

IRISH RESEARCH COUNCIL

ANNUAL
REPORT
2019



IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn



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 (HEA). 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:

Laura Finnegan's watercolour(s) of Irish scientists

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The accounts for the Irish Research Council are published as part of the HEA Annual Report 2019.

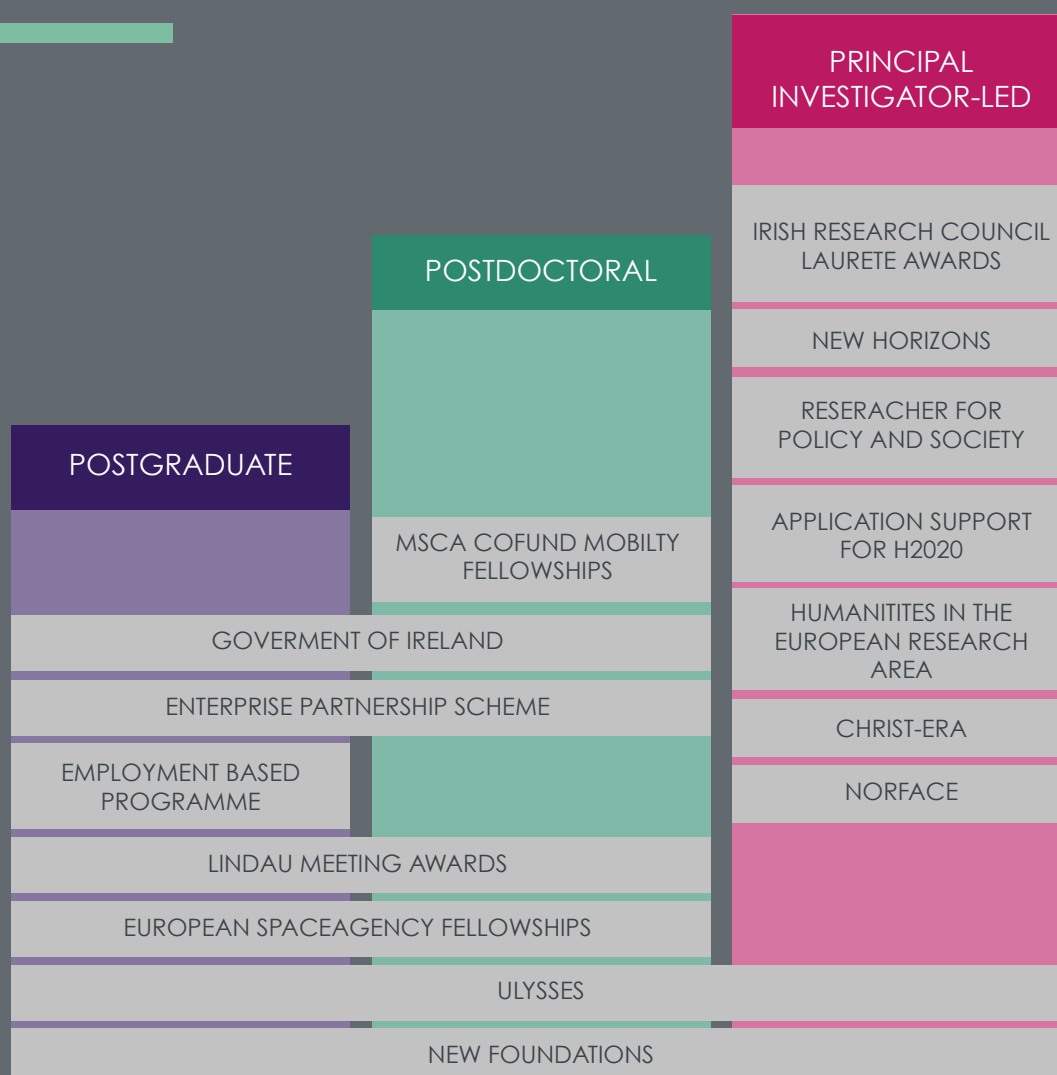


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OVERVIEW



HOW WE FUND



PARTNERSHIPS WITH GOVERNMENT DEPARTMENTS AND AGENCIES



An Roinn Airgeadais
Department of Finance



Coimisiún na hÉireann
um Chearta an Duine
agus Comhionannas
Irish Human Rights and
Equality Commission



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



Irish Aid
An Roinn Gnóthaí Eachtracha agus Trádála
Department of Foreign Affairs and Trade



HEA | HIGHER EDUCATION AUTHORITY
AN tUDBARAS um ARD-OIDEACHAS



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 2019. We are proud to have funded 1558 researchers across a portfolio of awards worth in excess of €159 million.

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 2019, the Council welcomed 288 new postgraduate scholars and 96 new postdoctoral fellows to its awardee community. 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.

The Council has 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.

Most of all, 2019 was a year of renewed and new collaborations nationally and internationally. Several new partnerships and scholarships were launched in 2019. For example,

- > **European Southern Observatory Cooperation:** The Council signed a five-year Partnership Agreement with the European Southern Observatory (ESO). The goal of the ESO Studentship Programme is to connect PhD students and their advisors with the infrastructure and experts at one of the world's foremost observatories. The programme offers an invaluable training opportunity for the next generation of Irish astronomers and users of ESO facilities. Under the agreement, the Council will fund up to ten one-year studentships or up to 5 two-year studentships over the term of this initial agreement.
- > **Ulysses:** Together with the Embassy of France, the Council announced the projects that have received funding as part of the Ulysses programme. This year, for the first time, a number of high-profile semi-state, public sector and private sector organisations in Ireland and France committed to offering specific researcher opportunities to selected research projects as part of the programme.

- > **IRC-UKRI:** The Arts and Humanities Research Council of the UK (AHRC) and the Irish Research Council announced a collaboration on a new programme that aims to deliver a transformational impact on Digital Humanities research in the UK and Ireland. The programme will exploit complementary strengths in the Digital Humanities between world-leading centres of excellence in the UK and Ireland.
- > **Countess Markievicz Award:** The Department of Business, Enterprise and Innovation, in partnership with the Council, announced a new postgraduate scholarship in honour of the legacy of Countess Markievicz, to aid the development of innovative national policies and to support the next generation of women leaders. The successful postgraduate researcher will undertake cutting-edge research, with the guidance of an expert advisory group, to develop the evidence base required in order to remove barriers and to create the supports needed to enable women to rise to the top of business and public service in Ireland.
- > **Department of Finance History Fellowship:** The Council and the Department of Finance appointed Dr Ciarán Casey to write the second volume of the history of the Department of Finance. A history of the first 36 years of the Department of Finance's existence was published in 1978, authored by the late Ronan Fanning, Professor of Modern Irish History at UCD. The book is considered a seminal work on the evolution of a key part of Ireland's administration as a young State. It is hoped the second volume by Dr Casey will be published in 2022, to mark the centenary of the Department of Finance and indeed the foundation of the State. This three-year fellowship is funded by the Department of Finance. Dr Casey will be based in University College Dublin for its duration.

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 2019. We appreciate your interest in our work and invite you to email us or visit our website if you require further information.

OVERVIEW OF ACTIVE AWARDS IN 2019

1558 directly funded researchers



365

Postdoctoral fellows
(GOI, EPS, CAROLINE
and Projects)

1148

Postgraduate scholars
(GOI, EPS, EBP and Projects)



45

Research assistants
(PI-led projects)

106 principal investigator-led projects



26

COALESCE

Laureate

48

16

ERA-NET Projects

1

Research Infrastructures

Other Research Projects

15

€159.3m value of award portfolio in 2019



€5.2m*

leveraged funding from other sources

234

Enterprise partners



104

Knowledge exchange and networking awards

9

Partnerships with government departments and agencies



26

Charity Partners in Civic Society Connections

* The funding from other sources includes €1.4 million received from EU funding in relation to CAROLINE and GENDERNET.

OVERVIEW OF NEW AWARDS IN 2019

214 / €18.3m GOI Postgraduate Scholarship Programme



86
Male



128
Female



191
European



23
Rest of world

106 STEM

108 AHSS

16 Institutions

41 / €3.3m Enterprise Partnership Scheme (Postgraduate)



21
Male



20
Female



34
European



7
Rest of world

28 STEM

13 AHSS

11 Institutions

33 / €2.5m Employment-Based Postgraduate Programme



13
Male



20
Female



27
European



6
Rest of world

13 STEM

20 AHSS

10 Institutions

76 / €6.4m GOI Postdoctoral Fellowship Programme



45
Male



31
Female



63
European



13
Rest of world

37 STEM

39 AHSS

8 Institutions

10 / €900k Enterprise Partnership Scheme (Postdoctoral)



4
Male



6
Female



7
European



3
Rest of world

10 STEM

0 AHSS

6 Institutions

10 / €1.6m CAROLINE MSCA COFUND Programme



4
Male



6
Female



8
European



2
Rest of world

4 STEM

6 AHSS

7 Institutions

26 / €4.8m COALESCE



12
Male



14
Female



25
European



1
Rest of world

3 STEM

23 AHSS

9 Institutions

DORA



The Irish Research Council becomes a signatory of the San Francisco Declaration on Research Assessment (DORA).

The Declaration on Research Assessment (DORA) recognizes the need to improve the ways in which researchers and the outputs of scholarly research are evaluated.

The Journal Impact Factor is a frequently used measure of a researcher's work. It was initially developed to help librarians make subscription-related decisions, but it has become a proxy for the quality of research. Despite many well-documented flaws, the Journal Impact Factor is commonly used in funding, hiring and promotion decisions. Researchers are judged by where they publish and not by what they publish.

The San Francisco Declaration on Research Assessment (DORA, 2012) highlights the inadequacies of the Journal Impact Factor for measuring research quality and provides a series of recommendations for improving research evaluation aimed at individual researchers, publishers, institutions, funding agencies, and providers of bibliometric services. DORA accepts that affecting cultural change across the research system is not trivial and needs to engage the entire research community acting with a single voice and adopting a number of measures in parallel.

The idea to write the declaration was developed in 2012 during the Annual Meeting of the American Society for Cell Biology in San Francisco. It has become a worldwide initiative covering all scholarly disciplines and all key stakeholders including funders, publishers, professional societies, institutions, and researchers.

As signatory to DORA, the Council is fully aligning its review and evaluation processes with DORA principles. To this end, all types of research output are recognised, and the Council is committed to assessing the quality and impact of research through means other than journal impact factors. In the spirit of supporting open research, the Council also considers a commitment to making data and other types of research, open and accessible.

PLAN S

Plan S is an initiative for Open Access publishing led by cOAlition S, an international consortium of research funding and performing organisations. These organisations, with the support of the European Commission and the European Research Council, have agreed to require full and immediate Open Access to research publications resulting from their research grants by the year 2020.

In February 2019 the Irish Research Council reaffirmed its commitment to Open Access publishing, emphasising its important role in promoting the exchange of knowledge and the dissemination of research findings. The Council noted the cOAlition S initiative's coordinated approach and ambitious intent. The current Council strategy on Open Access emphasises the central role of the researcher in shaping and facilitating Open Access, reflecting both the researcher's freedom and responsibilities. The Council will continue to support Open Access, taking into account the interests of the research community and society as a whole.

Regarding the implementation of Plan S, the Council recommended that a number of considerations be taken into account to ensure the welfare of researchers and enable greater inclusivity and dialogue across all disciplines. The Council recommended that a more detailed consideration of the diversity of research areas and disciplines and the unique characteristics of publishing practices among certain disciplines be incorporated into the implementation of Plan S. The Council advocated for greater engagement and training of researchers in publishing policy and practice, and to ensure the safeguarding of early-career researchers' prospects. The Council emphasised the role(s) of open archives and repositories in hosting research outputs, and welcomed proposals to cap Article Processing Charges (APCs). The Council recommended greater clarity on the provision of funding for Plan S, and that such provisions be made without prejudice to researcher or discipline.

The Council has emphasised its commitment to continue to work closely with other European research funding organisations in Science Europe and with organisations on a national level, particularly through ongoing discussions under the National Open Research Forum (NORF), with the aim of collaborating to achieve an open access environment that supports excellent research. The Council will remain committed to collaborating with all relevant stakeholders to achieve Open Access including: researchers, research funding organisations, research performing organisations, and government departments.

RESEARCH ACHIEVEMENTS

The Department of Finance (DFIN) partnered with the Irish Research Council to commission the second volume of the history of the DFIN covering the years 1959-1999.

The history of the first 36 years of the DFIN was published in 1978, authored by the late Ronan Fanning, Professor of Modern Irish History at UCD. It is planned that the second volume will be published in 2022, to mark the centenary of the Department of Finance, and indeed the foundation of the State.



Also in January, the Council opened the call for the Employment-Based Postgraduate Programme (EBP). The EBP programme provides postgraduate researchers with an opportunity to complete a master's or PhD while directly acquiring workplace experience and skills. The value of each research award is up to €96,000, depending on the duration of the postgraduate qualification.



January

February



The Council endorsed the principle of open access, noting its important role in promoting the exchange of knowledge and the dissemination of research findings. The Council joined a number of European research funding organisations (cOAlition S), with the support of the European Commission and the European Research Council, who agreed to require full and immediate open access to research publications resulting from their research grants by the year 2020.

The Council announced details of a new five-year strategic partnership with the São Paulo Research Foundation (FAPESP), the largest public research-funding organisation in Brazil.

The partnership will support and encourage collaboration in basic scientific research conducted by researchers in Ireland and researchers in the State of São Paulo. A key aim will be to promote collaborative applications for international funding schemes, particularly Horizon 2020 and its successor, Horizon Europe.



Later in February, Minister of State for Training, Skills, Innovation, Research and Development, John Halligan TD, announced details of a €4.3 million investment in the Council's Enterprise Partnership Scheme.

The Irish Research Council's Enterprise Partnership Scheme supports collaborations between researchers and partner organisations. Over the coming months, a total of 53 researchers will take up positions at higher education institutions in collaboration with 48 partner organisations.



In March, we announced seven research projects addressing the issue of gender equality across a range of important topics, as part of the European Union GENDER-NET Plus programme.

The Irish Research Council was one of the 16 international partners across 13 countries that formed GENDER-NET Plus, in cooperation with the European Union. Partners worked together to create a transnational funding call that was specifically designed to welcome proposals for research that integrates gender in addressing urgent societal challenges. This resulted in 13 projects being awarded funding, seven of which have Irish university partners.

Seven distinguished Irish researchers addressing gender equality met with Minister of State for Higher Education, Mary Mitchell O'Connor TD today at the President's Room, RDS, to mark International Women's Day. The Irish researchers – based at Dublin City University (2), University College Cork (2) and National University of Ireland, Galway (3) – are supported by an international group of research funding agencies, including the Irish Research Council and the Health Research Board.



March

April

In April, the Minister for Education and Skills Joe McHugh T.D. and Minister of State for Training, Skills, Innovation, Research and Development John Halligan T.D. announced an investment of €11.8 million in frontier research. The investment will fund 12 researchers under the Council's 2019 Advanced Laureate Awards Programme.

The 12 researchers receiving funding are at an advanced stage in their careers and will be supported to conduct ground-breaking, world-class research across a wide range of disciplines. Each awardee will receive a maximum of €1 million in funding, over a period of four years.



We announced that three Irish researchers will participate in transnational research projects aimed at gaining a deeper understanding of public spaces in Europe.

The three research projects, involving Irish principal investigators Aileen Dillane (University of Limerick), Bernadette Quinn (Technological University Dublin), and Ailbhe Kenny (Mary Immaculate College), will each receive €1m from a joint research programme coordinated by Humanities in the European Research Area (HERA).





The Irish Research Council, together with the French Embassy in Ireland, signed a Letter of Intent with EirGrid and Réseau de Transport d'Electricité (RTÉ) to mark their commitment to supporting the 'Ulysses' research programme over the next four years.

