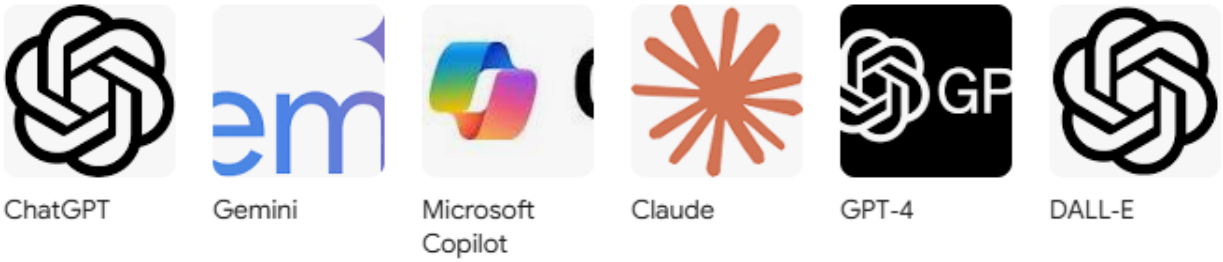
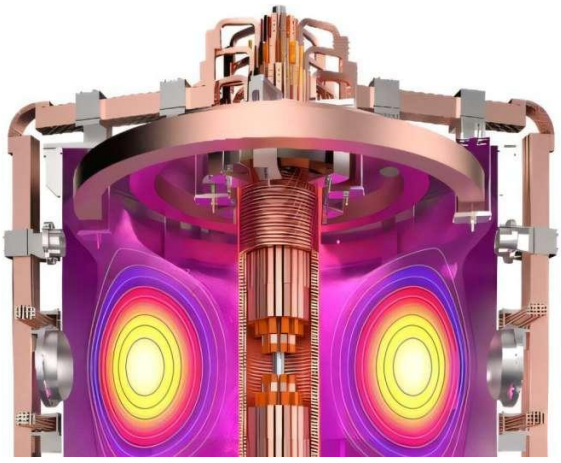
Irish Chemical News

A Journal of the Institute of Chemistry of Ireland

Game Changer: A New AI Application DeepSeek, from a Chinese AI firm, is disrupting the industry with its low-cost, open-source large language models, challenging the Big Tech Giants. AI making rapid inroads as a tool in Chemistry Research





SMART: One step closer to nuclear fusion with its first plasma from the Plasma Science and Fusion Technology Laboratory of the University of Seville. Is the race for a 'Wright Brothers' moment approaching with Nuclear Fusion

Institiúid Ceimice na hÉireann
The Institute of Chemistry of Ireland
ICI Centenary 1922-2022
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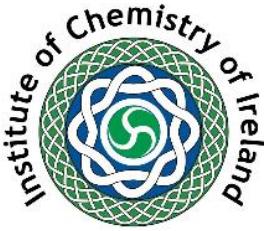

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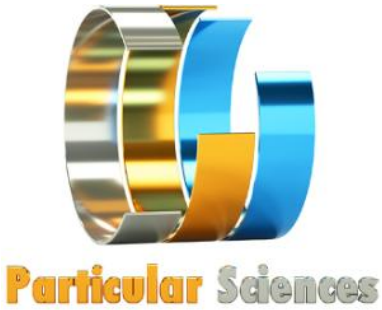

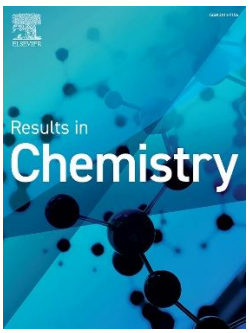

Do visit the EuChemS web page for active links to these supporter web sites:

https://euchems2024.org/opportunities-to-support/sponsors-exhibitors

Congress PCO & Venue

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Centre for Synthesis & Chemical Biology

A Message from the President

Dear Fellows, Members, Graduates and Associates.

In this issue, you will find details of our upcoming ICI Awards Day which will be held at University College Dublin on 1 May. Professor Isabel Rozas of Trinity College Dublin will be the recipient of the ICI Eva Philbin Lecture Award and Professor Paul Murphy of the University of Galway, the ICI Boyle-Higgins Medal. The ICI Postgraduate Award has been renamed in honour of our former ICI President, Professor Dervilla Donnelly, who herself contributed in a significant way to the supervision and promotion of PhD students. The Dervilla Donnelly Award winners are Keerthi Nair of ATU Sligo and Fionn McNeill of University College Dublin. We will hold our AGM after the presentations at University College Dublin and this will be my last event as President of the ICI, with Professor Steven Bell of Queen's University Belfast becoming the next President at that AGM.

Details of the impressive 8th Irish Biological Inorganic Chemistry Society Symposium (IBICS-8) are also given, with a top-class list of lecturers from home and abroad, as well as the upcoming Inorganic Ireland Symposium which will take place on Friday, 23rd May 2025, at the University of Galway. This one-day meeting will feature invited talks, oral flash presentations, and posters, showcasing the breadth, diversity, and excellence of inorganic chemistry in Ireland.

Other notable events covered in this issue include details of the upcoming 22nd European Carbohydrate Symposium, which will be held 6th-10th July in Gdańsk and the 10th EuChemS Chemistry Congress which will be held 12-16 July 2026, in Antwerp, Belgium.

Details of recent EuChemS News & Updates are given, along with news from the European Research Council and recent developments in AI.

Many thanks to the ICI Young Chemists' Network (YCN) who continue to work hard to provide support to the younger members of our community. Many thanks to Aaron McCormack, University of Galway, who is this Committee's Chair and please do get in contact with the YCN if there are items you wish to highlight or events you wish to organise.

I wish to again thank our Editor, Pat Hobbs, who continues to enlighten our community on national and international topics that are of most interest to our community. This is a significant undertaking and is much appreciated. I do hope you enjoy reading it.

My thanks also to all Council members who voluntarily give of their time and expertise to support our Institute and community. A special thanks to you, our ICI Fellows, members, graduates and associates. Please do keep in touch and send us your updates. We would be delighted to showcase these on our ICI website and in future ICN issues.

