fields of physiology and medicine were:

- > Ms Shuai Shuai Hu based at Technological University Dublin, who is studying endothelial microparticles and platelet microparticles in hypertension.
- > Mr David Burns, from University College Cork, who is a physiologist interested in respiratory and muscle physiology in the context of neuromuscular disease.
- > Dr Emer Duffy, based at Dublin City University, who is studying carbonaceous nanoparticles and carbon on carbon composite materials.

The patron of the Irish Lindau Nobel Laureate Meeting Awards is the President of Ireland, Michael D. Higgins.

#### IRISH RESEARCH COUNCIL-**EUROPEAN SPACE AGENCY** TRAINEESHIP SCHEME



#### Funding exceptional graduates to undertake traineeships with the European Space Agency



We are committed to cultivating skills and expertise in space exploration and technologies, as well as developing the training of master's graduates in Ireland. As such, we engaged with Enterprise Ireland, who coordinate Ireland's industrial and research participation in the programmes of the European Space Agency, to establish training needs and strategic priorities for the country.

The Irish Research Council-European Space Agency (ESA) Traineeship Scheme fully funds graduates in any field to undertake traineeships in ESA stations across Europe. Trainees gain practical experience in high-tech space activities such as science operations, data analytics, artificial intelligence, telecommunications, navigation, mission operations and human spaceflight.

Following a three-stage competitive process, two candidates were selected for these traineeships in 2018:

Amy Joyce has a master's degree in experimental physics from the National University of Ireland, Galway. She will work on developing tools for mission cross calibration and will also learn about the scientific uses of x-ray satellites and the challenges and procedures of operating a space mission.

Cillian Murphy has a master's degree in space and science technology from University College Dublin. He will work on the Gaia Mission to assist in completing an astrometric survey of stars, using spacecraft observation. He is also a future Analog Astronaut candidate with the Austrian Space Forum (OeWF).



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# POWERING ENTERPRISE



Our suite of enterprise programmes is designed to support enterprise-academia engagement through exceptional individual researchers, while in parallel presenting options for diverse career paths. Both for-profit and social enterprises are catered for under the programme.

The programmes are aligned with our mission to fund researchers across all disciplines and promote engagement with enterprise. Employers benefit from working with researchers on innovative projects and engaging in research that is aligned with their needs. In collaboration with 220 partners, there were a total of 321 active awardees in 2018.

Awards made under the 2018 Enterprise Partnership Scheme are due to commence in 2019, for this reason these awards are not included in this annual report.

# EMPLOYMENT-BASED PROGRAMME



The Employment-Based Postgraduate programme is a unique initiative that provides students from any discipline the opportunity to be employed in a partnering company or organisation while gaining a postgraduate research qualification. The Employment-Based Postgraduate programme will contribute to the achievement of targets set out in *Innovation2020*, Ireland's five-year strategy on research and development, science and technology. The programme also contributed to the government's targets under the Action Plan for Jobs.

In 2018, we awarded 31 new scholarships amounting to €2.5m.

The programme has placed students with a wide range of employers, including Remedy Biologics Ltd., Dublin Airport Authority and Leinster Rugby.

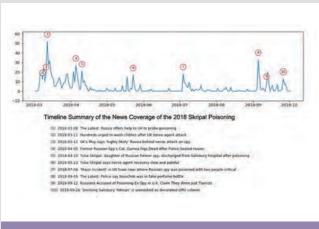
Patient-guided studies of the immune system for the development of colon cancer therapies, financial and safety issues related to wildlife collisions on the runways of Dublin International Airport and understanding hamstring injuries in professional rugby are examples of the new research topics selected for funding in 2018.

Case Studies

#### Awardee: Demian Sam Gholipour Ghalandari

**Project title:** Structured news story summarisation

#### Partner: Aylien Ltd



Graph provided by Demian Ghalandari

Demian is a postgraduate researcher, based at University College Dublin, whose research is concerned with improving natural language processing (NLP) and data mining tools. Partnered with artificial intelligence company Aylien Ltd, Demian's research aims to aid readers in quickly navigating and comprehending large numbers of news stories through innovative NLP tools, helping them to better preserve the larger narrative of important current events. His project will improve state-of-the-art storyline extraction methods to improve the quality and relevance of news reports for readers. Aylien specialises in creating NLP tools. They are a repeat partner with the Council, having employed three EBP awardees since 2014.

#### Awardee: Lána McCarthy

**Project title:** How can parental engagement be maximised as a lever for change in enhancing children's language and literacy outcomes in an area of socio-economic disadvantage?

#### Partner: Young Ballymun



Lána, a postgraduate researcher at Trinity College Dublin, is developing innovative frameworks of parental engagement to address higher rates of child language and literacy problems in socio-economically disadvantaged communities. In partnership with Young Ballymun, Lána's research integrates local expertise from the parents accessing children's literacy and language programmes with an interdisciplinary appraisal of existing parental engagement models and current Irish government policy on social inclusion and education disadvantage. Her project will provide direction, structure and guidelines to educators and parents in areas of socio-economic disadvantage, acting as a lever for change and increased parental engagement with childhood literacy and language development.

## ENTERPRISE PARTNERSHIP SCHEME

The Enterprise Partnership Scheme is an innovative initiative whereby, in partnership with enterprise, we award co-funded postgraduate scholarships and postdoctoral fellowships. The programme supports the development of an expertise-driven higher education and research system so as to enhance Ireland's creative and innovation capacity and skills base.



Case Studies

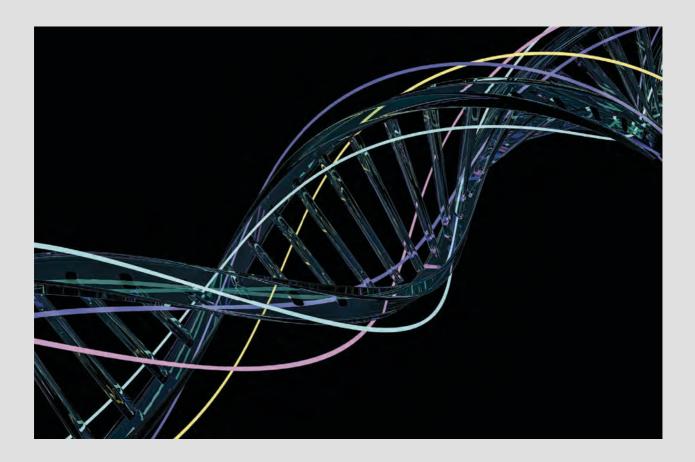


#### **Awardee: Tom Manning**

**Project title:** Gaming as youth work: Exploring the role of gaming as a creative tool for fostering social and emotional learning among socially isolated young people

#### Partner: Carlow Regional Youth Services CLG

Based at the Institute of Technology, Carlow, Tom is exploring if and how gaming can be used to build relationships between youth workers and young people who are socially isolated due to communication, learning or mental health difficulties. Tom is particularly interested in whether gaming can contribute to social and emotional learning (SEL). His project investigates the capacity of gaming to support the SEL needs of young people. The research draws data from a targeted cohort of twenty young people from the Carlow region and aims to produce much needed resources for the youth work sector by enhancing youth workers' knowledge of the role of gaming as a tool for practice.