Ulysses is coordinated by the Irish Research Council and the French Embassy in Ireland. Under a new strand, it will facilitate joint research projects in the area of renewable energy, bringing together researchers in France and Ireland.

May

June

Together with the Embassy of France, we announced the projects that have received funding as part of the Ulysses programme. This year, for the first time, a number of high-profile semi-state, public sector and private sector organisations in Ireland and France committed to offering specific researcher opportunities to selected research projects as part of the programme.



The Irish Research Council welcomed the launch by Minister of State for Higher Education, Mary Mitchell O'Connor T.D., of the Senior Academic Leadership Initiative (SALI). SALI was developed in collaboration with a working group of representatives from the higher education institutions and is aimed at supporting institutions to take positive action to accelerate and achieve their gender equality and diversity goals and objectives.

It will award funding for up to 45 new and additional senior permanent posts across Ireland over a three-year period and aims to attract outstanding female applicants from within the sector in Ireland and internationally.





The Council announced the signing of five-year Partnership Agreement with the European Southern Observatory (ESO) during the ESO Council Meeting at Farmleigh House, Dublin. The agreement to support the ESO's international studentship programme was signed by Peter Brown, Director of the IRC, and Xavier Barcons, Director General of ESO.

The goal of the ESO Studentship Programme is to connect PhD students and their advisors with the infrastructure and experts at one of the world's foremost observatories. Under the agreement, the IRC will fund up to ten one-year studentships or up to 5 two-year studentships over the term of this initial agreement.

July

August

Enterprise and employers benefit from the expertise of Ireland's brightest young researchers through the Council's Employment-Based Programme.

A total of €2.5m is invested in 33 researchers through the EPB programme, where each funded researcher is placed in a role with a partner organisation for the duration of their full-time postgraduate studies – providing them with an opportunity to carry out their research while directly acquiring workplace experience and skills.





A team of geneticists with a desire to understand the inner workings of genes implicated in cellular identity discovered new biological targets that may help devise alternative therapies for cancers that are becoming resistant to existing drugs. Associate Professor in Genetics at Trinity College Dublin, Adrian Bracken, led the team that has just published its findings in the leading international scientific journal, *Molecular Cell*. Irish Research Council PhD Fellow in Professor Bracken's lab, Dr Evan Healy, is lead author on the paper, which was published in parallel with another study conducted by researchers at the Memorial Sloan Kettering Cancer Centre.

The Irish Research Council held a panel discussion in NUI Galway on Culture Night on the topic of the housing and homelessness crisis.

The panel discussion, "Cultures of Exclusion in Contemporary Ireland", was chaired by Professor Daniel Carey, who is a member of the Irish Research Council and the Director of NUI Galway's Moore Institute for Research in the Humanities and Social Studies.



Professor of Geography at Maynooth University, Mary Gilmartin was hosted at Leinster House by Kildare South TD, Fiona O'Loughlin as part of the Irish Research Council's Oireachtas Shadowing Scheme.

The scheme sees some of Ireland's most promising researchers 'shadowing' members of the Oireachtas for the day in Leinster House. The scheme was developed by the Irish Research Council to bridge the divide between policy-making and research, and to ensure that elected representatives are supported to tap into publicly-funded research.

September

October



Two Irish scientists were selected to join the traineeship programme at the European Space Agency (ESA) following a competitive national process. The coveted positions are part of an ongoing partnership between the Irish Research Council and ESA, which hosts Irish trainees at its centres across Europe.

As part of the programme, the scientists will work on cutting-edge projects and gain practical experience in high-tech space activities such as: space science; Earth observation; telecommunications; navigation; mission control and operations; and human spaceflight.

The Arts and Humanities Research Council of the UK (AHRC) and the Irish Research Council collaborate on a new programme that aims to deliver a transformational impact on Digital Humanities research in the UK and Ireland. The programme will exploit complementary strengths in the Digital Humanities between world-leading centres of excellence in the UK and Ireland.



The Irish Research Council and the Department of Finance announced the appointment of Dr Ciarán Casey to write the second volume of the history of the Department, covering the work of the Department from 1958 to 1999. This three-year fellowship is funded by the Department of Finance. Dr Casey will be based in UCD for its duration.



The Department of Business, Enterprise and Innovation, in partnership with the Irish Research Council, announced a new postgraduate scholarship in honour of the legacy of Countess Markievicz, to aid the development of innovative national policies and to support the next generation of women leaders.

The successful postgraduate researcher will undertake cutting-edge research, with the guidance of an expert advisory group, to develop the evidence base required in order to remove barriers and to create the supports needed to enable women to rise to the top of business and public service in Ireland.

An investment of over €24 million in early-career researchers were announced by Minister of State for Training, Skills, Innovation, Research and Development, John Halligan TD, under the Irish Research Council's Government of Ireland programmes.

The Irish research and innovation system will benefit from a new cohort of 294 postgraduate and postdoctoral researchers, who will conduct cutting-edge research across disciplines.



November

December



The winners of the Irish Research Council 2019 'Researcher of the Year' awards were revealed at a ceremony to commend the very best of the Council's awardees and alumni working in academia, industry, civic society and the public sector. President of Ireland Michael D. Higgins was Guest of Honour and presented the winners with their awards.

The 2019 awardees were Professor Laoise McNamara, NUI Galway (Researcher of the Year); Dr Jeremy J. Piggott, Trinity College Dublin (Early-Career Researcher of the Year); while Prof. David Farrell, University College Dublin, won this year's Impact Award.

In recognition of President Higgins's attendance as Guest of Honour, the Council made a special award to academic and activist Professor Emeritus Kathleen Lynch, University College Dublin, for her exceptional contribution over many decades to Equality and Participation, a theme of his presidency.

This year's Medals of Excellence were awarded to Shirley Howe, Maynooth University, (Eda Sagarra Medal of Excellence), Michael Craig, Trinity College Dublin (Jane Grimson Medal of Excellence), Dr Seán Hewitt, University College Cork (Maurice J Bric Medal of Excellence), and Dr. Harold Berjamin, NUI Galway (Thomas Mitchell Medal of Excellence).

Five researchers recently supported by the Irish Research Council were amongst those announced by the European Research Council (ERC) in December as winners of its latest Consolidator Grant competition. Two of the five researchers are recipients of IRC Laureate Awards. A sixth researcher, in the Social Sciences and Humanities, will also benefit from an ERC Starting Grant. In total, seven Ireland-based researchers secured ERC Starting and Consolidator grants this year.



SELECTION OF 2019 PUBLICATIONS AND HONOURS

Our funded 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 outputs and honours that our current and former awardees have delivered and received in 2019.



SCIENCE FOR THE LOVE OF IT

Winner of the Mary Mulvihill Award

Laura Finnegan was awarded a Government of Ireland Postgraduate Scholarship in 2017 (working in the Smurfit Institute of Genetics, Trinity College Dublin).

LEAN BUSINESS IRELAND AWARD 2019

Winner of the Lean Business Ireland Award 2019
Michael O'Meara was awarded a Government of Ireland Postgraduate Scholarship in 2018 (working in Waterford Institute of Technology).



THE MUSEUM BUILDING OF TRINITY COLLEGE DUBLIN

Prof Christine Casey was awarded an Advanced Laureate Award in 2019 and a New Horizons award in 2016 (working in Trinity College Dublin).

Website: <http://makingvictoriandublin.com>

BRENDAN BEHAN IN PARIS

Radio documentary on RTÉ Radio 1, produced by Deirdre McMahon

Deirdre McMahon was awarded a Government of Ireland Postgraduate Scholarship in 2015 (working in University College Dublin).
Link: www.rte.ie/radio/doconone/2019/0829/1071608-brendan-behan-in-paris/

*THE MAGHERA PONY*

Music album released by Matthew Noone

Matthew Noone was awarded a Government of Ireland Postdoctoral Fellowship in 2018 (working in University of Limerick).

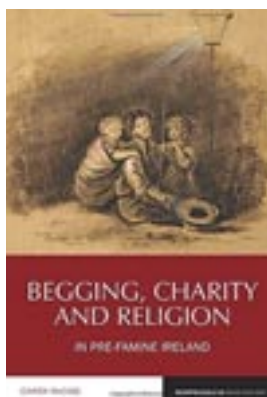
Listen to the album here: matthewnoone.bandcamp.com/album/maghera-pony

MULTIPLE REGIONS OF SHOCK-ACCELERATED PARTICLES DURING A SOLAR CORONAL MASS EJECTION

Article authored by Diana E. Morosan, Eoin P. Carley, Laura A. Hayes, Sophie A. Murray, Pietro Zucca, Richard A. Fallows, Joe McCauley, Emilia K. J. Kilpua, Gottfried Mann, Christian Vocks & Peter T. Gallagher E

Eoin Carley was awarded an Embark award in 2010 and an Elevate award in 2014. **Laura Hayes** was awarded

an Enterprise Partnership Scheme Postgraduate fellowship in 2014. **Sophie Murray** was awarded a Government of Ireland Postdoctoral Fellowship in 2017. (all working in Trinity College Dublin).



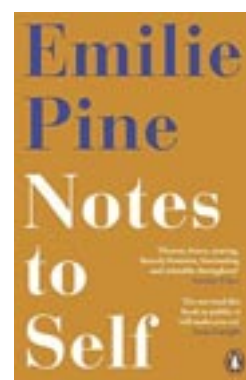
BEGGING, CHARITY AND RELIGION IN PRE-FAMINE IRELAND

Published by **Ciarán McCabe**, who was awarded a Government of Ireland Postdoctoral Fellowship in 2013 (working in Maynooth University).

#NOTESTOSELF

Published by Emilie Pine and named the An Post Irish Book of the Year 2018

Emilie Pine was awarded a Postgraduate Scholarship in 2001 and a New Horizons award in 2015 (working in University College Dublin).



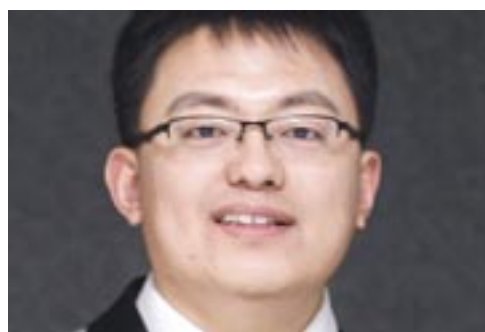
HOME SWITCH HOME

Published by Wil Oshoke Ikpekha

Wil Oshoke Ikpekha was awarded an Enterprise Partnership Scheme postgraduate scholarship in 2012 (working in Dublin City University, currently in Waterford Institute of Technology).

*RE-PURPOSING OF PHARMACEUTICAL DRUGS IN
THE TREATMENT OF CASTRATE RESISTANT
PROSTATE CANCER*

Debbie O'Reilly, winner of Researchfest @ Inspire Fest 2019, was awarded a Government of Ireland Postgraduate Scholarship in 2018 (working in Dublin City University).



KATHLEEN LONSDALE PRIZE

Xinxin Xiao winner of the Royal Irish Academy Kathleen Lonsdale Prize

Xinxin Xiao was awarded a Government of Ireland Postgraduate Scholarship in 2014 (working in University of Limerick).

IRELAND AND THE ENGLISH LAKE POETS

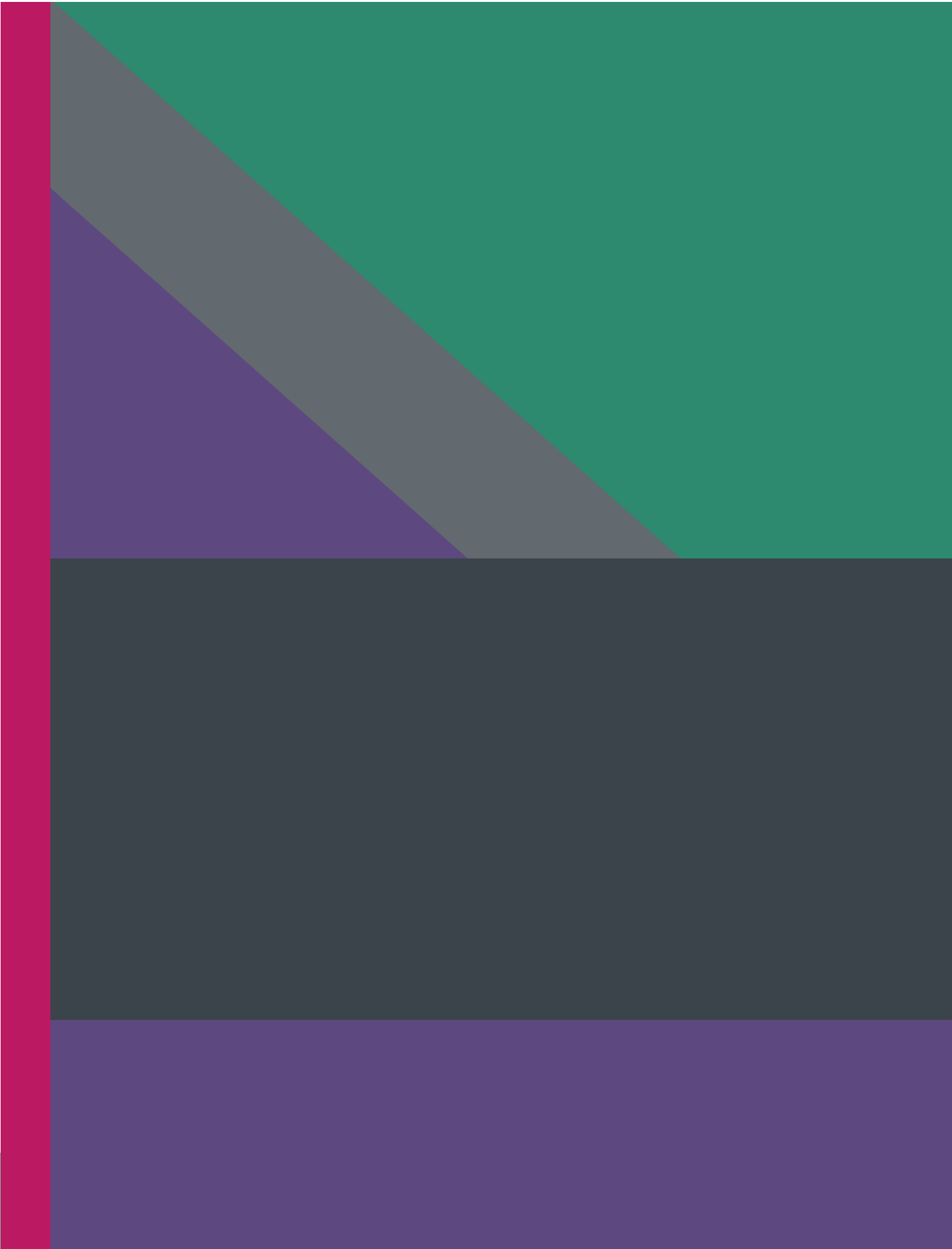
Exhibition curated by Brandon Yen and Amy Prendergast

Brandon Yen was awarded a Government of Ireland Postdoctoral Fellowship in 2017 (working in University College Cork).

Amy Prendergast was awarded a Government of Ireland Postdoctoral Fellowship in 2013 (working in Trinity College Cork).