With best regards,

Professor Pat Guiry BSc PhD CChem FRSC FICI PRIA

President, Institute of Chemistry of Ireland

4th March 2025

Editorial

A New Year and a quarter way into the 21st Century. In this first Issue of ICN for 2025 we open with some dramatic developments in Artificial Intelligence with the launch of China's DeepSeek from a company less than two years old. Forty-year-old, Liang Wenfeng born 1985) is a Chinese entrepreneur and businessman who is the co-founder of the quantitative hedge fund High-Flyer, as well as the founder and CEO of its artificial intelligence company DeepSeek founded in July 2023. DeepSeek was launched in late January and is a sensation disrupting the stock market.

One of the key minds behind DeepSeek's breakthrough is Luo Fuli, a 29-year-old AI researcher now regarded as an "AI prodigy" in China. Her expertise in natural language processing (NLP) played a major role in developing DeepSeek, a model that rivals some of the world's best AI systems such a Chat GPT, Gemini, Claud and Microsoft Copilot. She studied at Beijing Normal University, where she initially struggled with computer science before finding her footing in AI. Later she studied at Peking University's Institute of Computational Linguistics. In 2019 she published eight research papers at the prestigious ACL conference which made her name. There are claims this cost only about $6 million but that is disputed compared to billions for rivals. Shortly after Chinese the tech company Alibaba released a new version of its Qwen 2.5 model that it claimed surpassed the DeepSeek and more followed.

There is much debate in the press about DeepSeek and A Special Topic has been added to the Chemistry & Artificial Intelligence section of this journal to cover a selection of these articles. Science researchers will be taking great interest in this cheap AI model.

Superconductivity is back on the agenda with many develops. This is not about the Korean claims but more solidly based work and can be found in the Superconductivity Addendum**.**

There is a report on the 8th Irish Biological Inorganic Chemistry Society Symposium (IBICS-8) on a new website "Irish Chemical Events" created by Joseph Byrne (UCD) to publish reports on chemistry events in Ireland. This is in a different format to the usual ICN articles, so the page numbering is absent in this section. The article has a DOI reference/number.

The ICI Awards & Lectures & AGM will take place on the 1st of May 2025 at UCD. Watch for more details by email and on our web site. Our Annual Congress will take place in Trinity this year in June and again more details will follow.

There have been significant advances in nuclear fusion this period pointing the way to fusion in the midterm future as the articles in this section show.

ICI, Fellow Dr James Donovan, former director of the forensic science laboratory based at Garda Headquarters has sadly passed away aged 80. He survived a car-bomb attack by Dublin criminals and suffered life changing injuries.

The ICI received a death notice for Honorary Fellow Dr. Wolfgang Fritsche, CChem Hon FRSC, FICI based in Germany from his son Dr. Johann-Gerhard Fritsche. He was aged 96. This notice is reproduced on page 14.

May they both rest in peace.

Suggestions, Comments, Feedback and Responses are welcome and can be sent to the **Editor**
Email address: -

editor@instituteofchemistry.org

Institute of Chemistry of Ireland (chemistryireland.org)

Patrick Hobbs MSc, FICI, CChem, CSci, MRSC.
Editor
Irish Chemical News

2 March 2025

Note: Opinions expressed in this Journal are those of the authors and not necessarily those of the Institute.

The 22nd European Carbohydrate Symposium
6th-10th July 2025, Gdansk, Poland
The 22nd European Carbohydrate Symposium in Gdansk – eurocarb22 (eurocarb2025.com)

Abstract Submissions extended to 28 February

Welcome to EUROCARB 2025

It is a pleasure to invite you to **22nd EUROCARB** to be held in Gdańsk on **July 6th-10th, 2025,** hosted by the Faculty of Chemistry, University of Gdańsk, under the auspices of the` European Carbohydrate Organization.

The first **EUROCARB** symposium was organized in Austria in **1981**. As a biennial meeting, it has evolved from a carbohydrate chemistry forum to a glycoscience meeting which also includes glycobiology and biological chemistry. Nowadays, **EUROCARB** is positioned as a leading symposium at the forefront of Glycosciences in Europe.

The **EUROCARB 2025** program will try to consolidate the interplay between chemistry and biology, to be attractive to both communities, and reinforce the needed interaction between glycochemistry, glycobiology, and applied glycosciences. The conference will be organized in several topics that cover all aspects of Glycosciences, aimed at showing the latest developments in the field, provide a forum for discussions and networking and highlight the challenges and future trends in carbohydrate-related scientific disciplines and applied technologies.

EUROCARB 2025 will gather academia and industry to burst innovative technologies into application in a large diversity of fields, including medicine, nutrition and food sciences, material sciences, chemistry, biotechnology and bioeconomy.

The symposium is also an opportunity to visit **Gdańsk**, which is located on the Baltic coast of northern Poland. Either before or after the symposium you'll be able to enjoy the city, its architecture and museums.

On behalf of the Organizing Committee, I invite you to the 22nd EUROCARB in **Gdańsk in 2025.**

Zbigniew Kaczyński

Chairman of the Organizing Committee

Contact: For the e-mail correspondence, please use the e-mail address: **eurocarb22@ug.edu.pl**

Are you a chemist in Ireland aged between 18-35 years old? Want to be part of an exciting new network of young chemists and be part of a growing community? Join us today by emailing youngchemists@instituteofchemistry.org with your name, age, and where you study or work. If your institution is not listed below, you could even be part of our incredible committee.

ICI's Young Chemists Network Committee for 2023/2024

Aaron McCormac, Chairperson of the ICI YCN, Director of the Institute of Chemistry Ireland, PhD student University of Galway.

Email: a.mccormac17@universityofgalway.ie youngchemists@instituteofchemistry.org

Committee Members 2023/24

Save the Dates

ICI Awards & Lecture Day & AGM 1st May 2025

At UCD

Boyle Higgins Gold Medal Lecture Award 2025

Professor Paul Murphy, University of Galway

The ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series)

Professor Isabel Rozas (TCD)

Dervilla Donnelly Postgraduate Award

Fionn McNeill (UCD)

Keerthi Nair (ATU Sligo)

ICI Annual Congress 2025

TCD in June organised by Professor Lyons (TCD)

Next Inorganic Ireland Symposium will take place on Friday, 23rd May 2025, at the University of Galway.

This one-day meeting aims to strengthen collaborations among inorganic chemistry research groups across the island, fostering synergies and new opportunities. The symposium will feature invited talks, oral flash presentations, and posters, showcasing the breadth, diversity, and excellence of inorganic chemistry in Ireland.

We strongly encourage participation from postgraduate students and postdoctoral researchers.

This is a save-the-date notification—further details, including abstract submission, will be shared in due course.