#### Awardee: Catherine Mahoney

**Project title:** Discovering genomic regions enriched for de novo recombination events

#### Partner: Genomics Medicine Ireland

Catherine, a postgraduate scholar at University College Dublin, is partnered with Genomics Medicine Ireland to develop a new mathematical framework that will open an entirely new area in the analysis of genetic disease: the association of genetic recombination events with complex disease presentation. For the first time, using recently developed population-based genome inference, novel definitions of recombination hotspots, and a new application of disease association, it will be possible to pinpoint genetic recombination events contributing to the presentation of complex diseases. Catherine's project focuses on Autism Spectrum Disorder as a case study for the development of a software package that will identify recombination events in case data and determine the areas of the genome in which an excess of such recombination events contributes to disease presentation.



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# LAUREATE AWARDS FOR FRONTIER BASIC RESEARCH

## LAUREATE AWARDS



In 2018, we awarded 36 Starting and Consolidator Laureate Awards worth €18m and opened a call for Advanced Laureate Awards for €12m, providing funding for ground-breaking, 'blue-skies' research across all disciplines and at three key career stages.

The Starting, Consolidator and Advanced Laureate Awards (mirroring the funding categories of the European Research Council) were established to address a significant gap in the Irish research landscape, namely the lack of a funding programme to enable exceptional researchers to conduct frontier research beyond postdoctoral level across all disciplines. With a cumulative investment of nearly €30m, the Laureate Awards have created a strong foundation for the undertaking of frontier research at principal investigator level, providing an environment which breeds world-class education, training and development, for new discoveries, and for the future application of those discoveries with economic or societal impact. Funding for all three calls was awarded on the basis of excellence, assessed through a rigorous and independent international peer-review process.

The Starting and Consolidator Laureate Call, which opened in 2017, received 258 applications. The assessment process required the commissioning of over 1,400 peer-reviews and the engagement of 779 international assessors sitting on panels for a total of 21 days. In addition to the 36 awards made, 31 fundable reserve proposals were identified – illustrating the high quality of researchers and the calibre of proposals being generated in frontier research in Ireland.

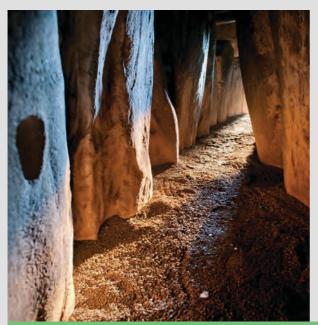
We opened the Advanced Laureate funding call in May 2018. The call had an exceptional response from the Irish and international research community, across all disciplines. A total of 140 eligible proposals were received, 69 of which had advanced to the second stage of the assessment process by the end of 2018. The results of the Advanced Laureate Programme will be announced in 2019.



#### Awardee: Dr Jessica Smyth

**Project title:** Passage tomb people: Investigating the social drivers of passage tomb construction (PTP)

#### Award: Consolidator Laureate Award





Newgrange, midwinter solstice (Ken Williams, Shadows and Stone Photography)

Passage tomb people (PTP) aims to identify the social drivers of passage tomb construction along the Atlantic Façade. Hundreds of these tombs dot the Atlantic coast, the very largest clustered in complexes (including three UNESCO World Heritage Sites) in northern Britain, Ireland, western France, and Iberia. Their connectedness in terms of iconography, building methods, and material culture has long been recognised, but to date there has been no targeted research on the societies that built them. Erected after the arrival of farming in each region, these tombs may be responses to economic stress or, equally, the result of surplus and increasing social competition. Focusing on three especially well-connected passage tomb regions – Ireland, Orkney and North Wales – PTP probes the links between monument construction, resource exploitation, and social networks, testing whether similar factors triggered similar behaviours in each area. Specific lines of investigation involve species identification of highly fragmentary bones; isotope and molecular analyses of human/faunal remains and absorbed residues in pottery to establish patterns of consumption and to investigate short-range mobility and extensiveness of farming systems; and radiocarbon dating to resolve inter-regional chronologies of tomb use. PTP is ground-breaking in integrating such an extensive and challenging biomolecular and isotope record, which demands not only cutting-edge methods and high-throughput analyses but a strong interdisciplinary ethos.

#### Awardee: Dr Jeremy J. Piggott

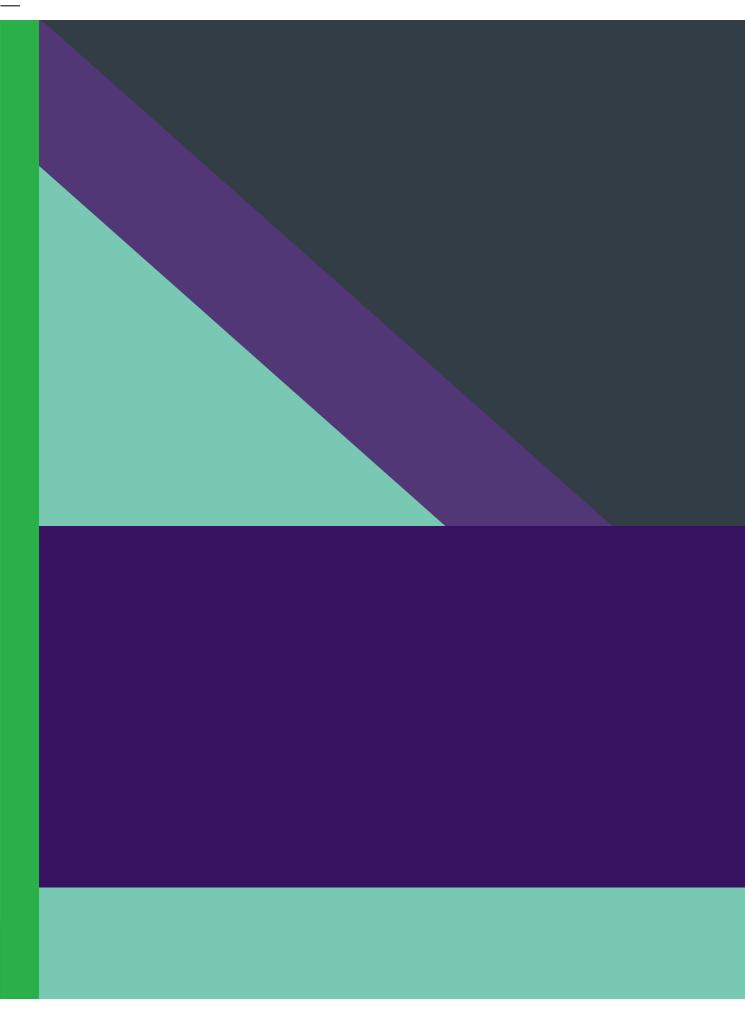
Project title: Freshwater ecosystems under global change (ExStream)