<https://twitter.com/IrishResearch/status/1164154865318318080/analytics>



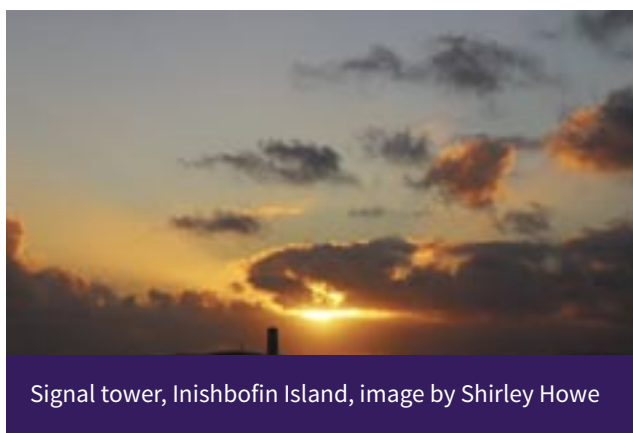
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FUNDING EXCELLENT EARLY CAREER RESEARCHERS



GOVERNMENT OF IRELAND POSTGRADUATE SCHOLARSHIP PROGRAMME

€18.3 million 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, from archeology to zoology.

In 2019, we awarded 214 new scholarships to researchers from 27 countries on the basis of the excellence of their projects, with an associated commitment of €18.3 million.

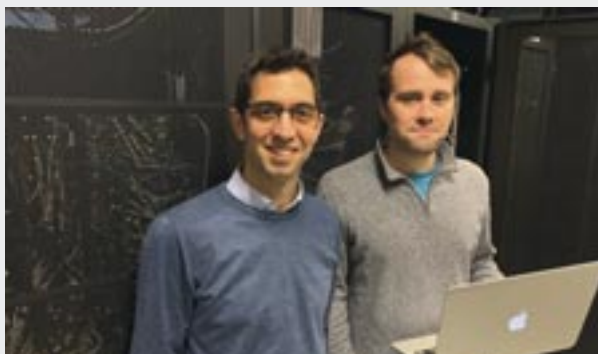
Disability inclusion, fighting osteoporosis, labour policies and Irish literary revivals and landscape studies are just a sample of the new research topics selected for funding in 2019.

This brings the total number of active Government of Ireland Postgraduate Scholarship awards in 2019 to 852.

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 2019 were the Department of Foreign Affairs and Trade, the Department of Children and Youth Affairs and the Environmental Protection Agency.



Case Studies



Michael and his supervisor, Professor Max Garcia-Melchor



Michael presenting his research at a conference

Awardee: Michael Craig

Project title: Accelerated Discovery of Hybrid Materials for Water Splitting Technologies

Michael is a postgraduate researcher at Trinity College Dublin investigating energy storage. Solar panels and wind turbines are excellent sources of renewable electricity, however, it is not always sunny or windy when we need electricity. In contrast, when it is too windy, power output can be so high that transmission lines cannot handle the input, meaning turbines must stop spinning. In Ireland, about 5% of available wind energy is lost because of this.

The project Michael is working on proposes an energy storage solution that could tackle both of these problems at once. By using excess renewable electricity to split water into hydrogen and oxygen using electrolysis, molecular hydrogen can be stored in tanks and used as a green fuel. This H₂ can be converted back to electricity in fuel cells, with the only exhaust being water, presenting an opportunity to help decarbonise transport and heating.

What, then, is preventing us from using water, wind and sunlight to power our homes and electronic devices? Splitting water involves two separate processes which generate H₂ and O₂ sequentially; the generation of O₂ requires a large energy input and expensive, scarce materials. There simply needs to be cheaper, better materials (ie. catalysts) to allow hydrogen energy storage to become economically viable.

To address this major issue, Michael is simulating catalysts for the O₂-generating reaction using supercomputers. Computational calculations help to accelerate the search for a needle in the haystack material since hypothetical candidates can be tested at a faster rate than is possible in a lab. So far, his research has highlighted important refinements to commonly-applied methods for simulating catalyst efficiency, and he is currently working on applying machine learning to use these insights to help identify more efficient and cheaper catalysts for this reaction to enable us to reduce our carbon footprint.

Awardee: Shirley Howe**Project title:** Of land and ocean: Culture and climate on Ireland's Islands

The Rusheen Pier on Inishbofin destroyed in storms of Winter 2014/2015

Shirley, a PhD student at Maynooth University, proposes a cross-disciplinary approach drawing on geography and anthropology to examine how ideas regarding the culture-nature relationship mediate perspectives of, and responses to, anthropogenic climate change. Shirley's project responds to the Environmental Protection Agency (EPA) proposal that the social and economic factors that result from cultural frameworks influence solutions and barriers to sustainable production, consumption and behaviour, to

inform a "better understanding of how individual and collective behaviour can either help or hinder" (EPA, 2014) achievement of Ireland's low emission, sustainable economy and culture.

Her research considers key themes including: the changing culture-nature relationship in Western thought, and its drivers; if humans and our societies are a part of nature or apart from it, and if we perceive of ourselves as being part-nature, or not-nature; and how weather, climate, land and ocean intertwine with cultural processes, and if or how these are impacted by climate change.



[Shirley Howe, dressed for the weather]

Shirley's central methodology is ethnographic research, with a particular interest in Ireland's island communities. Often perceived as on the margins, or politically and economically neglected, these resilient communities live at the front of changing climate patterns. As an immersive, qualitative method, periods of ethnographic research enable Shirley to interact with the vibrant community of approximately 170 permanent residents of Inishbofin Island off the coast of County Galway. In furthering her understanding and analysis of what it means to live in an environment where every action and non-action is dependent on the weather, Shirley's work investigates how this lived reality informs the understanding of the culture-nature relationship for islanders, and how it may influence perceptions of climate change. This rich learning is essential to centre the voices of the community members that contribute to her research, and to subsequently apply this learning more widely to the issue of climate change.

Therefore, Shirley's research proposes that it is necessary to learn about existing culture-nature understandings if climate challenges are to be effectively responded to. It will contribute to progressing the strategies required to engender cultural engagement with climate change and advancement of policies, and to development of necessary adaptation and mitigation actions as an effective response to climate change becomes ever more critical.

GOVERNMENT OF IRELAND POSTDOCTORAL FELLOWSHIP PROGRAMME

€6.4 million 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 2019, 76 new researchers from 18 countries were awarded these prestigious and highly competitive fellowships, with an associated commitment of €6.4 million.

Gender, refugees and forced displacement in Northern Ireland's 'Troubles', generating novel miRNA therapeutics for the treatment of multiple sclerosis, emotions in moral development, the fight against homelessness in Dublin and Lisbon, and the design and synthesis of rationally designed novel antivirals are some examples of the new projects selected for funding in 2019.

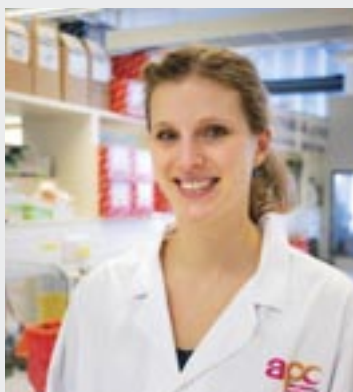
This brings the total number of active Government of Ireland Postdoctoral Fellowship awards in 2019 to 223.



Case Studies

Awardee: Kirsten Berding Harold

Project title: Gut Reactions and Brain Function: Nurturing the gut microbiota to improve stress responses and cognitive function



Kirsten Berding Harold at UCC

What if modifications to our diet allowed us to feel less stressed and boost our mood? Increasingly, science is showing that a healthy diet is fundamental in supporting optimal mental health. What has also been discovered by scientists over the last decade is that the millions of little bugs (called microbiota) living in our gut can control many aspects of our brain, including our stress responses and mood. Importantly, the types of microbes in our gut and their activity can be controlled, for example through diet, which might be a new way to improve our mental health. However, a lot more needs to be explored in this triangular relationship between diet, the gut microbiota and mental health.

This is the question UCC researcher Kirsten sets out to explore in her project. Using a specific dietary intervention aimed to alter the gut microbes, Kirsten is investigating whether the diet would improve mood and feelings of stress of the participants and enhance resilience to an acute stressor. The results show that participants who followed the diet, which was rich in fruit and vegetables, grains, legumes and seeds, and fermented foods, for 4 weeks, felt significantly less stressed and also had better sleep quality. First results from the microbiota analysis revealed that certain microbes, which could be harmful, might decrease after following the diet. Kirsten is now focusing on further analysing how microbes responded to the diet and is also looking at potential mechanisms (including the immune system and microbial metabolites, which are produced by the microbes by digesting food) that could be linked to the changes in the participants' feelings of stress. Ultimately, she hopes that the results obtained through this study will inform policies and eating guidelines to support mental health of the population and reduce the incidence of stress-related conditions, such as depression, and pave the way to develop new, easily accessible intervention strategies for patients affected by mental illness.

Awardee: Conor Linnie

Project title: The Inter-Arts Networks of British and Irish Post-War Periodical Culture



Conor Linnie in the UCD Special Collections Library

Conor's project at University College Dublin explores the periodical networks that connected independent literary and artistic activity in Britain and Ireland during the two decades after the Second World War. The project maps the migrant milieu of writers and artists who circulated between the two islands and who found crucial focal points of creativity and association in a cluster of interlinked magazines: *Envoy*, *The Bell*, *Irish Writing*, *Horizon*, *Nimbus* and *X: A Quarterly Review of Literature and Art*.

The project is the first interdisciplinary study of its kind to seriously consider the overlapping worlds of literature and visual art in Britain and Ireland in the post-war era, situated within the field of periodical studies to establish the 'little magazine' as the period's key site of inter-arts exchange. This magazine culture stimulated literary and artistic traffic across the Irish Sea in a way that was central to the development of new aesthetic and ideological practices. The global social and economic transformations of the post-war era refigured literary and artistic life in increasingly transnational terms. Magazines represented vital nodes of inter-arts activity and expression in a rapidly globalising sphere. This project will demonstrate how periodical networks stimulated inter-arts exchange in ways that led to the creation of new distinctive forms and ideas.

Conor's research will form the basis of a unique digital exhibition drawing on UCD's rich Cultural Heritage Collections. The project establishes an inter-institutional collaboration between UCD Library Special Collections and the Museum of Literature Ireland to create a public digital platform showcasing the role of little magazines in mid-twentieth century literary and visual culture.

LINDAU NOBEL LAUREATE MEETING AWARDS



From left to right: Vijaykumar V. Jadhav, Sarah Guerin, Dame Jocelyn Bell Burnell, Christopher A. Broderick, Niamh Kavanagh, Adam Kelly

Once every year, 30-40 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 2019, five Ireland-based researchers were chosen to take part in the 69th Lindau Meeting, dedicated to the fields of physiology and medicine.

Following their nomination by the Council, the researchers went through a highly competitive multistage 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 successful nominees who represented Ireland at the 69th Lindau Meeting dedicated to the fields of physiology and medicine were:

- > **Niamh Kavanagh**, the Tyndall Institute at University College Cork, whose research focuses on designing, building and optimising an optical communications system to provide alternatives for future high-capacity, high-speed internet growth;
- > **Christopher A. Broderick**, also based at the Tyndall Institute, who works on condensed matter theory and computational physics;
- > **Sarah Guerin**, based at the Bernal Institute at University of Limerick, who is developing molecular modelling tools to predict electronic structures and certain responses of molecular crystals;
- > **Adam Kelly**, a nanoscientist at Trinity College Dublin, whose research focuses on developing printed electronics from solution-processed 2D materials;
- > **Vijaykumar V. Jadhav**, based at the School of Chemistry, University College Cork, whose research focuses on the field of energy storage and material physics.

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 2019



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.

Recognising the unique level of expertise in space technologies that has been developed in the various ESA centres, the Irish Research Council entered into an agreement with ESA to collaborate in the training of Irish young engineering or science graduates in ESA technical fields of specialisation.

Since the signing of the agreement in 2016, a total of 6 Irish Graduates have had the opportunity to gain practical experience in high-tech space activities in ESA centres.

Eoin O'Neill – European Space Operations Centre (ESOC), Darmstadt, Germany

The ESOC serves as the main mission control centre for ESA and is home to the engineering teams that control spacecrafts in orbit, manage the global tracking station network, and design and build the systems on the ground that support missions in space. Eoin joined the ESOC team on the project titled Artificial Intelligence and Data Analytics for space operations. The team is focused on developing prototypes and novel applications to support Space Operation tasks, such as early detection, diagnostics, forecasting and planning, using AI technology.

Eoin O'Neill's Testimonial:

"As I've always been passionate about space, the chance to be a trainee at the European Space Agency is a fantastic opportunity both personally and professionally. It will be the beginning of what will hopefully be a long career in the space industry, and I hope that I will be able to contribute what I learn during my time as a trainee to the Irish space industry in the future."

Eoin Tuohy – European Astronaut Centre (EAC) – Cologne, Germany

The EAC hosts the European astronaut corps and is responsible for astronaut training and medical operations. Eoin joined the EAC team on the project titled the **Spaceship EAC Project, Future Missions** at EAC the goal of which is to develop technologies and concepts relevant for exploration on the Moon. The focus of the proposed National Trainee activity is to support EAC activities within the frame of the "Spaceship EAC" initiative in the area of a medical capability for future human exploration missions beyond Low Earth Orbit (LEO).

Eoin Tuohy's Testimonial:

"This traineeship is such a wonderful opportunity for me. I will get to work with leading researchers throughout ESA as well as gaining valuable insight into the field of human spaceflight. I also hope to use this traineeship to gain the knowledge and experience that will help me to inspire Irish students to pursue careers in the space sector and explore what the space industry in Ireland has to offer."

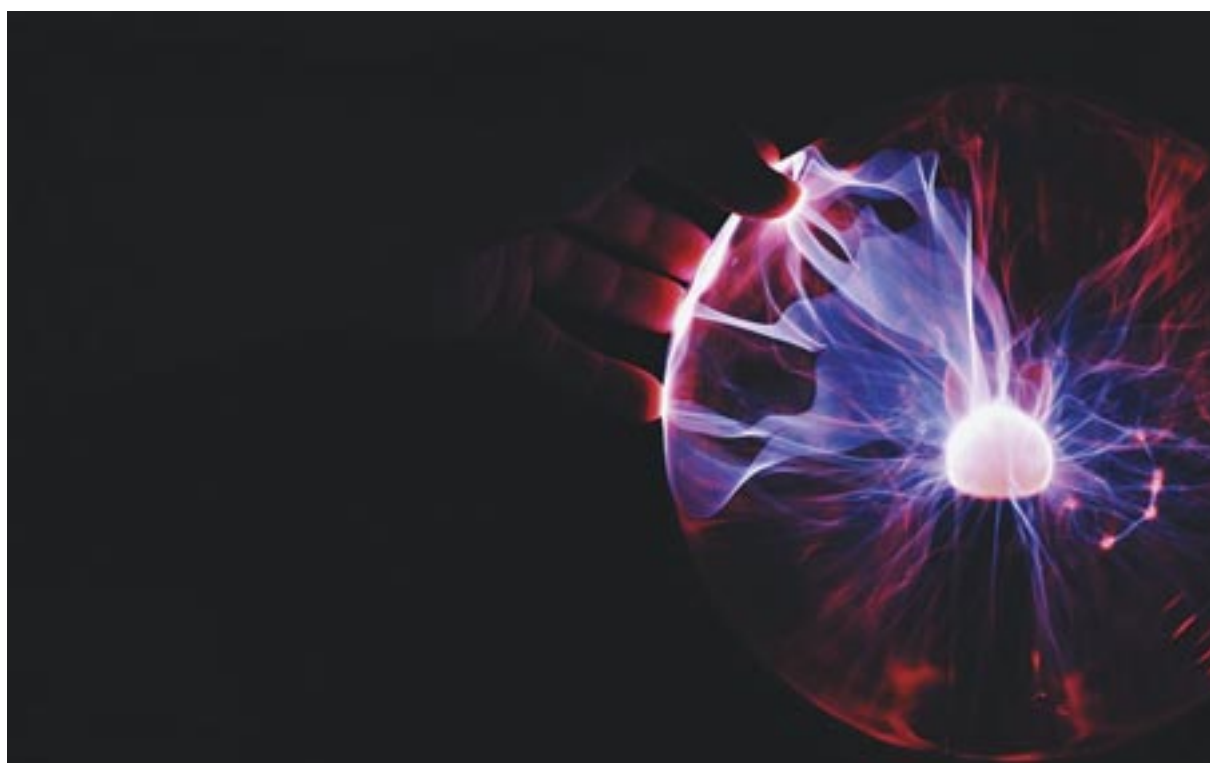


Eoin O'Neil and Eoin Tuohy



3

POWERING
ENTERPRISE



€6.7 million committed to support enterprise–academia collaborations

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 2019, we awarded 74 new scholarships and 10 new fellowships across our suite of enterprise programmes, with an associated commitment of €6.7 million.