We look forward to seeing you there!

All the best,

Constantina

On behalf of the organising committee

Constantina Papatriantafyllopoulou (she/her)

Lecturer | Head of the Galway Porous Materials Group | Chemistry Pathway Director

Death Notice: Dr. Wolfgang Fritsche, CChem Hon FRSC, FICI

Dear Mister President,
It is sad news to inform you that my father Dr. Wolfgang Fritsche, CChem Hon FRSC, FICI, former Secretary General of Gesellschaft Deutscher Chemiker and lifelong Honorary President of the Federation of European Chemical Societies (FECS, now EuChemS) passed away on 26 January 2025 at the age of 96.

My father was always very proud of having been found worthy of being awarded the lifelong Fellowship of the Institute of Chemistry of Ireland, with which he was connected in a particular professional relationship and personal friendship.

Furthering international cooperation in Chemistry and good relations between institutions and people regardless of ideological, cultural or religious background was a major item in the philosophy of his life. He always felt "at home" in the Institute of Chemistry of Ireland, the achievements of which he observed with great appreciation and respect.

Yours sincerely
(Dr. Johann-Gerhard Fritsche)

Als Gott sah, dass der Weg zu lang, die Hügel zu steil, das Atmen zu schwer wurden,
legte er seinen Arm um Dich und sprach: „Komm heim."

Dr. rer. nat. Dipl. Chem.

Wolfgang Fritsche

* 11.03.1928 † 26.01.2025

Ehemaliger Hauptgeschäftsführer der Gesellschaft Deutscher Chemiker
Ehrenpräsident der Föderation Europäischer Chemischer Gesellschaften
Ehrenmitglied der Royal Society of Chemistry
Inhaber der Verdienstmedaille der Föderation Europäischer Chemischer Gesellschaften,
der Lavoisier-Medaille der Société Française de Chimie,
der Carl-Duisberg-Plakette der Gesellschaft Deutscher Chemiker,
der Hanušovu-Medaili der Tschechoslowakischen Chemischen Gesellschaft
sowie weiterer internationaler Auszeichnungen

Nach einem erfüllten Leben ist unser geliebter Vater,
Schwiegervater und Großvater friedlich eingeschlafen.

In Liebe und Dankbarkeit nehmen wir Abschied

Sabine Rappel geb. Fritsche **mit Ernest Rappel**
Dr. Johann-Gerhard Fritsche und Andrea Fritsche geb. Bassler
mit Wolfgang Fritsche und Susanne Fritsche

Kondolenzanschrift: Familie Fritsche, An der Schmelze 3, 65232 Taunusstein

Die Beerdigung findet am Mittwoch, dem 12. Februar 2025 um 13.00 Uhr
auf dem Hauptfriedhof Kelkheim, Frankenallee, statt.

Anstelle von freundlich zugedachten Blumen und Kränzen bitten wir im Sinne des
Verstorbenen um eine Spende an die Freunde der Benediktinerinnenabtei St. Hildegard e.V.,
IBAN: DE04 5109 1500 0000 0996 86, Kennwort: „Dr. Wolfgang Fritsche".

Institute of Chemistry of Ireland as a Co-Owner Benefits when you publish in PCCP

Physical Chemistry Chemical Physics

12 Dec 2024 28 , Issue 5,
Page 27831 to 28292
https://doi.org/10.1039/D4CP02070G

Physical Chemistry Chemical Physics
Phys. Chem. Chem. Phys.,
14 January 2025, Issue 2,
2025,**27**, 611-612
Page 611 to 1198
https://doi.org/10.1039/D5CP90005K

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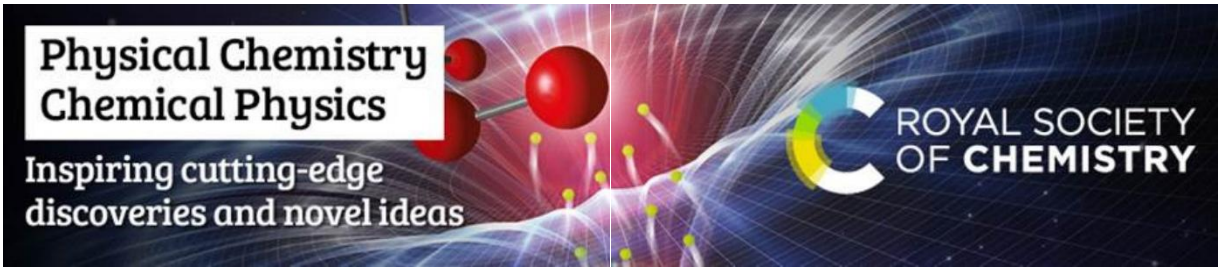
Scope

PCCP (*Physical Chemistry Chemical Physics*) is an international journal for the publication of cutting-edge original work in physical chemistry, chemical physics and biophysical chemistry. To be suitable for publication in *PCCP*, articles must include significant new physical insights; this is the prime criterion that referees, and the Editors will judge against when evaluating submissions.

The journal has a broad scope which includes spectroscopy, dynamics, kinetics, statistical mechanics, thermodynamics, electrochemistry, catalysis, surface science, quantum mechanics and theoretical developments play an important part in the journal. Interdisciplinary research areas such as polymers and soft matter, materials, nanoscience, surfaces/interfaces, and biophysical chemistry are especially welcomed whenever they include a physico-chemical approach.

PCCP is proud to be a Society journal and is co-owned by 19 national chemical societies. The journal is published by the Royal Society of Chemistry on a not-for-profit basis for the benefit of the whole scientific community.

Impact factor: 4.493*
Publishing frequency: 48 per year
Indexed in MEDLINE and Web of Science



PCCP Emerging Investigator Lectureship Award 2025

Dear Colleague,

Do you know an outstanding emerging investigator in physical chemistry, chemical physics, or biophysical chemistry?

I am delighted to request your nomination for this year's *PCCP* Emerging Investigator Lectureship Award to recognise and support an emerging scientist working in physical chemistry, chemical physics or biophysical chemistry.

The recipient will receive £1000 to cover travel and accommodation costs to attend and present their research at a leading international conference in 2025. At the conference, a member of our Editorial Board will present them with their award. In addition, selected nominees will be invited to submit to the 2025 *PCCP* Emerging Investigator themed collection. You can read our most recent *PCCP* Emerging Investigators themed collection here.