#### Award: Starting Laureate Award

How multiple drivers of global climate change interact remains one of the greatest uncertainties in predictions of future biodiversity change. Jeremy's study of running freshwaters in Ireland and New Zealand incorporates three world firsts in climate-change research: (i) the first experiment manipulating the key climate-change drivers of temperature, CO2, and flow simultaneously; (ii) the first field-based downscaled climate simulation testing general and region-specific hypotheses to predict the severity of expected impacts; and (iii) the combined application of genomic, stoichiometric, and ecological approaches across multiple levels of biological organisation. Experiments are conducted using an innovative field research facility that offers an unparalleled combination of strict control, excellent statistical power, and a high degree of realism. The project's results will disentangle the individual and interactive responses of stream ecosystems to these key climate-change drivers and the 'ecological surprises' (synergisms, antagonisms) that may result.



ExStream Experimental Stream Mesocosm System (Jeremy J. Piggott)



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# CHAMPIONING THE UN'S SUSTAINABLE DEVELOPMENT GOALS



### COLLABORATIVE RESEARCH FELLOWSHIPS FOR A RESPONSIVE AND INNOVATIVE EUROPE (CAROLINE)



€4.6m committed to attract experienced researchers to work towards shared economic prosperity, social development, and environmental protection



The Irish Research Council Marie Skłodowska-Curie Actions COFUND Postdoctoral Fellowship programme entitled CAROLINE – Collaborative Research Fellowships for a Responsive and Innovative Europe – provides experienced researchers with an opportunity to obtain a prestigious research mobility and career development fellowship. Successful candidates will carry out research either in Ireland or abroad and gain intersectoral and interdisciplinary exposure.

The aim of CAROLINE is to attract experienced researchers from any discipline to conduct research relevant to the themes of the United Nations 2030 Agenda for shared economic prosperity, social development, and environmental protection, that is, the sustainable development goals (SDGs). In 2015, we were among the first research funders in Europe to secure funding from Horizon 2020 for a project built around the SDGs, leading the way in an approach which will be a significant overarching framework for FP9.

In 2018, 22 new awardees were awarded these prestigious fellowships, with an associated commitment of €4.6m.

Contemporary slavery in the Andean Region in an era of climate change, the adoption of clean cooking technologies in low and middle-income countries, and shared responsibility in global supply chains are a few examples of the research topics selected for funding in 2018.

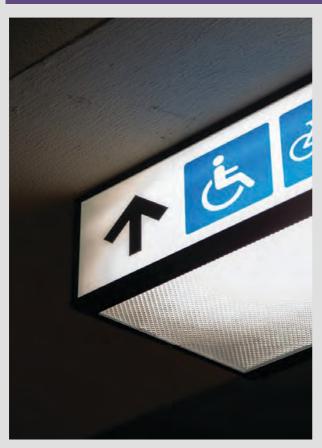
CAROLINE has received funding from the European Union's Horizon 2020 Research and Innovation programme under the Marie Skłodowska-Curie grant agreement No 713279.

Case Studies

#### Awardee: Dr Ana María Sánchez Rodríguez

**Project title:** Scaling community social innovation to promote inclusion in the implementation of the SDGs: An international, interdisciplinary and intersectoral perspective on women and girls with disabilities

#### Project partner: Humanity and Inclusion (Handicap International)



By adopting the United Nations 2030 Agenda, member states have committed to leaving no one behind in their implementation of the SDGs. Yet local communities and marginalised groups are often left out of development planning. Their needs are rarely included in overall national sustainable development strategies, even though there have been many examples of successful community-level initiatives relevant to achieving the SDGs.

Ana's project addresses the gap between the community and the State. It aims to promote better scaling of good practices by connecting community-level innovations with national-level change. It explores, analyses and promotes effective community-level innovations that can be scaled up to inform the development of national policies to implement the SDGs for persons with disabilities, with a particular focus on women and girls with disabilities.

#### Awardee: Dr João Frias

**Project title:** Managing for microplastics: A baseline to inform policy stakeholders (IMP.act)

#### Project partner: Irish Whale and Dolphin Group



Human-made marine litter and microplastic pollution have been recognised by the United Nations Environment Programme as a global environmental threat with ubiquitous distribution and negative effects on marine and coastal life, ecosystems, local economies and potentially human health. Based at Galway-Mayo Institute of Technology, João's project conducts ecosystem-based targeted surveys in Galway Bay and its environs to estimate baseline microplastic concentrations. The project intends to develop models that can serve as long-term management tools and establish a working framework dedicated to marine anthropogenic litter and microplastic pollution. The ecosystem model in development will contain both new and previously collected field data and allow the assessment of microplastics accumulation hotspots and distribution patterns. This tool can assist managers and policy makers to identify accumulation areas for marine litter and microplastics, while the project's reports can contribute to mitigation strategies for microplastics not only in Galway Bay but throughout Ireland.



Silverstrand Beach, Galway Bay (João Frias)

#### Awardee: Dr Mairéad Foody

**Project title:** SEXED: Investigating online sexual harassment and exploitation in relation to the UN Sustainable Development Goals

#### Project partner: Friends International Center against Bullying



The United Nations SDGs include the reduction in violence against, and exploitation of, children and teenagers. Dangers in digital and online environments fall within this remit, and this project is particularly concerned with the prevalence and impact of online sexual harassment and exploitation of teenagers. While previous research on cyberbullying (or online harassment) has highlighted important issues for prevention (e.g. the need for friendships and strong social networks), there is little evidence available on the specific risk factors of online sexual harassment or exploitation. Research is also limited on the role of gender in these experiences and on the effect they can have on a victim's mental health. Mairéad's project aims to conduct a large-scale cross-sectional study of the prevalence of online sexual harassment and exploitation in teenagers in Sweden and Ireland, with particular attention to gender and psychological outcome. Academics and NGOs working with victims of sexual harassment and exploitation will benefit significantly from the results and recommendations of this project.

# COALESCE – COLLABORATIVE ALLIANCES FOR SOCIETAL CHALLENGES RESEARCH FUND



In 2018, we launched the COALESCE – Collaborative Alliances for Societal Challenges Research Fund. The scheme was developed in response to challenges set out in the sustainable development goals (SDGs) identified by the United Nations and to challenges established in the Government of Ireland's National Development Plan and National Planning Framework (*Project Ireland 2040*).

Excellent research across all disciplines has a major role to play in developing new knowledge and evidence which policy and decision-makers and, indeed, practitioners can utilise to guide action and interventions on the path to successfully achieving national or international societal challenges. Maximising the contribution of the research system in this regard requires a strong emphasis on building robust mechanisms to ensure the transmission and integration of knowledge and evidence into the policy and practice environment, including building the necessary relationships with the public sector, civil society, or elsewhere, to support this process.