In collaboration with 234 partners, this brings the total number of active awardees in 2019 to 263.

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 *Innovation 2020*, 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 2019, we awarded 33 new scholarships amounting to €2.5 million.

The programme has placed students with a wide range of employers, including Novartis, Glanbia Ingredients, National Library of Ireland, and the Gaelic Athletic Association.

A prospective analytical cohort study into physical activity and adolescent wellbeing, process and ingredient optimisations of an infant food formula, and innovation and digitalization for healthcare management and access globally are examples of the new research topics selected for funding in 2019.





Case Studies

Awardee: Sinead McEntee

Project title: Process and ingredient optimisations to develop an infant formula with more desired process-ability and nutritional characteristics

Partner: Glanbia Ingredients

Mothers' breast milk is considered the optimal source of nutrition for infants. It enhances immune function, reduces acute and chronic diseases, and is hypoallergenic. However, for infants who cannot be breast-fed, infant formulas (IF) provide a suitable alternative. Sinead is a postgraduate researcher based at University College Cork, whose research focuses on developing infant formulas for infants who cannot be breast-fed.

Glanbia is in a unique position in Ireland of having the capability to produce novel protein dairy streams, allowing for the enrichment of β -casein and whey protein fractions. Sinead's project uses these protein streams as a base for the development of a complete IF with an amino acid profile closer to human milk. Through combining the liquid protein fractions, IF can be produced without the need to dry individual protein ingredients, leading to a more economical and sustainable IF production model.

Water removal is one of the costliest operations during IMF powder production, this project assesses the use of optimised membrane technology as a cost-effective mode of concentration. Spray drying is a critical process as it largely determines IF powder quality. IFs are considered relatively low-protein, high-lactose fat-filled milk powders and are often difficult to spray dry due to issues with stickiness in the dryer, associated with amorphous lactose and/or emulsion destabilisation. Therefore, to increase drying efficiency, processing parameters must be optimised to ensure the physical and nutritional stability of concentrates during spray drying. Sinead's project aims to develop an IF process that provides the required amino acid and protein profile using membrane filtration which can be concentrated, and spray dried under conditions where lactose crystallisation is controlled.





Maeve Casserly at the National Library

Awardee: Maeve Casserly

Project title: Why Remember? Evaluating the National Library of Ireland's public engagement in the Irish Decade of Centenaries as a primary case study to produce a best-practice guideline for heritage practitioners producing commemoration in the cultural heritage sector.

Partner: National Library of Ireland (NLI)

What role does commemoration play in the formation of national identity through public engagement with history? Maeve, a postgraduate researcher at University College Dublin, evaluates current commemorative practices in order to answer reflective questions about the role of commemoration, and to establish best practice guidelines for commemoration programmes for National Cultural Institutions (NCIs) and heritage practitioners, thus significantly contributing to public engagement and learning.

Using a case study approach, Maeve's research project evaluates how the National Library of Ireland (NLI) engages the public with history through its Irish Decade of Centenaries (DOC) programme. The project will analyse how NCIs, including the NLI, state-sponsored and private cultural heritage institutions in Ireland have responded to the requirement for public commemoration by evaluating engagement strategies during 2014-2021, specifically historical narratives presented in public exhibitions.

The DOC represents a major commemorative period in Irish history because of the diversity of events and groups it encompasses, from Irish participation in WWI, the Easter Rising, the War of Independence, and the partition of Northern Ireland. The way in which these events are remembered has a major impact on contemporary national identity and international relations, particularly in the context of changing relationships and borders. Maeve's project addresses how NCIs devise and implement public engagement policies through their exhibitions. It will determine the function and impact of commemoration in remembering difficult histories in society, and develop international best-practice guidelines for the cultural heritage sector managing public engagement with commemoration.

ENTERPRISE PARTNERSHIP SCHEME



Chart from Dublin Climate Finance Week, provided by awardee Norah Storey

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.

In 2019, we awarded a total of €4.2 million to 51 researchers collaborating with 60 partner organisations.

New research topics selected for funding in 2019 included an examination of the decision making about investment in low-carbon technologies, injury surveillance in elite-level women's football, improving clinical decision making in early-stage breast cancer screening, and analysis of housing supports for low-income Dublin households.

Enterprise partners in 2019 included AIB, the Football Association of Ireland, Microwave Vision SA, Clúid Housing, Fighting Blindness, GreenLight Pharmaceuticals, Teleflex Medical Europe, Ludger Ltd., Valitacell Ltd., and Killruddery Arts, Culture, Ecology and Heritage.



Case Studies



Norah Storey (left) at the BAFA (British Accounting and Finance Association) annual conference in Birmingham with two of her WIT colleagues (Nora Gordon and Denis Walsh)

Awardee: Norah Storey

Project title: An Exploration into the Influences Underpinning the Decision-making Process of Institutional Investors in the Low Carbon Agenda: Perspectives from Germany, Ireland and the UK

Partner: AIB

Based at the Waterford Institute of Technology, Norah is exploring the decision-making perspectives of institutional investors in the low carbon agenda. If Europe is to reach the ambitious targets of the Paris 2015 climate agreement, additional annual investment of €500 billion per annum is required. Institutional investors are seen by many as the natural fit to bridge the investment gap but currently they provide less than 2% of global climate finance despite having long-term investment funds available. Why these investors are unable or unwilling to allocate funds to this agenda is the focus of this research.

This project determines the key influences and factors pertaining to decision-making processes of institutional investors in the low carbon agenda in Europe, utilising a behavioural finance lens alongside traditional finance and institutional theory frameworks. The project's scope encompasses three major jurisdictions: Germany, Ireland and the UK. Germany, a relatively mature low-carbon regime, is the largest economy in the EU. The UK, a fast-changing market, is the third largest economy in the EU. Ireland, an emerging market, is one of the fastest growing economies in the EU.

Norah's research will give insights into the drivers, motivations, and barriers for institutional investors investing in the low carbon agenda in these jurisdictions. A greater understanding of how and why institutional investors are making decisions will play a central role in the current development of sustainable financial frameworks by the EU as Europe works to meet climate targets in 2035 and beyond.

Awardee: Declan O'Loughlin

Project title: Early-stage radar-based breast cancer screening: Improving clinical decision making

Partner: Microwave Vision SA

In recent years, survival rates for breast cancer have increased dramatically due to improving treatments, better diagnostic and screening tools and increased awareness of its signs and symptoms of breast cancer. In light of these advances, the World Health Organization (WHO) continue to encourage early detection and asymptomatic screening (BreastCheck in Ireland) to help combat the impact worldwide. Currently, x-ray mammography is the only breast cancer screening tool proven to help, however, x-ray mammography can be very uncomfortable, the equipment is expensive and must be used in a hospital environment. Radar-based breast imaging is an emerging imaging tool which is safe, comfortable and could potentially be used in local clinics even in remote or under-developed regions. Exploiting the interaction of harmless, low-power microwaves with the body, radar-based breast imaging has the potential to find early-stage cancers more effectively, improving treatment and survival for women world-wide.

Engineering researcher in NUIG, Dr Declan O'Loughlin, has partnered with a leading industrial French company, Microwave Vision SA to examine how to improve the value of microwave breast images to the clinicians. Microwave Vision SA have developed Wavelia, one of two industrial radar-based breast imaging systems used in clinical trials, and to date, over thirty women have participated in trials at University Hospital Galway. Declan is exploring how differences between size, shape and composition of the breast between women can impact the image quality and hence the detection rate of radar-based breast imaging. While over ten radar-based breast imaging systems have been used with patients worldwide, most trials to date have focused on comfort, safety and preliminary detection results. This project addresses some key remaining challenges for clinical acceptance of radar-based imaging using high-quality clinical data gathered by the industrial partner, namely improving the detection rate (sensitivity and specificity).

Specifically, this project examines if and how the radar-based imaging algorithm accounts for variability in the breast. The human breast is a complex organ containing many different tissue types such as skin, fat, glands and potentially tumours. Differences in skin thickness, tissue distributions and electrical properties of the tissues between women are common and normal, and the breast can also change due to age, menstrual cycle, and the menopause. This research project proposes a novel imaging algorithm which reconstructs different regions of the breast in turn to account for local variations. These images are then combined to form a complete picture of the breast, helping to improve the image quality and detection rates, potentially finding tumours which would otherwise have been obscured by local variations in the breast. Preliminary results from this project have been used to improve imaging performance of future generations of the Wavelia device, helping to bring radar-based breast imaging from the research bench to the patient bedside.





4

GOVERNMENT PARTNERSHIPS



DEPARTMENT OF FINANCE HISTORY FELLOWSHIP



Ciarán Casey upon receipt of his award

In January 2019, the Department of Finance commissioned the Irish Research Council to source a scholar to write the second volume of the history of the Department.

The Department was founded in 1922, and a history of the first 36 years of its existence was published in 1978. This first volume of the Department's history was authored by the late Ronan Fanning, former Professor of Modern Irish History at UCD.

Following a competitive, externally reviewed process managed by the IRC, Dr Ciarán Casey was appointed to take up where Professor Fanning left off, charting the work of the Department from 1958 to 1999. Dr Casey's 3-year fellowship, funded by the Department of Finance and hosted by UCD's School of History, began in July 2019. His work is supported by an advisory group comprised of leading economic historians, members and former members of the Department of Finance, and members of the IRC executive. The publication of this second volume of the Department's history is planned to coincide with the centenary of the establishment of the Department in 2022.

OIREACTHAS SHADOWING SCHEME INITIATIVE

In 2019, we continued our 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.

Adrian Bracken, Associate Professor in Genetics at Trinity College Dublin, was hosted at Leinster House by Dr Michael Harty, a GP and Independent TD for Clare. PhD student at University of Limerick, Branagh O’Shaughnessy, was hosted by Limerick City TD, Jan O’Sullivan; Dr Sindy Joyce, a doctoral graduate of the Sociology Department at University of Limerick, a Member of the Council of State and the first Traveller in Ireland to graduate with a PhD, ‘shadowed’ Minister David Stanton; and Professor of Geography at Maynooth University Mary Gilmartin was hosted by Kildare South TD Fiona O’Loughlin.



TD Dr Michael Harty, Prof Adrian Bracken,
Dr Eavan O’Brien



PhD student at University of Limerick, Branagh
O’Shaughnessy, was hosted today at Leinster
House by Limerick City TD, Jan O’Sullivan



Dr Sindy Joyce ‘shadowed’ Minister David Stanton



Mary Gilmartin was hosted by Kildare South TD,
Fiona O’Loughlin

CITIZENS' ASSEMBLY





The Citizens' Assembly is an exercise in deliberative democracy, placing the citizen at the heart of important legal and policy issues facing Irish society. A Citizens' Assembly ran in Ireland from 2016-2018 and examined a number of topics and this broadly followed the model used by the Convention on the Constitution which ran from 2012-2014.

In June 2019, the Government agreed that two topics would be sequentially considered by 2 new Citizens' Assemblies. The first would consider gender equality and, following this, a second Assembly from Dublin County would be selected to consider the best model of local Government for Dublin.

Following the successful appointment of a lead researcher for the first Citizens' Assembly, the Citizens' Assembly Secretariat has asked the Irish Research Council to run a second Call to select a Research Fellow for the Citizens' Assembly on Gender Equality. Their research was designed to help the Secretariat to engage with the Membership throughout the lifetime of the Assembly, in order to gain a better understanding of the perceived deliberative quality of the Assembly work programme and modus operandi.

After an independent peer reviewed process overseen by the Irish Research Council, Dr Jane Suiter of Dublin City University was awarded a Research Fellowship to conduct this research. She carried out this work in collaboration with Professor David Farrell, UCD; Professor Yvonne Galligan, TU Dublin and Professor Simon Niemeyer, University of Canberra.



5

LAUREATE
AWARDS FOR
FRONTIER
BASIC
RESEARCH

LAUREATE AWARDS

In 2019, the Council awarded 12 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 €30 million, 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.

2019 LAUREATE SUCCESSES



Dr Matthew Campbell

Consolidator awardee Dr Matthew Campbell (TCD) was awarded a European Research Council Consolidator Grant, one of the most competitive and prestigious funding opportunities for experienced researchers across Europe. This year, the ERC received 2,453 proposals for the scheme, with only 301 researchers selected for funding. These include five researchers previously supported by the Irish Research Council, who are now building on that support by leveraging European funding. Dr Matthew Campbell will receive funding to investigate the role of the inner retina in age-related macular degeneration.

Commenting on the award, Dr Campbell says: “Having received an IRC laureate award in 2018, it is without doubt that the preparation of the proposal and going through the interview process played a key role in my ability to eventually secure ERC funding. The vision that IRC have had in preparing Irish researchers for the hugely competitive ERC funding is a testament to the organization’s endeavour to make Ireland one of the best places in world to conduct research. I have no doubt that future ERC success in this country will be built on the platform of the IRC laureate programme.”



Ciara Breathnach at one of her workshops

Consolidator awardee Dr Ciara Breathnach (University of Limerick) won the Faculty's Excellence in Teaching Award in May, and was able to disseminate early findings of her project *Death and Burial Data, 1864-1922* at conferences in Vancouver, Sydney, Hungary, Oxford, Chicago and Birmingham and worked with RTÉ Prime Time Investigates on its coverage of infant mortality following the Fifth Interim Report of the Mother and Baby Homes Commission of Investigation in March 2019. She visited the University of Wollongong as part of its Visiting Research Leaders Fellowship scheme and delivered a keynote at a conference in Sydney in April/May 2019. Her team held their first project workshop on 23 October 2019, which included participation from students, faculty, and the public.

Summarising her first year as Laureate awardee, Ciara stated: "The first six months of an award can be overwhelming, and I received great support from my Faculty and Department. UL library colleagues Dr Kirsten Mulrennan and Sineád Keogh, Dr Puneet Saidha, Research Office, Dr Imelda Doolan, Health Research Institute deserve mention, they understood the pressures and helped when they could. Professor Tiziana Margaria, Computer Science and Information Systems, has given generously of her time and expertise to ground the project in cutting edge software engineering approaches. It was a busy but enjoyable year, the IRCLA has afforded me several opportunities and I am a very proud recipient."



6

ACHIEVING IMPACT THROUGH KNOWLEDGE EXCHANGE



COLLABORATIVE ALLIANCES FOR SOCIETAL CHALLENGES RESEARCH FUND PROGRAMME (COALESCE)



In 2018, we launched the COALESCE – Collaborative Alliances for Societal Challenges Research Fund Programme. 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 (NDP) 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 IRC 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 2019 call, partners included the Southern Regional Assembly, Central Statistics Office, Irish Human Rights Equality Commission, HSE Sexual Health and Crisis Pregnancy Programme (SHCPP), Department of Children and Youth Affairs (DCYA).

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. 26 awards, totalling €4.8 million, were made under the 2019 call.