Nominations must be made to the Editorial Office by **5 April 2025** by submitting the lectureship nomination form and an accompanying letter of recommendation. For more details, including eligibility criteria, please check the webpage.

Nominate now!

We look forward to receiving your nomination!

With best wishes,

Anouk Rijs

Editorial Board Chair

Vrije Universiteit Amsterdam

Michael A Rowan

Executive Editor

Royal Society of Chemistry

PCCP is an international journal for the publication of cutting-edge original work in physical chemistry, chemical physics, and biophysical chemistry. *PCCP* is owned by 19 chemistry, physical chemistry, and physics societies and is published by the Royal Society of Chemistry. The Royal Society of Chemistry is a society publisher with a mission to advance excellence in the chemical sciences, we re-invest all surplus back into the global scientific community. Find out more about the advantages of publishing in a Royal Society of Chemistry journal by visiting our website.

Universities Sector News

University of Limerick rewards researchers at awards ceremony - Limerick Live

9 December

University of Limerick rewards researchers at awards ceremony - Limerick Live

Chemistry to Circular Economy | Research | Queen's University Belfast

18 December

Chemistry to Circular Economy | Research | Queen's University Belfast

New appointments at Galway and Limerick universities

27 January

New appointments at Galway and Limerick universities

UCC researchers awarded €2.3m for new research to address climate and environmental challenges

19 February

Latest news and views from University College Cork

Taighde Éireann Research Ireland

News

https://www.researchireland.ie

2 ERC Synergy Awards & 2 ERC Public Engagement with Research Awards

29 November

Prestigious European Research Council award successes for Irish-based researchers - Research Ireland

Over €9 million announced for National Challenge Fund finalists

17 December 2024

‘Grow Phase’ funding of over €9million has been announced today for 16 research teams under the National Challenge Fund – a €65million competitive programme which aims to deliver solutions for major environmental and societal issues.

Established under the Government’s National Recovery and Resilience Plan (NRRP), funded by the EU’s Recovery and Resilience Facility, the National Challenge Fund has supported 96 teams to identify problems related to Ireland’s Green Transition and Digital Transformation and collaborate directly with those stakeholders most affected by them to create real and tangible solutions.

The teams selected today will have the opportunity for additional funding in the final phase of the programme, where prize funding of between €1-2million will be on offer to the most competitive teams under each Challenge.

Celine Fitzgerald, Interim CEO, Research Ireland, said:

"The National Challenge Fund is a solution-focused approach that encourages teams to work across discipline and sectoral boundaries, enabling collaboration between academic researchers, industry and government stakeholders and end-users, and ensuring they are developing innovative and implementable solutions. I wish all the finalist teams success as they continue to develop their unique research projects."

1. The **Energy Innovation Challenge** seeks solutions that will accelerate Ireland's transition to a clean and secure energy system. The finalists in this challenge are researching solutions in the areas of the circular economy, renewable energy and reducing carbon emissions.

2. The **Digital for Resilience Challenge** seeks solutions that will enhance Ireland's capabilities in crisis prediction and response. The teams in this challenge are researching solutions in the areas of digital resilience, resilient supply chain solutions, flood forecasting and integrating data from disparate healthcare sources.

3. The **Healthy Environment for All Challenge** seeks solutions to ensure clean and healthy air, water and soil for humans, animals, and plants. The teams in the Grow Phase for this challenge are researching solutions in the areas of microbiological water quality monitoring, biodegradable tree-supports, water disinfection technologies, sustainable solutions for disposing firefighting foams and bioaerosol forecasting.

4. The **OurTech Challenge** seeks solutions to enhance the connections between government, communities, and people. The finalists in this Challenge are researching solutions in the areas of cyber safety for vulnerable populations, supporting the efficient use of existing building stock and combating child grooming.

Each team is being awarded up to €500,000 funding for the next 12 months. They will spend the next year advancing prototyping activities and demonstrating how the solutions they are developing can create tangible value by addressing the specific societal needs identified and refined in the previous phases of the funding programme.

The Energy Innovation Challenge seeks solutions that will accelerate Ireland's transition to a clean and secure energy system.

Teams (alphabetically by lead researcher):

- Dr Vesna Jaksic, Munster Technological University; co-lead Dr Paul Leahy, University College Cork: EirBLADE – National REposItoRy of Decommissioned Wind Turbine BLADEs.

- Prof. Fabiano Pallonetto, Maynooth University; co-lead Dr Amy Fahy, Maynooth University: RENEW – Renewable Energy through Networking, Education, and building a strong community Will for sustainability.

- Dr James Sweeney, University of Limerick; co-lead Prof. Vikram Pakrashi, University College Dublin: GREEN-GRID – Real-time prediction of GREEN electricity generation potential from renewables for optimised GRID management.

- Prof. Dominic Zerulla, University College Dublin; co-lead Dr Silas O'Toole, University College Dublin: PicoGlaze – Dynamic, sustainable, glazing technology enabling modulation of solar heat flow, significantly reducing carbon emissions from the built environment.

The Digital for Resilience Challenge seeks solutions that will enhance Ireland's capabilities in crisis prediction & response.

Teams (alphabetically by lead researcher):

- Dr Ruth Levey, University of Galway; co-lead Dr Ruth Tarpey, University of Galway: ambiCART – a disruptive digital technology to track live cells and monitor their viability in real-time as they are shipped ambiently.

- Dr Hazel Murray, Munster Technological University; co-lead Gillian O'Carroll, Munter Technological University: Cyber Resilience – Digital resilience for SMEs.

- Dr Indiana Olbert, University of Galway; co-lead Dr Thomas McDermott, University of Galway: Stop Flood – Novel approaches for forecasting multi-hazard hydrological events.

- Prof. Mark Roantree, Dublin City University; co-lead Prof Patricia Kearney, University College Cork: RECONNECT – Chronic disease: discovery, analysis and predictive modelling.

The Healthy Environment for All Challenge seeks solutions to ensure clean and healthy air, water and soil for humans, animals, and plants.

Teams (alphabetically by lead researcher):

- Dr Ciprian Briciu-Burgina, Dublin City University; co-lead Prof. Fiona Regan, Dublin City University: RESTART – Rapid bactErial Sensing for a healThy wAter enviRonmenT.

- Dr Yuanyuan Chen, Technological University of the Shannon co-lead Prof. Maurice Collins, University of Limerick: Traceless – Developing fully biodegradable tree-supporting products with controlled release of fertilizers and pesticides to avoid microplastic and chemical pollution.