COALESCE builds on and brings together two former research funding programmes, namely Research for Policy and Society and the New Horizons Interdisciplinary Research Call. The call is run in partnership with a number of government department and agencies, who fund or co-fund specific strands. For the 2018 call, partners included the Central Statistics Office, the Irish Human Rights and Equality Commission, HSE Sexual Health and Crisis Pregnancy Programme, the Department of Children and Youth Affairs, the National Parks and Wildlife Services, Geological Survey Ireland, and the Department of Foreign Affairs and Trade.

The programme provides opportunities for researchers across all disciplines to propose excellent research projects that enhance our collective ability to meet national challenges and contribute to a global sustainable future. The outcome of this call will be announced in 2019.



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# ENGAGING INTERNATIONALLY

The Council and its precursors have a strong track record in international engagement. We played an active role on the international stage in 2018 and will continue to do so into the future.

International activities provide new opportunities for Ireland-based researchers to collaborate internationally and for international researchers to engage with Irish research. Such activities support the development of research talent across all disciplines and career stages.

Notably, 2018 saw the publication of our International Engagement Strategy (2018-2021). Arising from this, we co-hosted the first UK-Ireland Research Funders' Forum and signed a Statement of Intent with UK Research and Innovation (UKRI). We continue to work actively to facilitate the integration of Ireland's researchers within the European Research Area and beyond.

This section summarises international activity in 2018. These actions include:

- > Developing and formalising our international cooperation with additional partnership opportunities for Ulysses (Ireland-France) and developing links with international research councils (Ireland-UK)
- > Funding the Irish Marie Skłodowska-Curie Office, which is operated in partnership with the Irish Universities Association, to support researchers at all stages of their careers, across all research disciplines and in all employment sectors
- > Leading as National Delegate and National Contact Point to support applications under Horizon 2020 Societal Challenge 6 'Innovative, Inclusive and Reflective Societies'
- > Holding the role of joint National Contact Point for the European Research Council (ERC), raising awareness, informing and advising on ERC funding opportunities in addition to supporting the preparation, submission and follow-up of an ERC grant application
- Developing and maintaining links for Ireland's researchers within European research networks, such as Humanities in the European Research Area (HERA), GENDER-NET Plus, New Opportunities for Research Funding Agency Cooperation in Europe (NORFACE) and CHIST-ERA
- > Strengthening Ireland's links with European Research Infrastructure Consortia (ERICs), such as the Digital Research Infrastructure for the Arts and Humanities (DARIAH) and the European Social Survey (ESS)

# INTERNATIONAL ENGAGEMENT STRATEGY (2018-2021)



Our new international engagement strategy was launched by Minister of State for Training, Skills, Innovation, Research and Development, John Halligan TD, in June 2018.

The new strategy aims to position Ireland as a centre of excellence for higher education and research 'post-Brexit' and seeks to develop Ireland's positive academic standing within the international community.

Two core goals form the basis of our strategy. These are:

- > generating new opportunities for Ireland-based researchers to collaborate internationally
- > generating new opportunities for international researchers to work in Ireland

In addition to these two core goals, we have identified a number of ambitious strategic action areas that underpin the strategy as a whole.

Over the next three years, we will put in place formal partnerships with a number of UK, European and other international research councils to create opportunities for research collaboration. This will be conducted in addition to work that we currently carry out to support engagement by Ireland-based researchers in Horizon 2020 and Horizon Europe, the European Union's current and future research framework programmes.





# UK-IRELAND RESEARCH FUNDERS' FORUM



UK-Ireland Research Funders' Forum (left to right): Dr Mike Ryan, Science Foundation Ireland; Peter Brown, Director of the Irish Research Council; Professor Jane Ohlmeyer, Chair of the Irish Research Council; HE Robin Barnett, British Ambassador to Ireland; Professor Andrew Thompson, Executive Chair, UKRI-AHRC

We met representatives from UK Research and Innovation, the Health Research Board and Science Foundation Ireland in Dublin in November 2018 for the inaugural UK-Ireland Research Funders' Form.

The event, co-hosted with Science Foundation Ireland, provided the opportunity for Irish research funders to engage with statutory funders from the UK on research and innovation strategies and to discuss ways to deepen alliances.

The funding agencies share common missions to enable and sustain vibrant research communities, excellent academic opportunities, and public engagement with research across Ireland and the UK.

The UK and Ireland share a strong history in research and innovation collaboration, with a range of partnerships and joint activities across the full spectrum of disciplines. As international collaboration on research and innovation becomes increasingly important in addressing today's global challenges, ensuring a forum for dialogue and exploring future opportunities for research and innovation collaboration between the UK and Ireland is key.

A Statement of Intent was signed to address this need for closer dialogue by a series of meetings where discussions and collaboration will be facilitated on a regular basis.

### **ULYSSES**

# **50** Irish and French researchers supported to foster new collaborations between Ireland and France.

The Ulysses programme, named to celebrate the links between Ireland and France, is designed to support new collaborations between Irish and French researchers. In Ireland, we fund and administer the Ulysses programme, with support from strategic partners. In France, it is funded by the French Ministry of Foreign Affairs and administered by the Embassy of France in Ireland and Campus France, the leading French agency for international mobility.

The immediate aim of the Ulysses programme is to foster new collaborations between researchers in Ireland and France by funding reciprocal travel visits between the two research groups over the course of one year. The longer-term goal is to establish lasting professional networks of researchers and institutes.

In 2018, for the first time, a number of high-profile semi-state, public sector and private sector organisations in Ireland and France have committed to offering specific researcher opportunities to selected research projects as part of the programme. These strategic partners include:

The Health Research Board have partnered with Inserm, the French National Institute of Health and Medical Research, to support four funded research projects focusing on patient-oriented and clinical research, population health or health services research.

The Sustainable Energy Authority of Ireland and ADEME, the French Environment and Energy Management Agency, provided support to three research projects exploring topics relating to energy.

Electricity transmission system operator EirGrid have partnered with French-based Réseau de Transport d'Électricité to support a suitably-aligned research project in the area of renewable energies and smart grids.

As part of the 2018 call, funding was awarded to 24 new collaborations, each of which received a 'seed-funding' bursary to cover travel and living expenses.

### Case Studies



#### Awardee: Professor Cliona O'Farrelly

**Project title:** Identifying mechanisms of innate resistance to viral infection in the Irish anti-D cohort

Not everyone exposed to a virus becomes infected. While some are chronically infected, others become infected but then spontaneously resolve infection. Yet others, termed 'exposed seronegative' (ESN), present no observable infection. Despite similar viral exposure, ESN individuals resist viral infection in an antibody-independent manner – likely through enhanced innate immune mechanisms. The project team has identified and recruited a subgroup of women from the Irish anti-D cohort who appear to have resisted infection in this manner after exposure to hepatitis C virus through contaminated anti-D. Using unique technologies at the Institut Pasteur, this project aims to characterise the innate immune system of our ESN women from the Irish anti-D cohort to understand mechanisms of natural resistance to viral infection. The researchers will use gene expression technologies and harness existing data held by the Institut Pasteur to identify proteins important in conferring resistance to infection. Cohorts that resist infection despite exposure to a virus represent an exciting opportunity to identify new therapeutic and vaccine strategies.