Case Studies

Awardee: Paul Hynds

Award: COALESCE Strand 1A, Open call for research addressing National Strategic Outcomes (NSOs)

Project title: Epidemiology of Cryptosporidiosis and verotoxigenic E. coli infection: Timing, Rurality and population Equality (EPI-CENTRE)



Over the past decade, the Republic of Ireland has repeatedly reported the highest incidence rates of symptomatic verotoxigenic E. coli infection in the European Union. Similarly, few people will forget the Galway outbreak of cryptosporidiosis in 2007, which affected 240+ people and cost the Irish taxpayer at least €19 million. The ubiquity of environmental pathogen sources (e.g. septic tanks, grazing animals) and pathways, a temperate maritime climate, rural and peri-urban settlement patterns, and geological factors

make Ireland the “perfect storm” regarding the occurrence and transport of enteric pathogens and subsequent infection. Infectious enteric diseases are extremely difficult to prevent in Ireland since the source and pathway are often unknown.

The EPI_CENTRE project will develop a high-resolution national dataset of laboratory-confirmed infectious diseases using Geographical Information Systems and linking numerous existing datasets. Spatiotemporal statistical analyses and machine learning will be used to understand the drivers of enteric infection within the Irish population, with a specific focus on socio-geography, human settlement/movement patterns and economic indices. Findings will be visualised using spatiotemporal risk maps and integrated with ongoing studies to develop guidance for healthcare management strategies and allow the general public to quantify their personal/household risk. This will improve surveillance and notification accuracy and enhance national policy and the lives of residents in Ireland.

Awardee: James Hadley

Award: COALESCE Strand 2A, Open call for interdisciplinary research addressing national or global societal challenges led by AHSS PI with STEM co-PI

Project title: QuantiQual: Quantifying the qualities of indirect translations



Indirect translation diagram (James Hadley)

Indirect translations, or translations of translations, are used when a translation cannot be made directly from language A to language C because of a lack of human expertise or a lack of data. The translator or translation software, therefore, uses a third language (B), for which more expertise/data are available, as an intermediate step. While the question of translation quality has been of great interest to both translation theorists and machine translation programmers for decades, all systems

of describing translation quality are flawed. Many overlook the fact that translations are produced for very different reasons and for readers with different needs.

Based at Trinity College Dublin, Ussher Assistant Professor James Hadley addresses these vital issues in translation and looks for ways to maximise a translation's fitness for purpose. The hypotheses are that the process of translating indirectly tends to strip out cultural specificity and that the language of indirect translations tends to be highly normalised to the target language (C). Aiming to find methods for controlling these qualities in texts translated by humans and machines alike, the project will test these hypotheses by running the same experiments on indirect translations produced by humans and by translation software and statistically comparing results. The project brings together a range of collaborating partners including leading software developers, the European Language Resource Coordination, and the European Commission eTranslation team. It will develop key insights into how the qualities of indirect translations can be described and acted on in such a way as to maximise their value for readers.

Awardee: Aileen O'Carroll

Award: COALESCE Strand 1D, Advancing Socio-Economic Rights in Ireland (co-funded with the Irish Human Rights and Equality Commission)

Project title: "What works?" Sharing best practices in how civil society organisations use the internet in organising and building for socio-economic rights



Co-Investigators David Landry and Aileen O'Carroll at the project launch

How do civil society organisations that are combating social exclusion and discrimination use the new forms of digital technology available to them, such as Facebook, WhatsApp, and Twitter? Dr O'Carroll is based at Maynooth University and her project seeks to uncover the best practices with which successful advocacy groups deploy Digital Organising Tools (DOT) for organising, mobilising, coalition building and conflict resolution, and what policies concerning social media usage they have established.

A common criticism of digital technologies is that while they enable message amplification for advocacy groups, they impair their abilities to achieve their goals by fracturing collective identities, networks of trust, and organisational roles. The groups themselves are aware of the opportunity costs of digital technologies, particularly those loosely organised advocacy groups who do not have traditional systems of decision-making

to fall back upon. These groups are in the forefront of working towards innovative solutions to the problems which digital technologies present for all organisations.

Specifically, the project examines the practices used by groups advocating to repeal the 8th Amendment – Doctors for Choice, The Abortion Rights Campaign, Migrants and Ethnic-minorities for Reproductive Justice, and Together For Yes. Their successful practices will be shared with other groups working for social and economic justice – notably those campaigning around the housing crisis (Irish Housing Network) – through workshops, audio, and other training material. In addition, archived training materials will be created which other civil society organisations will be able to access. In these ways the project will materially contribute to capacity building in these civil society organisations and to the development of policy and practices around social media usage.

Awardee: Anne Matthews

Award: COALESCE Strand 2B, Collaborative research with partner countries to promote policy development and build capacity (funded by the Department of Foreign Affairs and Trade)

Project title: Enhancing evidence-based infant feeding policy implementation in Malawi



There are many benefits to babies when their mothers breastfeed them until they are 6 months old, without any other liquids or foods (that is, exclusive breastfeeding). Furthermore, in places where clean water and baby milk formula are not always available, breastfeeding saves babies' lives, especially those born too early. Anne and collaborator Ellen Chirwa (Kamuzu

College of Nursing, University of Malawi) want to examine how policies that encourage exclusive breastfeeding in Malawi are implemented and why they seem to work well in supporting some mothers but not others. The project is taking a 'realist approach' to find out what works for whom and why, and to encourage people to follow approaches and practices that are found to be successful. Anne and Ellen will also show how the way they approach this study can be used to study and improve nutrition and health policy implementation in other high priority areas.

There is a widespread acknowledgement by policy-makers, health professionals and researchers of the "knowledge-action" gap. There is strong evidence about many healthcare and social interventions, including on infant feeding, supported by well-founded evidence-based policy and yet there is often limited implementation, so impact and health improvement is reduced. This project will utilise implementation science methods to study policy implementation. There is a need to understand policy implementation processes (and barriers and facilitators) in specific contexts. While health researchers have been trained in various research designs, implementation research training and capacity building is a gap that needs to be filled to support high quality implementation research and improvement. Anne and Ellen plan to address inter-professional and inter-sectoral training needs through training, to support this and future research. The goal of the project is for researchers, mothers, health workers, and leaders from Ireland and Malawi to work and learn together to improve the breastfeeding situation in Malawi.

CREATIVE CONNECTIONS

Creative Connections: Workshops to Cultivate Interdisciplinary Research in Ireland

The Creative Connections call invited researchers to develop innovative proposals for the design, organisation, and delivery of interdisciplinary workshops. These workshops encourage researchers from different institutions to co-develop ways of engaging across disciplinary boundaries. By cultivating a series of research networks across Ireland, the call was designed to foster research oriented towards solving complex societal challenges rather than primarily adding to the knowledge base within the discipline. From the 2018 call, the programme funded eight interdisciplinary research workshops in 2019, with support valued at more than €86,000.





Case Studies



Barra at the opening of the Hostile Terrain exhibition

Lead Researcher: Barra O'Donnabhain

Project title: The missing: Promoting interdisciplinary dialogue between forensic practitioners, researchers, and the arts

Institutions involved: University College Cork, University College Dublin, Queen's University Belfast, Department of Justice & Equality, Cork Centre for Architectural Education

The Missing: Promoting Inter-Disciplinary Dialogue Between Forensic Practitioners, Researchers and the Arts was a two-day workshop that aimed to promote dialogue among the different disciplines who deal with the societal trauma of missing persons. The workshop was held at University College Cork and brought together forensic scientists and *An Garda Síochána* with archaeologists, anthropologists, social scientists, as well as performance and visual artists. These were joined by international guest speakers who shared their experiences of how IDR collaborations have improved approaches to dealing with the issue of missing persons. Guests included speakers from the International Committee of the Red Cross, the Netherlands Forensic Institute, the International Commission for Missing Persons, and the Canadian Truth and Reconciliation Commission. A guest speaker from the Undocumented Migration Project spoke about the impact of clandestine migration across the USA-Mexico border and the workshop facilitated the display at UCC of the Hostile Terrain 94 exhibition which was hosted by the Glucksman gallery. The workshop aimed to develop new avenues of collaboration and to develop an inter-disciplinary network to advance research into the different approaches to locating missing persons in Ireland. The workshop enhanced the network's capacity to intervene in public debates about the missing victims of historic abuses, to progress current investigations into recent missing persons and provides a basis for more ambitious projects in this important area.

Lead Researcher: Rebecca Anne Barr

Project title: Fertility, feminism and reproduction: Towards a progressive politics

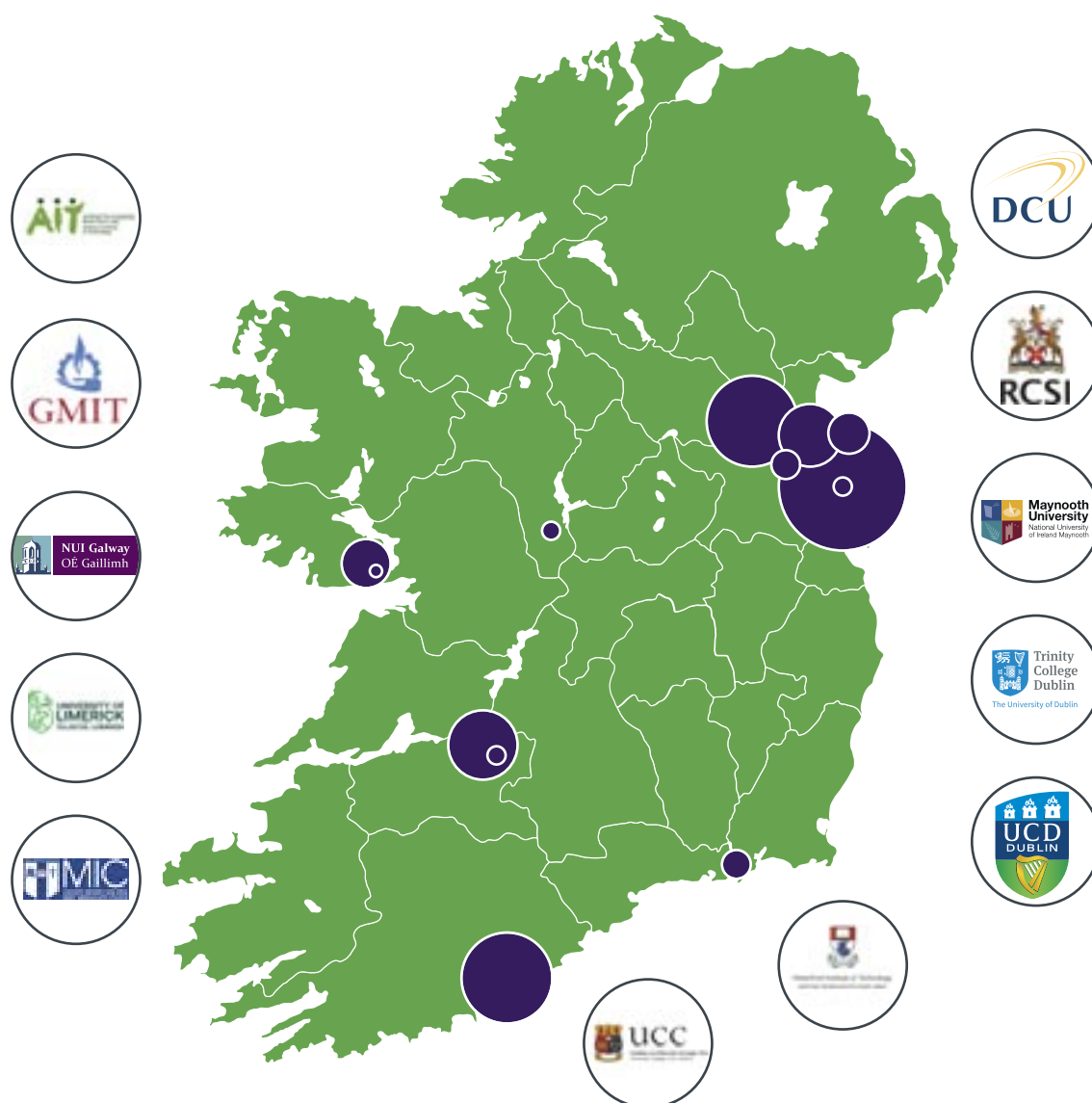
Institutions involved: NUI Galway, University College Dublin

This project deploys an explicitly feminist methodology to bring together medical practitioners, literary critics, historians of medicine and the family, novelists and filmmakers, legal experts, and sexual health and LGBTQ* activists to analyse the politics and culture of fertility and reproduction in Ireland and Europe, exploring the ways in which different disciplines and creative communities can contribute to a better understanding of these issues and work toward a new politics of reproduction. By bringing together interdisciplinary understandings of fertility, this project aims to intervene in the debate on the new terrain of Irish family life and fertility in the wake of the Marriage Equality Act, the Repeal of the Eighth Amendment, and the proposed excision of Article 4.2 – all taking place against a backdrop of global decline in fertility rates. It will do this by running two one-day symposiums, one in Dublin and one in Galway, which will facilitate cross-disciplinary conversations on the subject of fertility, feminism and reproduction. While evening panel discussions will be open to a general public, the workshops will be targeted to artists, academics, and activists. The project has budgeted for three postgraduate funded places at each of the workshops to ensure the participation of early career academics working in this area.



Pictured (left to right): Sarah-Anne Buckley, Rebecca Anne Barr and Lorraine Grimes (NUI Galway);
absent: Mary MacAuliffe (UCD)

NEW FOUNDATIONS



The New Foundations scheme supports eligible researchers who intend to pursue research, networking and/or dissemination activities within and across the diversity of disciplines. This scheme provides support for research actions, the development of networks and consortia, conference and workshop development, and capacity building for interdisciplinary collaboration.

The 2019 projects are under four strands:

1. Engaging Civic Society

1A. Enhancing Civic Society within a national context (max €12,000)

1B. Enhancing Civic Society within an international context

2. Knowledge Exchange for Impact

3. STEAM – innovations in the communication of science and knowledge (max €5,000)

4. Networking & Collaboration Grant, in collaboration with Irish Aid and Irish Human Rights and Equality Commission/IHREC

Strand 4a: Networking & Collaboration Grants for prospective North-South Research Partnerships

Strand 4b: Developing human rights and equality transdisciplinary collaboration between research institutions and civic society in Ireland, north and south (award up to a maximum of €15,000)

Case Study

Awardee: Bradford Anderson

Project: Jewish Texts in Marsh's Library: Cultural Institutions and Intercultural Engagement in Historical and Contemporary Perspective

Project Partner: Strand 1A - IRC funded – partner: Marsh's Library



Extracts from the Digital Exhibition

Marsh's Library in Dublin was the first public library in Ireland, and it remains an important institution today as both a centre for research and as a public-facing cultural institution. This well-preserved eighteenth-century Library was built by Archbishop Narcissus Marsh (1638-1713) and was established with his personal collection. While the Library has an extraordinary collection of early modern works, it also holds the largest collection of early modern Jewish and Hebrew books on the island: there are over 250 such volumes in the Library, including Hebrew Bibles, Talmudic texts, rabbinic writings, and Yiddish books. Nearly 150 of these resources can be traced back to Marsh himself and his own personal collection.

Bradford's project at Dublin City University investigated this extraordinary collection of Jewish books in Marsh's Library, looking at how and why such an extensive collection of Jewish sources ended up in Dublin in the early modern period. The project also explored how a public-facing institution and an academic researcher could collaborate in ways that encourage historical literacy and intercultural engagement. Outcomes of the project included an open-access online digital exhibition hosted on the Marsh's Library website highlighting the diversity of Jewish texts within the collection, as well as an interdisciplinary symposium at the Library featuring an international panel of scholars, which took place on 5 November 2019.