- Prof. Deirdre Fitzgerald-Hughes, RCSI University of Medicine and Health Science; co-lead Prof. Mary Pryce, Dublin City University: NoHoW-AMR – New OneHealth OneWater Antimicrobial Resistance Solutions.

- Prof. Cormac Murphy, University College Dublin; co-lead Prof. James Sullivan, University College Dublin: PFAS Cleanup – A sustainable solution for the disposal of PFAS-containing Aqueous Film Forming Foams (AFFF).

Dr David O'Connor, Dublin City University; co-lead Dr Jiayao Chen, University College Dublin: BOHEMIAN – Biological and chemical aerosol monitoring and modelling.

The OurTech Challenge seeks solutions to enhance the connections between government, communities, and people.

Teams (alphabetically by lead researcher):

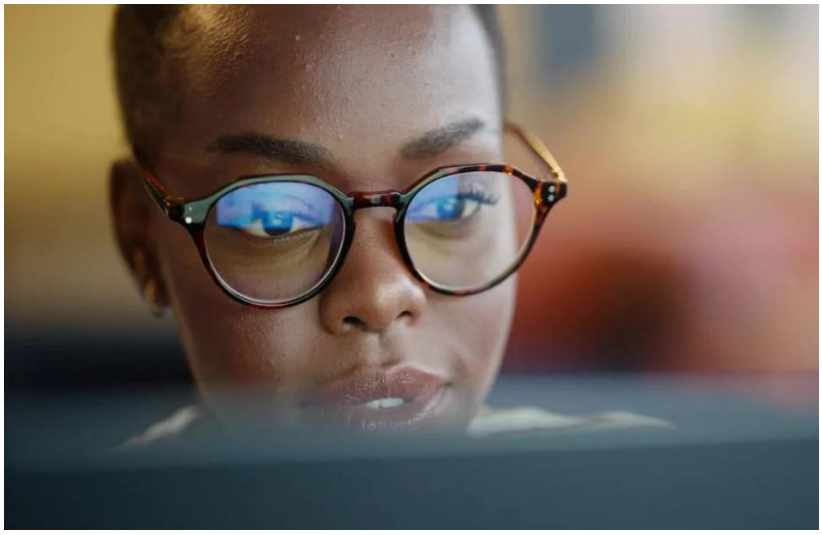
- Dr Philip Crowe, University College Dublin; co-lead Dr Gavin McArdle, University College Dublin: Building Stories – Development of a geospatial model for vacancy to reveal the adaptive capacity of urban areas in Ireland, using proxy datasets, GIS and AI.

- Dr Hazel Murray, Munster Technological University; co-lead Michelle O' Keefe, Munster Technological University: Cyber Safety – Cyber safety for vulnerable populations.

- Dr Christina Thorpe, Technological University Dublin; co-lead Dr Matt Bowden, Technological University Dublin: GroSafe – A Technology-Enabled Solution for Building Societal Resilience against Grooming.

Research Ireland announces €4.3m enterprise-focussed funding for postgraduate and postdoctoral researchers

19 December 2024



Development of spray-on, wash-off bandages; reducing carbon emissions in Ireland's construction industry; and genetic analysis to assist red squirrel conservation in Britain and Ireland among the successful projects.

Research Ireland has today announced funding of €4.3m that will enable 35 postgraduate and postdoctoral candidates across 13 higher education institutions to collaborate with an enterprise partner on a research project of mutual interest.

The Enterprise Partnership Postgraduate and Postdoctoral schemes provide postgraduate and postdoctoral candidates, hosted by a research-performing institution, with the chance to gain valuable experience in the early part of their careers, with participating enterprise partners benefitting from having fresh perspectives, expertise, ideas and knowledge.

Announcing the awards, **Research Ireland Interim CEO, Celine Fitzgerald, said**:

"I am delighted to see these latest projects selected for funding under Research Ireland's Enterprise Partnership Schemes. These co-funded programmes train early-career researchers for the diversity of employment opportunities in industry, the public sector and the non-government sectors. For enterprise partners, the schemes provide a low-risk, flexible route to research talent and innovation in an area closely aligned with their strategic interests. It's exciting to see the broad experience and benefits that these partnerships will give to researchers and their enterprise-employer partners."

Among the successful projects are:

- *'Spray-on, wash-off bandages (SOWOB): Reversible temperature-controlled polymers for painless bandage changes in Epidermolysis Bullosa':* **Hilal Kırpık (Maynooth University)**, in partnership with **DEBRA Ireland**, aims to develop and validate spray-on, wash-off bandages

based on thermo-responsive hydrogels, for painless bandage changes in Epidermolysis bullosa (EB).

- *'Reducing Carbon Emissions in the Irish Construction Industry by Employing Soil Stabilisation Methods in Unsuitable Soils.':* **Daniel Cagney (University of Limerick)**, in partnership with **MWP**, will focus on optimizing the design of binders, which are used to increase the strength and stiffness of the soil in construction sites. In 2021, over 7.5 million tonnes of soil waste was removed from construction sites in Ireland and replaced with crushed quarried stone, which has financial and environmental impacts. Improved binders could be mixed with onsite soil to improve rigidity, the reuse of the soil also reduces carbon emissions and contributes to the circular economy.

- *'Isle of Bute: A genetic case study with implications for red squirrel conservation in Britain and Ireland*: **Rebecca Synnott (South East Technological University)**, in partnership with **Vincent Wildlife Trust** will investigate the genetic composition of red squirrel and assess the relatedness and health of the population. Understanding the genetic links and health of the red squirrels will lead to informed conservation strategies. While partners Vincent Wildlife Trust will gain actionable insights from this research, to safeguard key strategic red squirrel populations coinciding with broader conservation and restoration goals.

- *'Beyond CHIME: A Longitudinal, Qualitative Investigation Examining the Changes in Emotions, Behaviours and Thought Processes that occur During A Person's Recovery Journey from Mental Health Challenges.':* **Michael Norton** (**RCSI University of Medicine and Health Sciences)**, in partnership with **Office of Mental Health Engagement and Recovery,** endeavours to be a catalyst for change, fostering a more nuanced and effective approach to supporting individuals on their path to recovery.