#### Awardee: Dr Stephan Köppe

Project title: A new generational and gender contract: Long-term care policy and politics in France and Ireland

Stephan is leading research into recent policy reforms and politics in France and Ireland in partnership with Dorota Szelewa (University College Dublin), Clémence Ledoux (Université de Nantes) and Sophie Garnier (Université de Nantes). Their project addresses the interrelationship of long-term care policies and intergenerational wealth transfers in France and Ireland, examining how policy reforms in each country have shaped generational and gender contracts among family members and their obligation to care or pay. The research team aims to facilitate essential policy conversations surrounding future Irish and French reforms in the context of ageing societies and increasing demands for welfare state spending. For instance, Stephan commented on the French pension reform in October 2018 at EuRadio.



Stephan Köppe on EuRadio in October 2018

### IRISH MARIE SKŁODOWSKA-CURIE OFFICE



Marie Skłodowska-Curie Actions support researchers at all career stages, across all research disciplines and in both the academic and non-academic sectors. Excellent and innovative research, training and career development, mobility and international collaboration are key features. The actions include individual fellowships, networks providing outstanding doctoral training (ITNs), staff exchange programmes, and COFUND, a scheme aimed at stimulating regional, national or international research training programmes.

We fund the Irish Marie Skłodowska-Curie Office, which is operated in partnership with the Irish Universities Association. The office promotes these funding opportunities and supports researchers in the preparation of high quality applications. This support is provided in the form of individual meetings, proposal reviews, handbooks, training workshops, presentations at various events and webinars.

By the end of 2018, researchers in Ireland had accessed over €115m in funding through Marie Skłodowska-Curie Actions since the beginning of the Horizon 2020 Framework programme.

Under Horizon 2020, Irish research-performing organisations and funding bodies have been awarded €36.4m from the European Commission for COFUND fellowship programmes, with an average success rate of 71% compared to the average EU success rate of 22%. In 2018, COFUND applications from Ireland enjoyed a success rate of 75%.

The 2018 drawdown of €12.9m for ITNs was the highest thus far since 2014. This will fund structured PhD programmes providing outstanding research and training to generate highly employable graduates.

### HUMANITIES IN THE EUROPEAN RESEARCH AREA





Delegates at HERA Uses of the Past Midterm Conference, 14-15 March 2018

We are the handling agency for Humanities in the European Research Area (HERA), a partnership between 26 humanities research councils across Europe and the European Commission. HERA's objective is the continued growth and development of collaborative and transnational humanities research across Europe.

The humanities are crucial to the understanding and conceptualising of fundamental changes in contemporary European society. Linking national programmes and launching joint research programmes dealing with all-encompassing social, cultural, political and ethical developments will generate new knowledge and enable policymakers, scientists and the public to interpret the challenges of a changing world.

The HERA network, along with the European Commission, invested €21m in 18 European research teams as part of its third joint research programme, Uses of the Past.

HERA Uses of the Past projects involve 18 project leaders, 62 principal investigators, 106 postdoctoral fellows, 30 postgraduate students and 76 associated partners. The projects will be funded for a maximum of three years from 2016 to 2019. The 18 projects examine which historically informed ideas and actions in society are promoted, mobilised and legitimised, and identify the mechanisms and motivations that lie behind the work of historical understanding.

In 2018, we organised the HERA Uses of the Past Midterm Conference from the 14-15 March 2018 in the Fleming's Selection Hotel, Vienna. This two-day conference provided opportunities for projects to gather at the mid-point of the joint research programme to engage with the intellectual changes of the Uses of the Past. The event also provided practical support on key themes and issues linked to project management and delivery. Practical workshops were held on topics such as *Communicating the Value of the Humanities* and *Knowledge Exchange, non-academic partnerships and co-production*.

We also organised a HERA Early Career Researcher Conference from 23-26 September 2018 at the Smolenice Castle in Slovakia. This event provided HERA-funded early career researchers with the opportunity to network with each other, to share research insights and to engage in workshops designed to support researcher development. The event was designed to include structured workshops and informal, peer-led sessions based on the current work of these researchers.



New Opportunities for Research Funding Agency Cooperation in Europe (NORFACE), a partnership between 14 social sciences research councils across Europe, was established in 2004, when the network successfully bid for an FP6 award to co-ordinate activities.

The 12 partners involved are the research councils for the social sciences from Estonia, Denmark, Finland, Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Slovenia, Sweden and the United Kingdom. Canada and Austria participate in NORFACE as associate partners. NORFACE is an ambitious programme of communication, enquiry, sharing of experience and action. We are the Irish representative in the consortium.

The 2018 call addresses the theme 'Democratic Governance in a Turbulent Age'.



CHIST-ERA funds transformative and highly multidisciplinary research projects in information and communication sciences and technologies, exploring new ideas with the potential for significant scientific and technical impacts in the long term. Each year CHIST-ERA launches a call for research proposals.

The 2018 call addressed the topics of analog computing for artificial intelligence and smart distribution of computing in dynamic networks. We are supporting Irish participation in this programme.



The Digital Research Infrastructure for the Arts and Humanities (DARIAH) is a pan-European infrastructure for arts and humanities scholars working with computational methods. It supports digital research as well as the teaching of digital research methods.

DARIAH-ERIC is an international infrastructure formed in August 2014, with the mission of enhancing and supporting digitally enabled research across the arts and humanities. DARIAH-ERIC develops, maintains and operates an infrastructure in support of ICT-based research practices.

Dr Orla Murphy of University College Cork is the current DARIAH national coordinator.



The European Social Survey is an academically driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations. To support the work of European Social Survey in Ireland, we appointed and fund a national coordinator to oversee and implement the survey.

In 2017, we published a national call for proposals and recommended that University College Dublin be appointed to the role of national coordinator of ESS round 9, led by Professor Philip O'Connell of the UCD Geary Institute.