<https://www.marshlibrary.ie/digi/exhibits/show/jewish-books>

Awardee: Roisín Cahalan

Project: Sing Strong: Strong lungs through song

Project Partner: Strand 1A - IRC funded (Enhancing Civic Society within a national context) – partner: COPD Support Ireland

Chronic Obstructive Pulmonary Disease (COPD) is a debilitating, incurable and progressive condition that affects up to 500,000 people in Ireland. In the European Union, Ireland has the third highest rate of mortality from the disease. Besides many physical complications, patients often lack the confidence to participate fully in their lives, leading to isolation, social exclusion and co-morbid depression and anxiety. Roisín's project at University of Limerick showed that singing for lung health has positive implications for persons with COPD by evaluating the efficacy of an 8-week singing intervention to improve biopsychosocial wellness in persons with COPD. Efficient breathing technique is often compromised in people with chronic respiratory disease and good vocal technique can help to address this. To raise awareness of COPD in the public and disseminate knowledge about the project through engagement with local and national media and using the established COPD networks of patient-partners, a SingStrong symposium was held in 2019 at the University of Limerick which attracted over 200 participants from the clinical community, COPD patient groups from other locations, singing instructors and the public. Details of the project were also shared on the RTÉ Brainstorm platform. This work has attracted the interest of respiratory clinicians and patient groups with COPD and other respiratory conditions around the country.

<https://www.rte.ie/brainstorm/2019/1001/1079458-how-singing-can-lead-to-better-lung-health/>



SingStrong symposium at UL



7

ENGAGING INTERNATIONALLY



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.

This section summarises international activity in 2019. These actions include:

- > Developing and formalising the Council's international cooperation by adding additional partnership opportunities to Ulysses (Ireland-France) and developing links with international research councils (Ireland-UK)
- > The Irish Research Council Marie Skłodowska-Curie Actions COFUND Postdoctoral Fellowship programme entitled CAROLINE – Collaborative Research Fellowships for a Responsive and Innovative Europe
- > 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, NORFACE and CHIST-ERA
- > Strengthening Ireland's links with European Research Infrastructure Consortia (ERICs), such as Digital Research Infrastructure for the Arts and Humanities (DARIAH) and the European Social Survey

2019: UK-IRELAND COLLABORATION IN THE DIGITAL HUMANITIES



The Arts and Humanities Research Council of the UK (AHRC) and the Irish Research Council (IRC) collaborated on a new programme aiming to deliver a transformational impact on Digital Humanities research in the UK and Ireland. The programme harnesses complementary strengths in the Digital Humanities between world-leading centres of excellence in the UK and Ireland, leading to new partnerships and cross-

disciplinary projects, building capacity, and enhancing the integration of humanities and technology in Digital Humanities development.

Given the growth of fields such as critical digital studies, machine learning, data science and artificial intelligence, Digital Humanities represents a transformative and rapidly developing field in both Ireland and the UK.

The programme began with an inaugural two-day workshop in Dublin on the 22nd and 23rd October 2019, attended by 60 delegates (30 from the UK and 30 from ROI) whose expertise ranged from the humanities to computer science. It gave researchers from the UK and Ireland the opportunity to build partnerships around the aims of the programme and identify priority thematic areas to be taken forward by the partners.

The collaborative funding programme, launched by this workshop, sought to exploit these complementary strengths and establish new transformative international research partnerships. It is anticipated that enhanced collaboration will generate multi-level impact (academic, societal, economic), for example, by fostering new partnerships with the creative industries sector, enhancing public access to and engagement with cultural heritage, creating new standards in open access, and supporting new learning, educational and professional skills. Delegates were invited to give their input on both the ensuing call's themes and structure.

ULYSSES



38 Irish and French researchers were supported to foster new collaborations between in Ireland and France.

The Ulysses programme 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 2019, 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 two 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 one research project exploring topics relating to energy.
- > Electricity transmission system operator EirGrid have partnered with French-based Réseau de Transport d'Électricité to support two research projects in the area of renewable energies and smart grids.

As part of the 2019 call, funding was awarded to 19 new collaborations, each of which received a 'seed-funding' bursary to cover travel and living expenses.



Case Studies

Awardee: Marie-Luce Paris

Project title: Democracy in Crisis: Exploring the Citizen Challenge of Deliberative Democracy in light of the French and Irish Constitutional Experiments (DECIDE2)



Marie-Luce giving a talk on citizens' assemblies

Citizens in Western democracies have been increasingly disenchanted with the performance of their elected institutions. Governments have tried other ways to involve citizens more directly in the political life of their country. They have experimented with Citizens' Assemblies. Citizens' Assemblies bring together ordinary citizens randomly chosen who deliberate on a given issue and provide a set of recommendations to the convening body. Such experiment in deliberative democracy has been conducted in both Ireland and France with a relatively high degree of

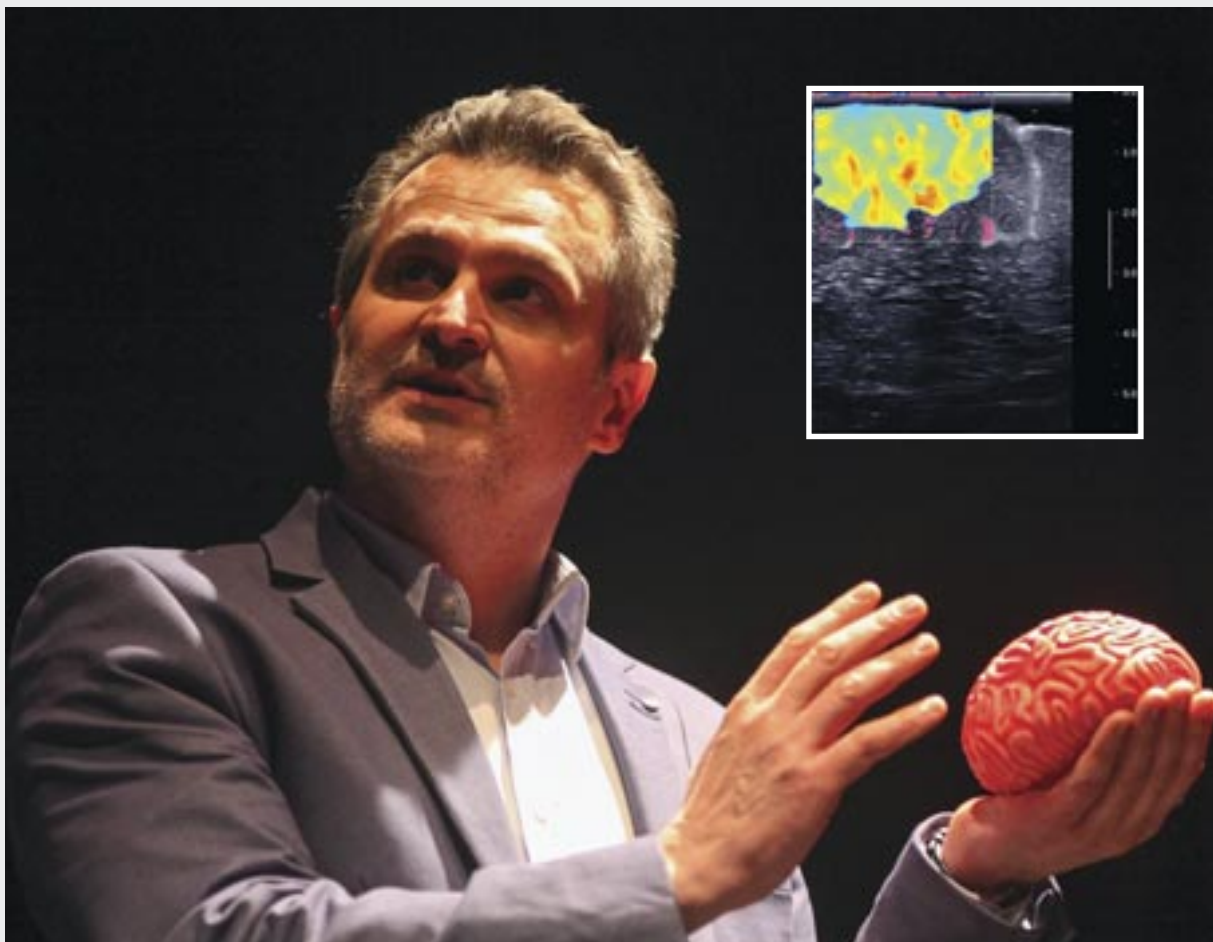
success. Ireland's three successive Citizens' Assemblies have resulted in reforms on same sex marriage, abortion, climate change and gender equality while France's Convention on Climate Change has resulted in significant legislative proposals.

The DECIDE2 project examines the legitimacy and efficiency of Citizens' Assemblies as a tool of deliberative democracy and addresses the fundamental question of how to reconcile deliberative democracy and representative democracy. The aim of the project is to inform Irish and French stakeholders, including governments, on best practices in that area. Internationally renowned expert, Professor Farrell (UCD Politics), works on the Irish team led by Dr Paris (UCD Law). Professor Stefanini (CNRS, Aix-Marseille University), expert in comparative constitutional law and democratic studies, and Professor Magnon (Aix-Marseille University), expert in public law and constitutional justice, work on the French team led by Professor Duffy-Meunier (Aix-Marseille University).

Awardee: Michel Destrade**Project title:** Acoustics of the skin and the brain

Anyone whose skin has been cut knows that the wound can sometimes burst open. That is because skin, and in fact all living tissues are under tension in the body. However, it is surprisingly difficult to measure accurately these levels of tension without damaging the tissue, especially on live humans. With this project, we are proposing a breakthrough for this challenge, by using and analysing acoustic waves travelling in the skin and in the brain. Experiments are conducted on animals and humans in Lyon, and are modelled and analysed in Galway.

The results will have crucial consequences for the medical evaluation of tumours (which have different properties than healthy tissues) and for planning surgery (answering the question of which is the best direction to incise the skin at a given location).



Professor Michel Destrade giving a talk about his work on sending acoustic waves in the brain.

Top right image: Sending acoustic waves in the brain of a cadaver. The colours change according to the stiffness of the brain matter.

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.

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



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 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). We were among the first research funders in Europe to secure funding in 2015 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 2019, 10 new awardees were awarded CAROLINE fellowships, with an associated commitment of €1.6 million, supporting research including the development of climate-smart risk management for vulnerable people; the assessment of herbicide exposure in the Irish population; and the advancement of our understanding of ageing tunnels. The successful researchers are the third and final cohort to receive funding under the EU co-funded CAROLINE programme.



Case Studies

Awardee: Alison Connolly

Project title: Ireland's bioMonitoring Assessment of Glyphosate Exposures

Project Partner: Institute for Prevention and Occupational Medicine of the German Social Accident Insurance



Alison Connolly presenting at ISES in Kaunas, Lithuania

The IMAGE project is an environmental exposure assessment among the Irish population to glyphosate. Glyphosate is the world's most commonly used herbicide and marketed under several products, including Roundup®. In 2015, glyphosate was classed as “Group 2A – probably carcinogenic to humans” by the International Agency for Research on Cancer (IARC). Many international agencies and government bodies differ in their classifications to that of IARC, including the European Food Safety Authority (EFSA), the United States Environmental Protection Agency (US EPA) and the

European Chemicals Agency (ECHA). Glyphosate is widely used in agriculture, horticulture, and amateur gardening. Despite its ubiquitous presence in our environment, there remains a dearth of data on human exposure to both glyphosate and its main biodegradation product (breakdown product), aminomethylphosphonic acid (AMPA).

The aim of Alison's IMAGE project at the NUI Galway was to develop a sensitive analytical technique (with the partner organisation) to analyse urine samples for glyphosate and AMPA, then to conduct a national human biomonitoring campaign involving the collection of urine samples among Irish families and finally to analyse these samples using the newly developed method. A total of 68 families have participated in the IMAGE project. Additional to the human biomonitoring samples, participants have also provided water and dust samples and contextual information that will be used to evaluate potential routes and pathways of exposures.

The information collected in this project generates data on environmental exposure to chemicals, which can be used to evaluate exposures sources and can be used to extrapolate internal levels to health-based guidance values, information which can be used to support policymaking and examine methods to reduce exposure. Studies such as IMAGE are essential to evaluate the level of exposure of contaminants in the general population. The project aligns with the United Nation's 2030 Agenda for Sustainable Development. In particular, goals 12 and 3, to achieve environmentally sound management of chemicals through environmental monitoring and to ensure healthy lives for all, at all ages and addresses the EU's societal challenges.

Awardee: Tommaso Natoli

Project title: Leave No One Behind: Developing Climate-Smart/Disaster Risk Management Laws that Protect People in Vulnerable Situations for a Comprehensive Implementation of the UN Agenda 2030

Project Partner: International Federation of Red Cross and Red Crescent Societies



One of the project events in Dominica

Tommaso's Fellowship at UC Cork investigates links, coherence, and potential overlaps between two key international frameworks adopted in 2015, namely the Sendai Framework for Disaster Risk Reduction and the UNFCCC Paris Agreement on Climate Change, assessed through the lens of the Sustainable Development Goals (SDGs). The project charts the application of those frameworks in national/subnational legislation and policy decisions; provides scientific outputs on informal law-making dynamics; and develops research-based analysis and advocacy and guidance tools to promote Agenda 2030's objective of leaving no one behind. The main outcomes will be the identification and scientific assessment of synergies between international frameworks aimed at anticipating the adverse effects of climate change (Climate Change Adaptation-CCA) and those taking appropriate action to prevent or minimise the damage caused by disasters (Disaster Risk Reduction-DRR); the completion of in-country

qualitative research (interviews with key informants), providing concrete findings in national/sub-national contexts, collecting best practices and main challenges in the inclusion of CCA perspectives within Disaster Risk Management (DRM) laws/policies; and the development of advocacy and guidance tools for the adoption of "Climate-smart/DRM laws", supporting the activities of the IFRC's Disaster Law Programme. Key research findings will be disseminated to governments interested in launching legislative reforms processes; Red Cross/Red Crescent (RCRC) entities and other non-governmental stakeholders; and scholars and academic communities.



Tommaso Natoli and his team



The tunnel TT10 at CERN'

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE

11 SUSTAINABLE CITIES
AND COMMUNITIES


Awardee: Zhipeng Xiao

Project title: Long-term ageing tunnel structural behaviour at CERN and probabilistic risk assessment

Project Partner: European Organization for Nuclear Research (CERN)

Rapid development of transportation demands growing use of tunnel networks in many cities all over the world. After construction, underground tunnel structures inevitably deteriorate with time. Regardless of tunnel geometry and ground condition, tunnel ageing evidence generally includes visible cracks and water infiltration, whereas the ground-tunnel interaction mechanism is not yet well understood. Zhipeng's study at UC Cork advances fundamental understanding of ageing tunnel behaviour by a case study of a critical tunnel TT10 section at the European Organization for Nuclear Research (CERN), where the world-famous Large Hadron Collider (LHC) is housed. Even decades after tunnel construction, Tunnel TT10 continues to deform with the development of substantial cracks and water seepage. In tunnel TT10, a network of Distributed Fibre Optic Sensing (DFOS) cables has been deployed to measure the continuous strain development in the tunnel structure. Furthermore, a series of computational models will be conducted to simulate long-term tunnel behaviour. The computed results will be compared against the field measurements by DFOS to give more insight into the mechanism of long-term tunnel behaviour. Furthermore, probabilistic risk assessment (PRA) will be performed to identify the most critical tunnel deterioration modes. In this CAROLINE project, the investigation will be led by the researchers at University College Cork and CERN with external advice from colleagues in the University of Cambridge. A series of three-dimensional ground-fluid coupled finite element analyses have been conducted to investigate the long-term behaviour of the horseshoe-shaped tunnel subject to hydromechanical deterioration. The parametric studies evaluated the effect of ground layers and ground permeability anisotropy on long-term tunnel behaviour. The computed tunnel deformation shows agreement with geodetic field measurements and observations at CERN, providing new insights into the hydromechanical interaction of ageing noncircular tunnel embedded in 3D different ground conditions. The knowledge and skills to be gained at CERN in this project will be widely applicable to ageing underground infrastructures all over the world. In addition, this study will assess CERN tunnel structure condition in compliance with regulations so as to ensure the serviceability of the LHC inside CERN tunnels as a high-quality physical lab for quality education and research.