Welcoming the announcement, **Peter Brown, Director, Researcher Development at Research Ireland,** said:

"The Enterprise Partnership Scheme links excellent research talent with enterprise and innovation in Ireland. The initiative helps to future-proof the careers and skills of academic researchers, while connecting employers with a high-quality pool of talent within Ireland's research community. Research Ireland is delighted to work with our enterprise partners this year, building on previously established partnerships and working with new companies and organisations. I congratulate all our awardees and wish them every success as they begin their research projects".

Enterprise organisations range from multinational corporations to SMEs, public-sector agencies, and non-governmental organisations (NGOs), and through this co-funded model, postgraduate or postdoctoral researchers are given the opportunity to develop new, advanced knowledge, and skills linked with industry needs.

Project list of Enterprise Partnership Scheme Postgraduate Scholars

Click here

#12DaysofIrishResearch

We are looking back on some of this year's Research highlights.

Follow along using **#12DaysofIrishResearch** on **LinkedIn**, **BlueSky**, and **X.**

A €14.6m investment for the Research Ireland Pathway Programme

20 December2024

A €14.6 million investment was announced in July for 25 projects under the Research Ireland Pathway Programme. The Programme supports early-career research across all disciplines to encourage a cohesive research ecosystem in Ireland. The awards will enable postdoctoral researchers to develop their career pathway and transition to become independent research leaders. The 25 research projects will be funded through 13 research bodies.

The SURG-Water team wins the SDG Challenge focused on SDG 13: Climate Action

In July, SURG-Water was announced as the winning project in the Research Ireland-Irish Aid Sustainable Development Goals Challenge, focused on SDG 13: Climate Action.

Prof. Kevin McGuigan, and Dr Jakub Gajewski of RCSI University of Medicine and Health Science, with partner team lead, Prof. Christabel Yollandah Kambala, Malawi University of Business and Applied Sciences, won the SDG Challenge with an innovative, low-cost solution to providing clean water to healthcare facilities in Malawi.

Research Ireland Public Service Fellowship funding announced for 14 researchers

14 research awards received funding through Research Ireland's Public Service Fellowship Programme in March.

The Research Ireland Public Service Fellowship programme offers academic researchers a unique opportunity to be temporarily seconded to Government departments and agencies and work on specific collaborative research projects. The fellowships help to foster innovation and provide an evidence base for policy, through close collaboration and engagement within the public sector and academic research community.

The projects represent a total grant funding in excess of €1.25 million. Co-funding partners include the Environmental Protection Agency, Geological Survey Ireland and the Sustainable Energy Authority of Ireland.

A total of €60 million in funding announced under the Research Ireland Frontiers for the Future programme

A total of €60 million in funding was awarded to 68 projects under the Research Ireland Frontiers for the Future programme this year.

In May, 28 funding awards valued at €34 million were announced under the Research Ireland Frontiers for the Future programme. The awards are of 4-5 years' duration and will support 124 research positions including 58 postdoctoral positions, 53 PhD students and 13 research assistants and other positions. This programme was funded in collaboration with SEAI.

In October, €26 million for 40 research projects was announced under the programme. The projects address key areas such as environmental sustainability, new EV battery technologies, breast cancer, inflammatory bowel disease, and currently untreatable childhood neurological disorders. As a Frontiers for the Future partner, Children's Health Foundation is funding two of the 40 projects (childhood epilepsy and cystic fibrosis) and co-funding another project with Research Ireland (bone cancer).

The DOROTHY programme invests €2.6 million in funding for ten fellows

The DOROTHY COFUND programme announced an investment of €2.6 million in funding for ten fellows in June. The fellows will tackle public health crises from a variety of disciplinary perspectives. The DOROTHY programme is a postdoctoral research programme co-funded by the European Union's Horizon 2020 research and innovation programme under Marie Skłodowska-Curie Actions (MSCA). Three Irish funding agencies, Research Ireland, Health Research Board (HRB) and the Environmental Protection Agency (EPA) Ireland, have collaborated to create this interdisciplinary fellowship programme.

A €104 million investment announced for four Research Ireland Centres

The funding was allocated to four Research Ireland Centres: BiOrbic Bioeconomy Research Ireland Centre; FutureNeuro Research Ireland Centre for Neurological Diseases; I-Form Research Ireland Centre for Advanced Manufacturing; and VistaMilk Research Ireland Centre. An additional €21 million has been committed by these Centres' industry partners.

The four Centres announced represent an important national research network of 17 host and partner institutions that have collaborated with over 130 industry partners ranging from SMEs to multinationals, across all regions and in a variety of sectors.

The targeted funding will support over 600 highly skilled research positions in the bioeconomy, agrifood, neurological disease and advanced manufacturing, over the next six years.

Link: https://youtu.be/UIpAyubJsNQ

€4.3m in funding announced under the Enterprise Partnership Postgraduate and Postdoctoral schemes

In December, Research Ireland announced funding of €4.3m that will enable 35 postgraduate and postdoctoral candidates across 13 higher education institutions to collaborate with an enterprise partner on a research project of mutual interest.
The Enterprise Partnership Postgraduate and Postdoctoral schemes provide postgraduate and postdoctoral candidates, hosted by a research-performing institution, with the chance to gain valuable experience in the early part of their careers, with participating enterprise partners benefitting from having fresh perspectives, expertise, ideas and knowledge

Development of spray-on, wash-off bandages for Epidermolysis Bullosa; reducing carbon emissions in Ireland's construction industry; and genetic analysis to assist red squirrel conservation in Britain and Ireland were among the successful projects

A €7 million joint investment announced for the US-Ireland Research Programme

A combined investment exceeding €7 million was announced in March through the US-Ireland programme – a tripartite research and development (R&D) partnership between the United States of America (USA), Republic of Ireland (RoI) and Northern Ireland (NI).

Under the Programme, six awards were announced spanning 11 institutions which will support more than 11 research positions in RoI, 10 research positions in NI, and over 20 positions in the US. The funded projects, covering three to four years, include research in the areas of sustainable collection and management of water, photonic integrated circuits, wearable sensors to monitor health, telecommunications, and microbial activity.

National Challenge Fund Finalists awarded 'Grow Phase' Funding

In July, €4.5 million funding was announced for the first nine teams become finalists in the competitive funding model. The nine teams selected will have the opportunity for additional funding in the final phase of the programme, where prize funding of €1 million will be on offer to the most competitive teams under both the 2050 and the Future Digital Challenges. The teams that received funding were split across two challenge areas.

- The **2050 Challenge** seeks transformative, forward-looking solutions to current and future challenges for Ireland in becoming climate neutral and resilient by 2050.