# PROGRESS ON GENDER EQUALITY

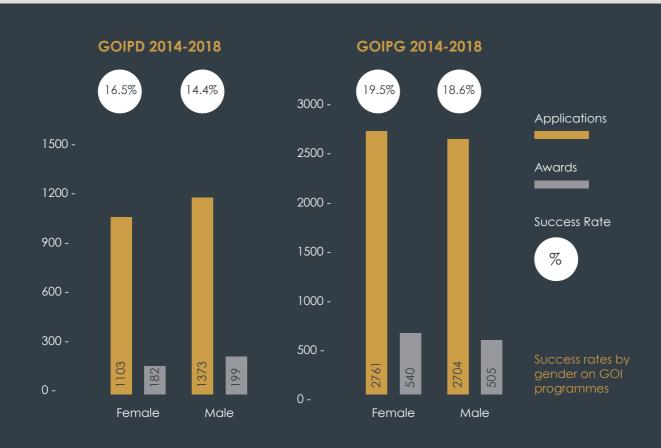


As outlined in our Gender Strategy and Action Plan (2013-2020), we are committed to promoting gender equality in research careers across all disciplines and supporting the integration of sex and gender analysis into research content. In 2018, we continued to advance these actions, in particular focusing on the following:

- > We are a partner on the GENDER-NET Plus ERA-NET COFUND, consisting of 16 international partners across 13 countries, which awarded €10.6m in December 2018 to 13 projects that consider gender in addressing urgent societal challenges, 7 of which have Irish partners.
- > Along with other Irish research funding agencies, we welcomed the launch of the Accelerating Gender Equality in Irish Higher Education Institutions – Gender Action Plan 2018-2020 and recommitted to making Athena SWAN certification in higher education institutions a condition of funding.
- > We remain committed to gender-proofing our assessment processes, with the gender-blinding of applications to mitigate gender bias in the assessment of excellence, and a gender balance requirement in assessment panels for all of our awards. This has resulted in gender balanced success rates on our biggest programmes.
- > We continue to support the integration of the gender dimension in research proposals by requiring applicants to our programmes to indicate if there is a gender dimension to the proposed research and how it will be addressed.

#### Other key activities in 2018 included the following:

- > We funded a Symposium on Gender Equality in Higher Education which took place on 10 October 2018. It was hosted by the Vice Principal for Equality, Diversity and Inclusion at University College Dublin, Professor Judith Harford, and brought together national and international leading scholars in the fields of gender and leadership in higher education.
- > We were one of the sponsors of the 10<sup>th</sup> European Conference on Gender Equality in Higher Education that took place in Trinity College Dublin from 20-22 August 2018. Our Director, Peter Brown, was a member of the National Conference Committee and was a featured speaker at the conference.



# GENDER-NET PLUS



In 2018, the GENDER-NET Plus consortium opened a funding call that was specifically designed to welcome proposals for research that integrates gender in addressing urgent societal challenges. In particular, researchers were asked to address and to explore interactions and interdependencies between the UN sustainable development goals (SDGs) relating to health and well-being, infrastructure, industrialisation and innovation and climate action.

In partnership with the Estonian Research Council, we ran the assessment process for the applications received under this call. A total of 75 eligible proposals were assessed by the scientific evaluation committee. This resulted in 13 projects being approved for funding, 7 of which have Irish partners.

The allocation of €1.7m to Irish gender researchers began with an initial €600,000 contribution from the Irish Research Council. We subsequently collaborated with the Health Research Board to raise additional funds. Once the agencies combined their funding, Ireland's contribution almost doubled, leveraging additional European Commission funding and maximising the number of high-calibre research projects that could be supported.

The success of Irish researchers in this highly competitive funding call shows Ireland's expertise in this critical area of research. They will study a wide range of important topics, which include:

- causes and effective policy responses to prevent violence against women migrants and refugees
- > sex-related differences in immune responses contribute to cancer treatment
- > the effect of gender on social exclusion and its consequences for health and wellbeing
- entrepreneurship, innovation and women's success
- the role of literature and cinema in shaping attitudes to masculinity and aging

We are committed to supporting gender equality and mainstreaming in research. Gender equality is a significant societal challenge, as highlighted by the UN SDGs. The integration of sex and gender analysis into research gives us new knowledge and insights, which is critical to research excellence.

#### Case Studies

#### Awardee: Professor Maura McAdam

**Project Title:** Overcoming the entrepreneurial ecosystem gender divide: A cross-cultural perspective (GENRE)



Women are underrepresented in successful entrepreneurial ecosystems, and a persistent gender bias continues to exist in entrepreneurship discourse and practice. The UN SDG on gender states that women suffer from 'disadvantages in education [which] translate into lack of access to skills and limited opportunities in the labour market'. This project and its partners in Ireland, Norway, Sweden and Israel aim to address this by providing a nuanced understanding of how gender is a decisive factor, i.e. how women and men are influenced by and, in turn, influence entrepreneurial ecosystems differently. In order to achieve this, GENRE focuses on women's technology

entrepreneurship as a specific facet of gender in entrepreneurship and on how this relates to femininity and masculinity in different cultural contexts. Among the key objectives of the project is the development of tools to visualise and to challenge the underlying gender norms that inhibit the processes of innovation in entrepreneurship ecosystems, and to provide recommendations for a transnational gendered framework to improve women technology entrepreneurs' participation in entrepreneurial ecosystems. The findings generated will inform policy development aimed at inclusivity and sustainability, thus benefiting both women and men.



#### Awardee: Professor Denis O'Mahony

**Project Title:** Identifying key prescribing cascades in the elderly: A transnational initiative on drug safety (iKASCADE)\*

Older women have significantly higher risk of adverse drug reactions than older men, meaning that being female predicts medication adversity. Prescribing 'cascades' may explain the gender difference. Prescribing cascades occur when a healthcare provider misinterprets the side effect of a drug as a new medical condition and prescribes a second, potentially unnecessary drug to treat the side effect. The project addresses an important and under-researched aspect of this iatrogenic medication harm. Since women live longer than men, are more likely to be prescribed potentially inappropriate drug therapies, and experience more drug-related adverse events, it is hypothesized that prescribing cascades have different effects according to sex and gender. Partners in Ireland, Canada, Israel, Italy and Belgium are looking at data on older people in primary care, hospitals, and nursing homes in order to create a comprehensive inventory of prescribing cascades, examine and compare the frequency of prescribing cascades by sex and country in those key settings of care, and explore how sex and gender are associated with the development and impact of prescribing cascades, using both quantitative and qualitative data. It is envisaged that results from these analyses will be used to create interventions that are tailored to women and men to reduce prescribing cascades and to improve the health and well-being of all older adults.

\*Funded in partnership with the Health Research Board



## RESEARCHER OF THE YEAR



### 2018 RESEARCHER OF THE YEAR AWARDS

In December, we held the second annual Researcher of the Year Awards at the historic Royal Irish Academy on Dawson Street. The awards recognise and commend the very best of our current awardees or alumni working in academia, industry, civic society or the public sector.



**Professor Anna Davies** (centre) was our 2018 Researcher of the Year. Anna directs the Environmental Governance Research Group at Trinity College Dublin and is on the steering committee for the Trinity Centre for Future Cities. She was awarded an Irish Research Council Thematic Research Project Grant (2017) and a European Research Consolidator Grant (2012) for her work on sustainable cities and city-based food sharing economies.