HUMANITIES IN THE EUROPEAN RESEARCH AREA



The Irish Research Council are the Handling Agency for Humanities in the European Research Area (HERA), a network of 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 current Joint Research Programme for HERA is called 'Public Spaces' and this was launched in Dublin in May 2019 by the Director of the Irish Research Council Peter Brown and the HERA Chair Professor Wojciech Sowa, along with two Irish Principal Investigators awarded in this programme.

The HERA network, along with the European Commission, has invested €20 million in 20 European research teams as part of its fourth joint research programme, Public Spaces.

HERA Public Spaces projects involve 20 project leaders, 73 principal investigators and 175 associated partners. The projects will be funded for a maximum of three years from 2019 to 2022. The 20 research projects, under the theme 'Public Spaces: Culture and Integration in Europe', will explore subjects ranging from housing and healthcare to food and festivals. With the theme of 'Public Spaces' HERA's hope is that the research projects will deepen cultural understandings of public spaces in a European context and identify new insights that promote the full potential of citizens' engagement with European public and cultural spaces. The IRC coordinated the launch conference for this programme in Gdansk Poland bringing together 300 delegates. More information can be found on the HERA website managed by the IRC: www.heranet.info

NORFACE



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 coordinate 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, and we are the Irish representative in the consortium.

NORFACE is currently working with the Humanities network HERA to launch a joint Call in both Social Science and Humanities in Europe. The National Science Centre in Poland will coordinate the new Joint Call Programme for HERA and NORFACE.

CHIST-ERA



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. Annually CHIST-ERA launches a call for research proposals.

CHIST-ERA is a coordination and co-operation activity of national and regional research funding organisations mainly in Europe and is supported by the Horizon 2020 Future and Emerging Technologies (FET) programme of the European Union through the ERA-NET Cofund funding scheme. On a yearly basis, the partner organisations identify emergent scientific fields allowing researchers to engage in high risk, high impact projects by launching a transnational call for research proposals.

In 2019 the annual Call topics were: Analog Computing for Artificial Intelligence (ACAI) and Smart Distribution of Computing in Dynamic Networks (SDCDN) respectively.

The IRC funded one project through the Call. Professor Deepu John based in UCD is a PI for the consortium JEDAI. The project JEDAI aims to develop analog algorithms, circuits, and systems for the implementation of machine learning techniques in CTDA sampled data in wireless biomedical sensors. This “near-sensor computing” approach, will help reduce the wireless transmission rate and therefore the power consumption of the sensor. The output rate of the CTDA is directly proportional to the activity of the analog signal at the input of the sensor. Therefore, artificial intelligence hardware that processes CTDA data should consume significantly less energy.

This dynamic research area is attracting an increased number of Irish researchers applying to Chist-era for funding. The IRC are funding between one and two projects annually per year. Researchers work collaboratively with partners across the European Network.

DARIAH-EU



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.

EUROPEAN SOCIAL SURVEY

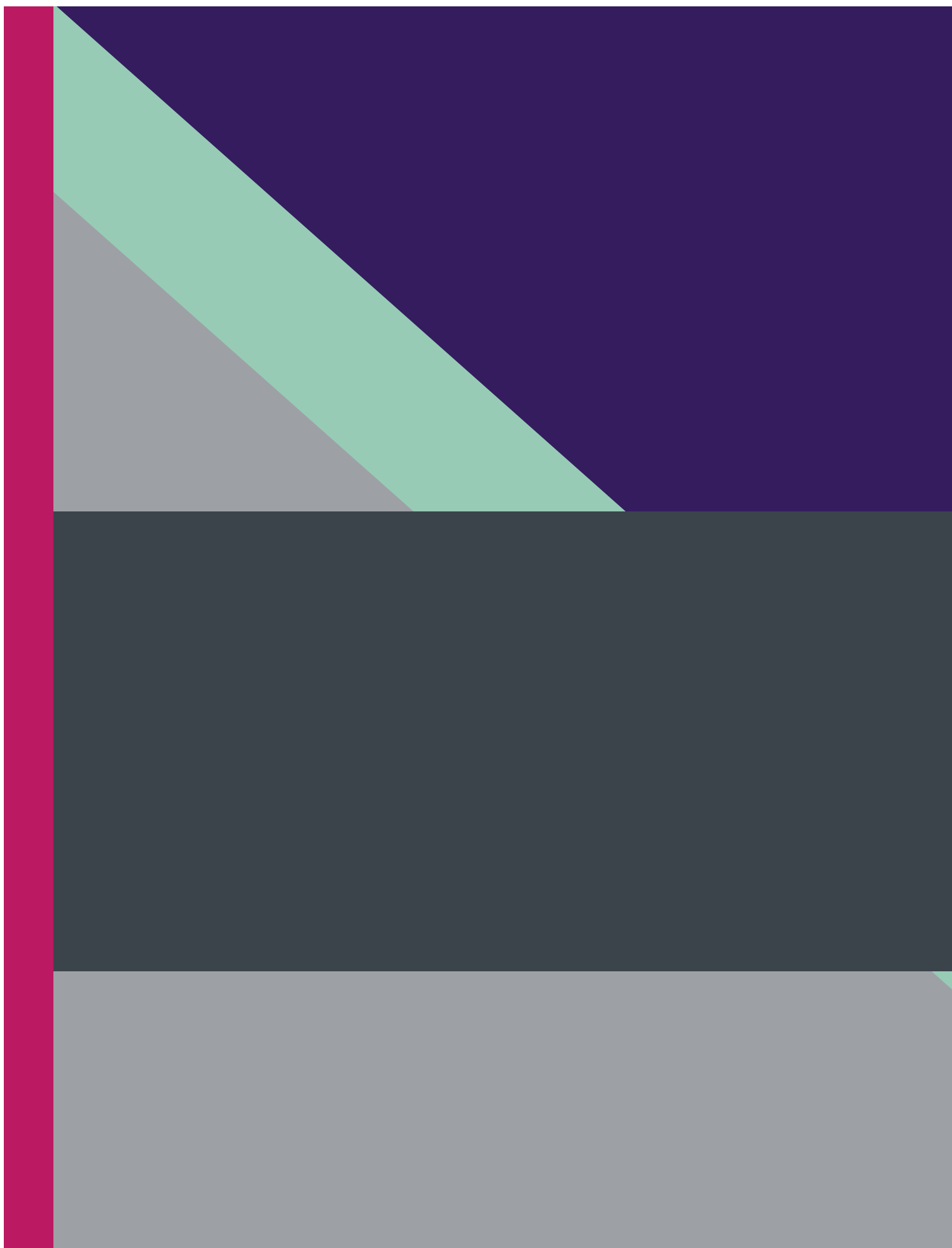


The European Social Survey is an academically driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs, and behaviour patterns of its diverse populations. To support the work of European Social Survey in Ireland, we appoint and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

The European Social Survey (ESS) has been conducted across Europe since its establishment in 2001. Every two years, face-to-face interviews are conducted with newly selected, cross-sectional samples. The survey measures the attitudes, beliefs, and behaviour patterns of diverse populations in more than thirty nations.

The objective of the study is to offer researchers, policy makers and the public the highest quality survey data that is comparable across countries and time.

The Geary Institute in UCD have been awarded the role of National Coordinator for both Round 9 and Round 10.



8

PROGRESS ON GENDER EQUALITY



GENDER EQUALITY

#LoveIrish Research

2019 INTERNATIONAL WOMEN'S DAY

Striving for gender equality and mainstreaming in research and innovation

- How does gender contribute to social exclusion in later life?**
DR KIERAN WALSH
NUIG
- How have literature and cinema shaped attitudes to men's ageing?**
DR ANTHONY TRACY
NUIG
- How can sexual and gender-based violence against female migrants be prevented?**
PROFESSOR NIAMH REILLY
NUIG
- How does gender impact inappropriate drugs prescribed to the elderly?**
PROFESSOR DENIS O'MAHONY
UCC
- How can attitudes towards masculinity prevent violence against women?**
DR CLAIRE EDWARDS
UCC
- How do sex-driven differences in immune responses contribute to cancer treatment?**
PROFESSOR JOHN CROWN
DCU
- How does gender impact women's success in entrepreneurship?**
PROFESSOR MAURA MCADAM
DCU

7 transnational projects

13 PARTNER NATIONS

Projects funded by the Irish Research Council, the Health Research Board and the European Commission through GENDER-NET Plus

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

GENDER-NET Plus has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [741874]

HRB
Health Research Board

As outlined in our current 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 2019, we continued to advance the actions outlined in this Action Plan, in particular focusing on the following areas:

- > The 13 projects funded under the GENDER-NET Plus ERA-NET CoFund officially began their research, signing shared consortium agreements including the 7 projects with Ireland-based partners. The 7 Principal Investigators based in Irish HEIs came together for International Women's Day and presented their proposed research to Minister Mitchel O'Connor in Leinster House.
- > The Council, along with other Irish research funding agencies, welcomed the new eligibility requirements for HEIs/RPOs, requiring the institutions to hold at least a Bronze Award under the Athena Swan Charter in Ireland. The new policy came into effect from the 1st of January 2019 and is managed by the Higher Education Authority.
- > 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 Council 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.

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.

The allocation of €1.7m awarded to Irish gender researchers began with an initial €600,000 contribution from the Irish Research Council. The Council 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 13 successful projects were announced at the end of 2018 and began their research in 2019 with an aim to completing their international research by 2022. 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.

The Gender Net Plus consortium of funders will also form of network for shared learnings in relation to gender initiatives and national gender policy. The information gathered will be collated into formal reports to be submitted to the European Commission for review.





9

RESEARCHER OF THE YEAR



Professor Laoise McNamara, NUI Galway,
2019 IRC Researcher of the Year

2019 RESEARCHER OF THE YEAR AWARDS

The winners of the Irish Research Council 2019 'Researcher of the Year' awards were revealed at a ceremony to commend the very best of the Council's awardees and alumni working in academia, industry, civic society and the public sector. President of Ireland Michael D. Higgins was Guest of Honour and presented the winners with their awards.

President Higgins has made research and education one of the key themes of his Presidency, championing the importance of cultivating independent thought and academic freedom. The President has continued to emphasise the crucial role that universities and research institutes can play in crafting a global response to the great global challenges of our time.

Professor Laoise McNamara, NUI Galway, was awarded the 'Researcher of the Year' award for her research in bone mechanobiology and osteoporosis. Professor McNamara is a Professor in Biomedical Engineering at NUI Galway and the Vice Dean for Recruitment and Internationalisation for the College of Engineering and Informatics.

Dr Jeremy J. Piggott, Trinity College Dublin, was awarded the 'Early-Career Researcher of the Year' award for his research in fundamental and applied ecology, including the management and conservation of biodiversity and ecosystem services in the face of global change. Dr. Piggott is an Assistant Professor in Aquatic Biology at Trinity College Dublin.

Professor David Farrell, University College Dublin, was awarded the 'Impact Award' for making a highly significant contribution in his field beyond academia. Professor Farrell is a Professor of Politics in the School of Politics & International Relations at University College Dublin; a member of the Stewarding Group of the Scottish Citizens' Assembly; Chair of the Finance Sub-Committee of the European Consortium for Political Research; and a member of the international advisory boards of the Electoral Integrity project and Making Electoral Democracy Work project.

Equality and Participation

This year, in recognition of President Higgins's attendance as Guest of Honour, the Council made a special award to academic and activist **Professor Emeritus Kathleen Lynch, University College Dublin**, for her exceptional contribution over many decades to Equality and Participation, a theme of his presidency.

Professor Lynch's work is and has been guided by her belief that the purpose of scholarship and research is not just to understand the world but to change it for the good of all humanity. To this end, she played a lead role in establishing the UCD Equality Studies Centre in 1990 and the UCD School of Social Justice in 2005.

Medals of Excellence

In addition to the 'Researcher of the Year' awards, the Council presented 'Medals of Excellence' to four early-stage researchers.

The 'Medals of Excellence' have been named after previous Chairs of the Irish Research Council and recognise excellence in the 2019 postgraduate and postdoctoral funding calls run by the Council in science, technology, engineering and mathematics (STEM) and the arts, humanities and social sciences (AHSS).

Shirley Howe, Maynooth University, was awarded the 'Eda Sagarra Medal of Excellence' for being the top-ranked postgraduate researcher in the AHSS category. Ms Howe's research focuses on the culture and climate on Ireland's islands.

Michael Craig, Trinity College Dublin, was awarded the 'Jane Grimson Medal of Excellence' for being the top-ranked postgraduate researcher in the STEM category. Mr Craig's research focuses on discovering of hybrid materials for water splitting technologies.

Dr Seán Hewitt, University College Cork, was awarded the 'Maurice J. Bric Medal of Excellence' for being the top-ranked postdoctoral researcher in the AHSS category. Dr Hewitt's research explores natural history in British and Irish writing.

Dr Harold Berjamin, NUI Galway, was awarded the 'Thomas Mitchell Medal of Excellence' for being the top-ranked postdoctoral researcher in the STEM category. Dr Berjamin's research is in the mechanical modelling of brain matter.



10

#LoveIrishResearch

#LoveIrish
Research

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 that includes regional and themed events, competitions, the Spotlight on Research blog series featuring IRC awardees (new in 2019), and media and social media support. With #LoveIrishResearch, we create opportunities for awardees to communicate their research to the public; we help disseminate and celebrate the work of Ireland-based researchers and important developments in the sector; and we aim to ensure that the general public values the role that research plays in driving our country's success.

COMMUNICATIONS WORKSHOP

(20 MAY 2019)

In advance of our public panels later in the year, we offered all researchers funded by the Council the opportunity to attend a free workshop on 20 May on 'How to Successfully Promote your Research'. The workshop was aimed at building researchers' understanding of public relations, marketing and how the media operate; and equipping researchers with the skills needed to better promote their work to diverse audiences, including journalists, politicians, policymakers and the general public. This event began with a networking lunch at the Irish Research Council's premises in Ballsbridge. Sessions included practical and interactive training from Martina Quinn, Managing Director of Alice PR & Events, on how the media operate and how researchers can publicise their work through traditional media relations and online communications; a Q&A with Jim Carroll, Editor of RTÉ Brainstorm, founder of Banter, and formerly a journalist with The Irish Times; a presentation by Diarmaid O'Sullivan, Senior Parliamentary Researcher at the Oireachtas Research and Library Service, on how researchers can engage with the Service; and reflections by Prof. Anna Davies (Trinity College Dublin), the 2018 winner of the Council's Researcher of the Year Award, on her personal experience of successfully promoting her research. The workshop was open to IRC-funded researchers at all career levels, and the vast majority of participants were in the early stages of their research careers.

ELECTRIC PICNIC



(29 AUGUST-1 SEPTEMBER 2019)



Electric Picnic is a major music and 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.

We sponsored a panel discussion on 'The Lives of Others: Populists and the Fear of "Others"' which featured Dr Sindy Joyce, a Traveller human rights activist, sociologist and IRC alumna, and Traveller comedian Martin Beanz Warde. Hosted by Jennifer O'Connell, the panel was presented on the Mindfield Leviathan stage on 31 August and was subsequently cited in The Irish Times as one of the highlights of the festival (<https://www.irishtimes.com/culture/hello-dublin-electric-picnic-2019-s-best-and-worst-moments-1.4004372>).