- The **Future Digital Challenge** seeks to realise transformational societal and economic impact from disruptive digital technologies.

In December, over €9 million was announced for National Challenge Fund finalists. The teams selected will have the opportunity for additional funding in the final phase of the programme, where

prize funding of between €1-2 million will be on offer to the most competitive teams under each Challenge.

The teams receiving funding are split across the following challenge areas:

- The **Energy Innovation Challenge** seeks solutions that will accelerate Ireland's transition to a clean and secure energy system.
- The **Digital for Resilience Challenge** seeks solutions that will enhance Ireland's capabilities in crisis prediction and response.
- The **Healthy Environment for All Challenge** seeks solutions to ensure clean and healthy air, water and soil for humans, animals, and plants.
- The **OurTech Challenge** seeks solutions to enhance the connections between government, communities, and people.

€27.5 million in funding announced under the Government of Ireland postgraduate scholarship and postdoctoral fellowship programmes

An investment of €27.5m in funding was announced in October for 290 projects under the Government of Ireland postgraduate scholarship and postdoctoral fellowship programmes. The Government of Ireland schemes support exceptional early-career researchers to pursue cutting-edge research with world-class potential in any discipline across the sciences, engineering, arts and humanities. The scheme is a unique facet of the Research Ireland portfolio, facilitating early-career researchers to lead on the development and implementation of their research idea. The investment this year will fund 210 postgraduate scholars and 80 postdoctoral fellows.

Celebrating public awareness, curiosity and passion for discovery and research in Ireland

A €5 million investment in 38 projects which encourage understanding of science, technology, engineering and mathematics (STEM) was announced under the Research Ireland Discover programme in February. The funding will create greater public awareness of the impact of STEM on society and everyday life, generate opportunities for dialogue and encouraging diversity in STEM-related disciplines.

Science Week is a nationwide celebration of STEM that aims to inspire curiosity, ignite a passion for discovery, and promote the importance of STEM education and research in Ireland. Science Week 2024 took place 10th – 17th November and offered a diverse range of activities and events for people of all ages to engage with.
As part of Science Week 2024, Alf, a giant puppet of a smooth Newt, paraded through Dublin's city centre, sparking conversations about climate change and habitat loss. Solaris appeared in the Marina Market Cork and Saint Nicholas Church Galway, bringing audiences on a journey through the life stages of a star. Over thirty festivals and events funded under the Science Week Programme Call engaged with people of all ages, exploring this year's theme of regeneration.

Link:
https://youtu.be/biPZiEJ_cmc

Minister Lawless announces €2.5million for 28 Research Ireland industry-focused fellowships

3 February 2025

AI, solar panels and male infertility among selected projects

Minister for Further and Higher Education, Research, Innovation and Science, James Lawless TD, has today announced a €2.5 million investment to fund 28 fellowships through the Research Ireland Industry Research, Development, and Innovation Fellowship (IRDIF) Programme.

The funding will enable researchers to undertake placements in 22 companies, working on projects across diverse fields including AI for computational safety, sustainable materials for solar panels, cell-sorting system for addressing male infertility, and developing multi-modal drug compounds for ulcerative colitis.

Minister Lawless said: "Research Ireland's Industry Research Development and Innovation Fellowship Programme is an excellent example of how the best of academic research and industry expertise can be brought together to tackle challenges and deliver impactful solutions. The initiative strengthens our national research ecosystem and highlights the importance of partnerships in fostering innovation that drives societal and economic growth. I look forward to the significant contributions these fellowships will bring."

The industry partners collaborating on the programme will collectively contribute co-funding of over €1.7 million. Researchers will bring valuable academic insights and research experience to their respective industry partners, while developing their industry and business knowledge during their placement.

Celine Fitzgerald, Interim CEO of Research Ireland, added: "We are delighted to facilitate these new partnerships between academia and industry. The Research Ireland IRDIF Programme offers researchers unique opportunities to address industry-focused challenges, ensuring that the knowledge exchange drives research excellence and enhances the competitive advantage of the companies involved."

Examples of the projects funded include:

- Developing smarter AI systems that can quickly and accurately detect harmful content, reducing the need for human involvement and making AI safer and more reliable, in collaboration with Workday.
- Cost-effective and eco-friendly coatings that make solar panels self-cleaning, reducing maintenance and improving energy efficiency, in collaboration with Kastus Technologies.
- Development of a cell-sorting system to efficiently sort human primary testicular cells for addressing male infertility, in collaboration with BD Research Centre Ireland.
- Climate risk intelligence tools for critical infrastructure assets, in collaboration with Climate Matters.
- Converting dairy processing side-streams (acid casein whey) into sustainable phosphate supplement using optimised novel phosphate removal approaches, in collaboration with Arrabawn Co-Operative Ltd.
- Development of innovative nanofluids to advance thermal cooling technology, in collaboration with HT Materials Science.
- Investigating Multi-Modal Drug Compounds as Therapeutic Agents for Ulcerative Colitis, in collaboration with Noa Therapeutics.

The fellowships range in duration from 12 to 24 months. Awardees represent the following eight higher education institutions: University College Cork, University of Galway, Trinity College Dublin,

University of Limerick, University College Dublin, Technological University Dublin, Dublin City University, and Tyndall National Institute.
The industry collaborators for the programme this year include 21 companies based in Ireland and one company from Toronto, Canada. Among the participating industries are:

- EIRNA Bio Ltd.
- TechWorks Marine Ltd.
- Kastus Technologies
- Branca Bunús Ltd.
- EnergyPro Asset Management Ltd.
- Versatile Packaging
- Bia Energy Limited
- iSentioLabs
- Noa Therapeutics
- Boston Scientific Cork
- HUAWEI TECHNOLOGIES (IRELAND) CO., LIMITED
- Bláfar Ltd.
- Marama Labs Limited
- Workday
- Analog Devices Inc., (ADI)
- Climate Matters
- Alcon Laboratories Ireland Ltd
- Mirai Medical Limited
- BD Research Centre Ireland
- HT Materials Science
- Arrabawn Co-Operative Ltd.

Research Ireland is working towards opening funding opportunities in 2025 which enable post-doctoral researchers to collaborate with enterprise, which we anticipate will open in the first half of 2025. These will be developed in collaboration with the Research Ireland Industry RD&I Fellowship Programme and the Research Ireland Enterprise Partnership Scheme (Postdoctoral) teams.