**Dr Karen English** (left) was our 2018 Early Career Researcher of the Year. Karen leads the Cellular Immunology Laboratory in the Institute of Immunology at Maynooth University. Her research concerns the role of cellular therapy in the treatment of inflammatory disorders. She was the recipient of an Irish Research Council EMBARK (2003) and Starting Laureate Award (2018).

**Dr Brian Egan** (right), Senior Engineer at Wood plc, received the Alumnus of the Year award for making a highly significant contribution in his field, outside of academia. Brian's expertise is in the area of advanced structural analysis and engineering design, which is critical to ensuring that heavy industries can meet the challenges of the future whilst remaining financially and environmentally sustainable. He was the recipient of an Irish Research Council EMBARK award (2009).

In addition to the Researcher of the Year awards, medals of excellence were presented to four early-career researchers. Each of the medals of excellence have been named after previous Chairs of the Irish Research Council and recognise excellence in the 2018 postgraduate and postdoctoral funding calls.



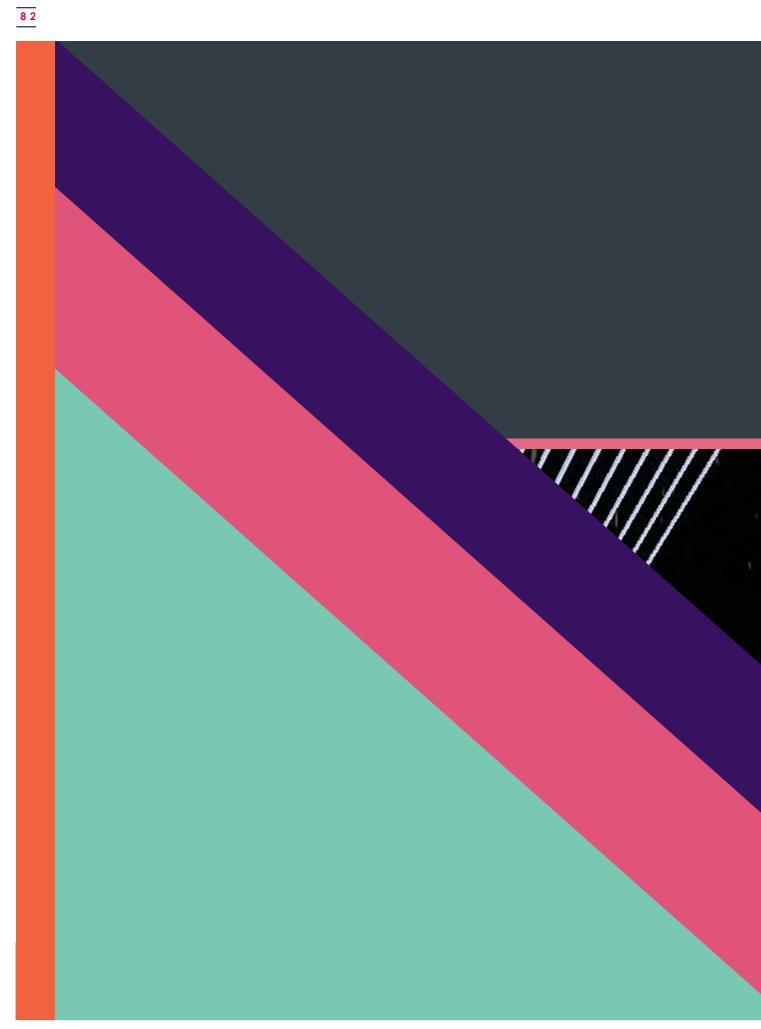
Left to right: Professor Eda Segarra, Dr Stephen Lucek, Professor Maurice J. Bric, Hannah Prendeville, Professor Thomas Mitchell, Joanna Poetz, Professor Anita Maguire (representing Dr Rohit Sharma), Professor Jane Grimson

**Joanna Poetz**, Trinity College Dublin, was awarded the Eda Sagarra Medal of Excellence for being the top-ranked postgraduate researcher in the arts, humanities and social sciences category. Joanna's research is in medieval studies, with her thesis based on the Waldensian texts.

**Hannah Prendeville**, Trinity College Dublin, was awarded the Jane Grimson Medal of Excellence for being the top-ranked postgraduate researcher in the science, technology, engineering and mathematics category. Hannah's research investigates the role of different lipid rich diets on antitumour immunity.

**Dr Stephen Lucek**, University College Dublin, was awarded the Maurice J. Bric Medal of Excellence for being the top-ranked postdoctoral researcher in the arts, humanities and social sciences category. Stephen's research is focused on adolescents' use of language in Irish secondary schools.

**Dr Rohit Sharma**, University College Cork, was awarded the Thomas Mitchell Medal of Excellence for being the top-ranked postdoctoral researcher in the science, technology, engineering and mathematics category. Rohit's research is in the design and synthesis of rationally designed novel antivirals.



## #LovelrishResearch



Ireland has a treasure trove of creative and innovative individuals whose research is powering progress, illuminating secrets of the past and transforming the way we think about the world. We launched our #LoveIrishResearch campaign in 2016 to foster greater public interest in, and knowledge of, what is happening in research in Ireland. Our initiative engages researchers at all career stages and across all disciplines, with a wide ranging programme including regional and institutional showcase events, monthly research themes, blog series and competitions. With the #LoveIrishResearch campaign, we aim to ensure that the general public values the role that research plays in driving our country's success.

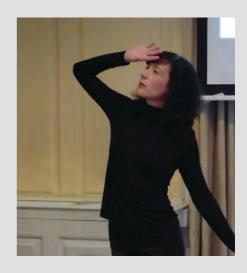
#### **CULTURE NIGHT**



Culture Night is a programme of free late-night entertainment, with venues and public spaces across the island of Ireland opening their doors as part of an all-island celebration of arts, heritage and culture.

For the third year in a row, we offered a packed schedule of activities in the historic surrounds of Boston College on Dublin's St Stephen's Green.

The creative processes and challenges of writing historical fiction, how exhibition design affects audience's experience, and the story of musical projects from the Seán Ó Riada Collection, formed just part of the exciting line-up of our Culture Night programme. The varied selection included a showcase of performances, demonstrations and interactive talks led by our researchers.



Dr Niamh Campbell presenting at Culture Night 2018

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# ELECTRIC PICNIC



Electric Picnic is a major cultural festival attracting an audience of over 55,000 people.

As part of this festival, MindField is well-established as a place where people can share and debate ideas, challenge their own views, see fresh new theatre and exciting performances from poets and musicians, and experience science experiments.

In September, we sponsored a panel discussion on *The Digital Public Square: Free Speech versus Fake News*, which was hosted by London-based Irish comedian and podcaster Jarlath Regan. Contributors on the day included our researchers Dr Mike Quayle (University of Limerick) and Dr Gillian Murphy (University College Cork).