Dr Joyce, whose ethnographic research at the University of Limerick was supported by an IRC Government of Ireland Postgraduate Scholarship, is the first member of the Irish Traveller community to graduate with a PhD (in January 2019). She was soon afterwards appointed by President of Ireland Michael D. Higgins to the Council of State in recognition of her ground-breaking work and ability to contribute to a more equitable society.

NATIONAL PLOUGHING CHAMPIONSHIPS

(17-19 SEPTEMBER 2019)

The National Ploughing Championships is a major agricultural event, with strong ties to agribusiness and innovation, that attracts nearly 250,000 visitors annually. In 2019, the Ploughing took place in Ballintrane, Fenagh, Co. Carlow.

The Department of Education and Skills (DES) organized a series of short research talks for a general audience in the Government tent on 18 September. Speakers included David O’Leary, a doctoral researcher at NUI Galway, whose thesis on geophysical remote sensing of subsurface properties for sustainable agricultural management is supported by an IRC Government of Ireland Postgraduate Scholarship.



CULTURE NIGHT

(20 SEPTEMBER 2019)



Photo credit: Jon Tyson, Unsplash

Culture Night is a programme of free entertainment and education, 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. An occasion to celebrate the richness of Irish culture, it also presents an opportunity to look at how we can address societal challenges in a more creative and sustainable way.

For the fourth year of our participation in Culture Night, we held a panel discussion in NUI Galway on the topic of the housing and homelessness crisis. The panel discussion, called “Cultures of Exclusion in Contemporary Ireland”, was open to the public and chaired by Professor Daniel Carey, who is a member of the Irish Research Council and the Director of NUI Galway’s Moore Institute for Research in the Humanities and Social Studies. The panellists included leading researchers in Ireland with expertise on this topic – IRC awardees Professor Niamh Hourigan (Mary Immaculate College), Dr Rory Hearne (Maynooth University), and Dr Valesca Lima (Maynooth University) – who were joined by Karen Feeney, Head of Client Services at Galway Simon Community, who added a valuable service-provider perspective.

DUBLIN FESTIVAL OF HISTORY

(19 SEPTEMBER 2019)

Six IRC awardees gathered in Dublin castle to discuss the unexpected places where history appears in – and contributes to – their ground-breaking research on a variety of topics. Included in the line-up was:

- > Jennifer McElwain, Climate Change Research Using Trinity’s Hidden Historical Natural History Archives
- > Arlene Crampsie, Irish Droughts: Environmental and Cultural Memories of a Neglected Hazard
- > Kevin O’Sullivan, Humanitarian History: Past Practice into Future Policy
- > Mark Keane, Data Analyzing the Ryan Report
- > Sara Ebrahimi, Worrying about the Field of the History of Emotions in Ireland
- > Brad Anderson, Jewish Texts in Marsh’s Library: Cultural Institutions and Intercultural Engagement in Historical and Contemporary Perspective

SCIENCE WEEK

(10-17 NOVEMBER 2019)

To mark Science Week 2019, we staged a light projection show at Barnardo's Square, Dame Street, Dublin. The projections lit up the well known Dublin City Council building every evening of Science Week with research questions inspired by the work of Irish Research Council awardees funded under the Laureate and COALESCE schemes.

This year's show shone a light on important research being done into areas of vital human interest. Through the vivid imagery of the projections, the show aimed to raise public awareness about how research benefits us all by delivering better solutions to problems and helping us to understand more about our history, culture and identity.

The research questions included were:

- > Can we devise new therapies for cancers that resist existing drugs?
- > How can we reduce waterborne infection outbreaks?
- > Can new material technologies revolutionise the use of gas?
- > Why is seafood the key to smarter urban consumption?
- > What can we learn from Ireland's past droughts?
- > Can materials released by cells be the key to earlier cancer detection?
- > How did Ireland contribute to the Renaissance?
- > How can photonics tell us how a battery is performing?

How did Ireland
contribute to
the Renaissance?



IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

Can materials released
by **cells** be the **key** to
earlier detection
of **cancer**?



IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

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IRISH RESEARCH COUNCIL
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IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

Can we devise
new therapies for
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existing drugs?



IRC Projection 2019 landscape with music

IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

How can we reduce
waterborne infection
outbreaks in
Ireland?



IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

Why is **seafood**
the key to smarter
urban consumption?



IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

What can we learn
from **Ireland's**
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IRISH RESEARCH COUNCIL
#LOVEIRISHRESEARCH

SPONSORSHIPS



In addition to our programme of research communication events and festival partnerships, the Irish Research Council supports a range of initiatives that boost public awareness of and engagement with the emerging and world-class research being undertaken in Ireland. We further underpin this research base through contributing to the maintenance and development of national research infrastructure beyond our own funding calls.

RTÉ BRAINSTORM



The Irish Research Council is a strategic partner of RTÉ Brainstorm, an online platform where the academic and research community contribute to public debate, reflect on what's happening in the world around us, and communicate fresh thinking on a broad range of issues. Combining opinion, analysis, and features, Brainstorm is edited by RTÉ and sits alongside their online journalism and content.

This unique partnership between RTÉ, Irish third-level institutions (DCU, MU, NUI Galway, UCC, UL, TU Dublin), and agencies (the IRC and Teagasc) enables researchers to provide readers with informed views and perspectives on topics ranging from contemporary world politics to medieval literature to climate change.

Read all about it at <https://www.rte.ie/brainstorm/>

10 THINGS TO KNOW ABOUT...

‘10 Things to Know About...’ is a five-part TV series highlighting outstanding work being undertaken by Irish scientific researchers across a range of disciplines. Presented by Aoibhinn Ní Shúilleabháin, Jonathan McCrea and Kathriona Devereux and including a Weird Science segment presented by Fergus McAuliffe and featuring #LovelishResearch, Series 5 was broadcast on RTÉ One at 8.30pm on Mondays 11 November – 9 December 2019. This was the fourth series of ‘10 Things’ to be supported by the IRC and HEA.

The series’ principal objective was to produce an engaging, entertaining and factually informative science show aimed at the general viewer. The programmes showcased the latest developments in Irish scientific research across a wide range of sectors, making the vital connection between the extraordinary work currently underway and the people it directly affects. The series featured pioneering Irish research in the areas of Air Quality, Mineral Exploration and Geology, Offshore and Renewable Energy Technologies, Environmental Monitoring of Global Emissions, and furthering research awareness and understanding around the global issues of Obesity and Vaccine hesitancy.



Fergus McAuliffe



Lydia Dyck



Lydia Dyck and Kathriona Devereux



Conor Crawford



Aoibhinn Ní Shúilleabháin and Conor Crawford



Ida Milne and Kathriona Devereux



10 Things to Know about Vaccines title card

The series showcased superb research on these topics being carried out all over the island of Ireland, featuring established researchers such as Francesco Pilla (UCD), Val Cummins and Jimmy Murphy (UCC), Eoin McGrath (GSI), and Ida Milne (Carlow College and past IRC awardee), alongside early stage researchers such as David Kelleghan (UCD) and IRC-funded doctoral scholars Conor Crawford (UCD) and Lydia Dyck (TCD).

Average viewing figures for the series were 157,400 (an increase on Series 4's average of 152,000), and the five-episode series received more than 787,000 views, excluding RTÉ Player figures and repeats. The series continued to be the second most watched programme in the 8.30pm primetime slot, behind Coronation Street.

BT YOUNG SCIENTIST AND TECHNOLOGY EXHIBITION

The BT Young Scientist & Technology Exhibition is an all-Ireland event aimed at improving the perception of science, technology, engineering and maths subjects amongst 12 to 19-year-olds. In its 55th year in 2019, it is the longest established educational exhibition of its kind in Europe. The exhibition ran from 8-12 January 2019 at the RDS in Dublin and spanned five display halls where c. 40,000 visitors could discover the diverse projects entered in the competition by 3773 students from 374 schools.

As a supporter of talented young researchers, we sponsored an award for the project that best combines two or more branches of science, or a branch of science with branches of the social sciences and humanities. The 2019 winners of the Irish Research Council Award were Kate Bagnall and Bobbi Beattie from The Kings Hospital, Palmerstown, Co. Dublin for their project 'Using statistics to investigate changing use of language in Irish Primary students' writing after 80 Years' in the Social and Behavioural Sciences Junior Group Category.



Liz-Anne Worrall, Assistant Director, Irish Research Council presents the Irish Research Council Award to Kate Bagnall and Bobbi Beattie (Credit: Chris Bellew)

EDUCATION MATTERS



Ireland's Yearbook of Education
2019-2020

Over the last ten years, *Ireland's Yearbook of Education*, produced by Education Matters, has established itself as the indispensable guide to the world of education in Ireland, bridging the gap between practitioners, managers, researchers and policy makers. Published annually, the *Yearbook* informs, guides and inspires educationalists across all sectors – namely, early childhood education, primary, secondary, further education and training, higher education, and research – to reflect on their goals and become more successful in their profession.

We support Education Matters both financially and with expertise, with IRC Director Peter Brown serving as editor of the Research chapter of *Ireland's Yearbook of Education* while several IRC awardees and members of the executives have contributed over the years.



Campus Engage





11

APPENDICES



Professor Jane Ohlmeyer, Chair of the Irish Research Council

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	5	1	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	6		6(6)
Professor Kieran Conboy	Dean of the College of Business, Public Policy and Law at the National University of Ireland, Galway	5		5(6)
Dr Felicity Kelliher	Senior Lecturer and Co-Chair of the RIKON Research Group at the Waterford Institute of Technology	6		6(6)
Professor Ursula Kilkelly	Professor of Law, Head of the College of Business and Law, University College Cork	5		5(6)
Professor Debra Laefer	Professor of Civil, Structural & Environmental Engineering School of Civil Engineering, University College Dublin	3	1	4(6)
Professor Eithne McCabe	Professor of Physics, School of Physics, Trinity College Dublin	4		4(6)
Professor Rob Kitchin	Professor in the National Institute of Regional and Spatial Analysis at Maynooth University	6		6(6)
Professor Patricia Kearney	Professor of Epidemiology in the School of Public Health at University College Cork	4		4(6)
Professor Emma Teeling	Professor in the School of Biology and Environmental Science at University College Dublin	5		5(6)
Peter Brown	Director (<i>ex-officio</i> member)	6		6(6)

APPENDIX 2

STAFF MEMBERS

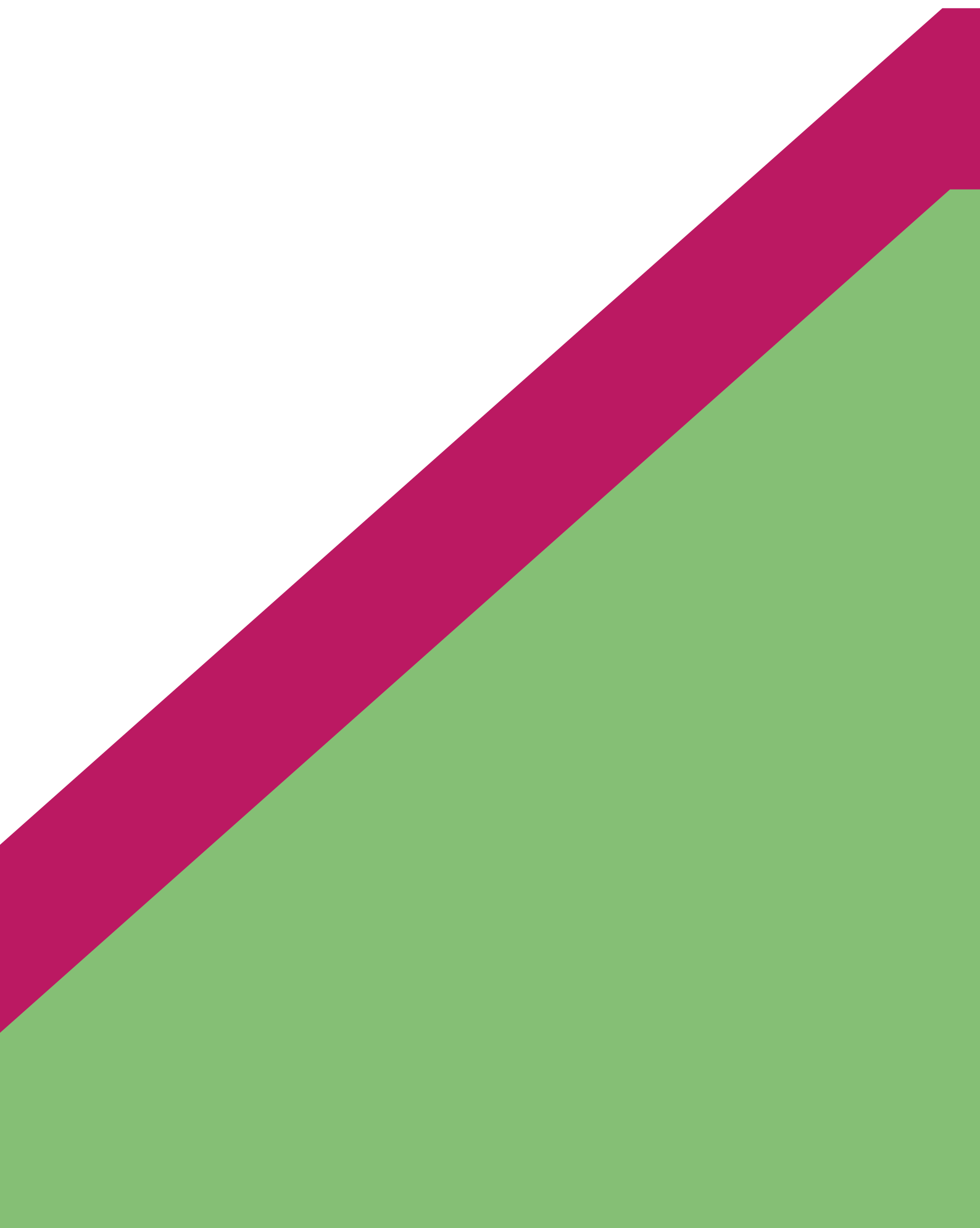
Peter Brown	Director
Dr Eavan O'Brien	Assistant Director Impact and Partnerships
Liz-Anne Worrall	Assistant Director Programmes and Resources
Dr Deirdre Quinn	Acting Assistant Director Joint ERC NCP
Gemma Duke	Programme Manager Laureate Awards Programme and GENDER-NET Plus
Dr Suz Garrard	Postdoctoral Intern
Dr Jennifer Cassidy	Research Support Officer Marie Skłodowska-Curie Actions COFUND fellowships (CAROLINE)
Dr Anne-Julie Lafaye	Postdoctoral Intern
Kerry O'Leary	Research Support Officer Government of Ireland Postdoctoral Fellowships, Ulysses and Lindau Nobel Laureate Meeting Awards
Mariana Reis De Almeida	Programme Manager Government of Ireland Postgraduate Scholarships
Dr Maria Morrissey	Programme Manager Enterprise Programmes
Robert Lindsay	Acting Programme Manager Government of Ireland Postdoctoral Fellowship Programme, Ulysses, Lindau Nobel Laureate Meeting Awards, and Communications
Dr Felicity Maxwell	Postdoctoral Intern
Rosemary Sweeney	Programme Manager European Partnerships (including HERA and NORFACE)
Linda Rose	Finance Manager
Dr Chiara Loda	Programme Manager Marie Skłodowska-Curie Actions COFUND fellowships (CAROLINE)

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NOTES

This image shows a full page of a worksheet designed for handwriting practice. It features 18 evenly spaced, horizontal dashed lines across the entire width of the page. The background is plain white, providing a clear guide for letter height and placement. There are no margins, text, or other markings present.



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