Mike's research is concerned with identity, and how active identity production impacts on psychological experiences and outcomes. He is currently working on an European Research Council project which explores the value of multilayer/multimode social networks as a metaphor for the psychology of attitudes. This will help us to understand opinion dynamics as group processes and will be particularly useful for understanding opinion dynamics and social influence in online social media, like Twitter.

Gillian's research relates to understanding attention and memory in everyday scenarios. She is currently running a large-scale longitudinal study assessing memories for the 2018 Irish abortion referendum. This study includes investigations of susceptibility to fake news, flashbulb memories, voter well-being and voter reasoning.

### SCIENCE WEEK

To mark Science Week 2018, we highlighted a selection of topical questions that our Laureate awardees are finding answers to by lighting up the well-known Dublin City Council building on Dame Street with a series of light projections. Projected from the adjacent Dublin City Hall, the light show was visible on the side of the Dublin City Council building on Barnardo Square. We sought to inspire passers-by to think about the following topics, allowing them to gain additional insight through a corresponding blog entry available on our website:

- > Dr Matthew Campbell: What causes schizophrenia?
- > Dr Immo Warntjes: How did Ireland contribute to the formation of Europe?
- > Professor Carel Le Roux: How does the brain control what we eat?
- > Dr Jessica Smyth: Who were the passage tomb people?
- > Dr Annie Curtis: Can lack of sleep cause heart disease?
- > Dr Riona Ni Fhrighil: What role do poets play in human rights?
- > Dr Karen English: Can stem cells be used to cure severe asthma?
- > Dr Francis Ludlow: Can climate change lead to violence?
- > Professor Laoise McNamara: How do tumours invade bone cells?
- > Dr Paul Dockree: Why does the mind wander?
- > Professor Kevin Ryan: Can nanocrystals be used to conserve energy?
- > Dr Deborah Hayden: What was medical practice like in medieval Ireland?

Several of these researchers were also subsequently featured in RTÉ's Brainstorm.



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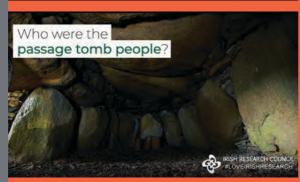


















### OIREACHTAS SHADOWING SCHEME



Left to right: Hildegarde Naughton TD; Peter Brown, Director of the Irish Research Council, and Morag Taite

In July, we announced a new scheme in which Irish researchers would 'shadow' an Oireachtas member at Leinster House. The ongoing initiative is aimed at strengthening academics' and politicians' understanding of the role research plays in public-policy formation.

Galway West / South Mayo TD Hildegarde Naughton was the first member of the Oireachtas to participate in the scheme, hosting researcher Morag Taite of National University of Ireland, Galway; Senator Maria Byrne hosted Dr Maura Adshead of University of Limerick in October; Senator Grace O'Sullivan hosted Dr Ray Griffin of Waterford Institute of Technology in December; Dublin and Dublin mid-west TD Eoin Ó Broin hosted Maynooth-based researcher, Grace Halpin also in December.

Left to right: Senator Maria Byrne, Dr Maura Adshead and Dr Eavan O'Brien, Assistant Director of the



## RTÉ BRAINSTORM



We became the first strategic partner for RTÉ's Brainstorm initiative which seeks to help enable the academic and research community to contribute to public debate, reflect on what's happening in the world and put forward new perspectives on a broad range of issues. The research featured on Brainstorm includes everything from contemporary world politics, to medieval literature, to climate change.

Launched in September 2017, RTÉ Brainstorm's founding partners are higher education institutions from across the island of Ireland, namely Dublin City University, Dublin Institute of Technology, National University of Ireland, Galway, Maynooth University, University College Cork, the University of Limerick and University of Ulster. We are the first research-funding agency to partner with the initiative.



## APPENDICES



#### **APPENDIX 1**

## IRISH RESEARCH COUNCIL BOARD MEMBERS

Board Member	Position	Attendance at board meetings		
		In person	Virtually	Total
Professor Jane Ohlmeyer	Erasmus Smith's Professor of Modern History at Trinity College Dublin and Director of the Trinity Long Room Hub	6		6(6)
Professor Daniel Carey	Professor and Director of the Moore Institute for Research in the Humanities and Social Studies at the National University of Ireland, Galway	5		5(6)
Professor Kieran Conboy	Dean of the College of Business, Public Policy and Law at the National University of Ireland, Galway	3	1	4(6)
Professor James Gleeson (until March 2018)	Professor and Co-Director of the Mathematics Applications Consortium for Science and Industry at the University of Limerick	2		2(2)
Dr Felicity Kelliher	Senior Lecturer and Co-Chair of the RIKON Research Group at the Waterford Institute of Technology	5		5(6)
Professor Ursula Kilkelly	Dean of the School of Law at University College Cork	6		6(6)
Professor Rob Kitchin	Professor in the National Institute of Regional and Spatial Analysis at Maynooth University	6		6(6)
Professor Debra Laefer	Professor in the School of Civil, Structural and Environmental Engineering at University College Dublin	1	2	3(6)
Professor Eithne McCabe	Fellow Emeritus in the School of Physics at Trinity College Dublin	2	1	3(6)
Professor Alan Smeaton (until March 2018)	Professor and Director of the Insight Centre for Data Analytics at Dublin City University	2		2(2)
Professor Emma Teeling	Professor in the School of Biology and Evironmental Science at University College Dublin	4		4(6)
Peter Brown	Director (ex-officio member)	6		6(6)

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# APPENDIX 2 STAFF MEMBERS

Peter Brown	Director
Dr Eavan O'Brien	Assistant DirectorImpact and Partnerships
Dr Andrea Valova	Assistant Director (Acting)Programmes and ResourcesMarie Skłodowska-Curie Actions (COFUND Programmes)
Emily Carroll	Programme ManagerGovernment of Ireland Postgraduate Scholarship Programme and International Space Programmes
Dr Suz Garrard	Postdoctoral Intern
Dr Raasay Jones	Programme ManagerLaureate Awards Programme and Communications
Niall Kelly	Research Support OfficerEuropean Partnerships (including HERA, NORFACE and CHIST-ERA)
Dr Aileen Marron	Programme ManagerGovernment of Ireland Postdoctoral Fellowships, Ulysses and Lindau Nobel Laureate Meeting Awards
Dr Maria Morrissey	Programme Manager Enterprise Programmes
Dr Sumona Mukherjee	Postdoctoral Intern
Dr Kieran McNally	Research Support OfficerMarie Sklodowska-Curie Actions(COFUND Programmes) and Enterprise Partnership Schemes
Kerry O'Leary	Research Support Officer Government of Ireland Postdoctoral Fellowship Programme, Ulysses and Lindau Nobel Laureate Meeting Awards
Dr Deirdre Quinn	Programme ManagerNCP H2020, including Societal Challenge 6 and COALESCE Research Fund
Vincent Sheridan	Programme ManagerResearch Support Officer Laureate Awards Programme

## **NOTES**




# IRISH RESEARCH COUNCIL

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