Minister Lawless announces €63.84m to accelerate commercialisation of research across Ireland

12 February 2025

- **Groundbreaking initiative co-funded by European Union & Irish Government**
- **€63.84m for Therapeutics and ICT Hubs under ERDF Regional Programme**

Minister for Further and Higher Education, Research, Innovation and Science, James Lawless TD, has today announced a multi-annual 'Accelerating Research to Commercialisation' (ARC) Hub investment programme to fast-track the commercial potential of scientific research across Ireland.

The new programme establishes two new Research Ireland ARC Hubs – the ARC Hub for Therapeutics and the ARC Hub for ICT. With funding from the European Regional Development Fund (ERDF) and the Government of Ireland, the two hubs have been awarded a combined budget of €63.84 million.

Speaking at the announcement, Minister Lawless said:
"*The Research Ireland ARC Hubs for Therapeutics and ICT represent a new model for regional innovation and entrepreneurial training that will catalyse a step-change in the translation of cutting-edge, publicly-funded research towards impact at a regional level. The ARC Hubs will enhance and accelerate the commercialisation of research to create new products, processes and services."*

Welcoming the announcement, **Research Ireland's Interim CEO, Celine Fitzgerald**, commented:

"The Research Ireland ARC Hub Programme is a gamechanger in terms of driving regional development through commercialisation of research. The two ARC Hubs unveiled today – Therapeutics and ICT respectively – will create regional entrepreneurial ecosystems in two critically important sectors for the Irish economy. Accelerating the overall journey to impact will be achieved by enabling researchers with novel ideas to become future entrepreneurs, with the Hubs providing an integrated approach to research funding, entrepreneurial training and access to networks and supports.

The ARC Hubs are co-funded by the Government of Ireland and the European Union through the Southern, Eastern and Midland Regional Programme 2021-2027, one of two ERDF programmes in Ireland. The ERDF aims to promote economic, social and territorial cohesion across all European regions.
Maciej Berestecki, European Commission Spokesperson, commented:

The European Commission welcomes this strategic investment to be co-funded by the European Regional Development Fund. The ARC Hubs offer an integrated approach which will not only accelerate the commercialisation of research but also improve regional competitiveness. By embedding entrepreneurial approaches into the research and innovation ecosystem, groundbreaking ideas can be developed and lead to tangible economic and societal benefits for all regions across Ireland".

Photo caption: Minister for Further and Higher Education, Research, Innovation and Science, James Lawless TD has today announced funding of €63.8 million to fast-track commercialisation of research across Ireland. The 'Accelerating Research to Commercialisation' (ARC) Hub investment programme is administered by Research Ireland and co-funded by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-2027. Pictured at the announcement in Research Ireland were (left-right): Marie Harnett, EU Division, Southern Regional Assembly; David Kelly, Director of Southern Regional Assembly; Michael McGrath, National Communications Officer, Member State; Prof. Sarah Jane Delany, School of Computer Science, TU Dublin and ARC Hub for ICT Lead; James Lawless TD, Minister for Further and Higher Education, Research, Innovation and Science; Prof. Vincent Kelly, School of Biochemistry & Immunology, Trinity College Dublin and Lead of the ARC Hub for Therapeutics; Michael Horgan, Chair, Research Ireland; and Helen Kearns, Head of Media, Communication and Outreach at European Commission Dublin Representation.

Ulysses 2026 Funding Programme Officially Launched

Research Ireland and the Embassy of France in Ireland are delighted to announce the launch of the Ulysses 2026 funding programme.

Named after James Joyce's celebrated novel, the Ulysses scheme, through targeted networking grants, aims to foster new collaborations by facilitating the exchange of innovative ideas and approaches between researchers based in Ireland and France, across all disciplines. The 2026 awarded projects will share funding of €120,000 in total under the scheme. Now in its 28th year, the Ulysses scheme is supported by the French Ministry of Foreign Affairs, the French Ministry of Higher Education and Research, Research Ireland, RTE-France, EirGrid, ADEME and Sustainable Energy Authority of Ireland.

• Electricity transmission system operator EirGrid will partner with France-based RTE-France to support suitably aligned research projects in the area of renewable energies and smart grids and on the technical and societal issues related to energy transition.

• The Sustainable Energy Authority of Ireland and ADEME, the French Environment and Energy Management Agency, will provide support to research projects exploring topics relating to environmental, climate and energy transition.

Celine FitzGerald, Interim CEO Research Ireland, commented:

"The long-standing Ulysses partnership exemplifies Ireland's and France's mutual commitment to supporting research collaboration between our two countries. To date, over 800 researchers have benefited from funding under this strategically important programme, which has measurably helped to strengthen connections and cultivate greater understanding between our respective research ecosystems. We look forward to the programme's continuation and to seeing the benefits stemming from the new call being launched today."

H.E. Céline Place, the French Ambassador to Ireland, remarked:

"I am thrilled to see the launch of the 2026 Ulysses program with Research Ireland. This significant research initiative underlines our commitment to the special bond between France and Ireland. The program has evolved over time to better serve our researchers' needs and is now stronger than ever, featuring two years of funding, partnerships with the private sector, and a focus on priority areas such as climate and renewable energy"y.

Over the years, projects have covered a wide range of topics, the last ones including for example the effect of air pollutants on respiratory health, active mobility of children from disadvantaged backgrounds, innovative electrocatalytic green hydrogen production processes, the promotion of Franco-Irish cultural relations, etc.

The call for new projects across all disciplines is now open, and full details can be found here.
Key Dates

Call Open 16:00 PM (Irish time) 20 February 2025

FAQ Deadline 16:00 PM (Irish time) 24 April 2025

Applicant deadline 16:00 PM (Irish time) 6 May 2025

Expected call outcome End of October 2025

Photo caption: *Pictured at the official launch of the Ulysses 2026 funding programme were (left-right) H.E. Céline Place, French Ambassador to Ireland, and Interim CEO Research Ireland, Celine Fitzgerald. Ulysses, through targeted networking grants, aims to foster new collaborations by facilitating the exchange of innovative ideas and approaches between researchers based in Ireland and France, across all disciplines.*

Minister Lawless announces €23.6 million Research Ireland Frontiers for the Future funding

26 February

Minister for Further and Higher Education, Research, Innovation and Science, James Lawless TD has today announced €23.6 million to support 23 research projects focused on tackling challenges in AI, healthcare, agriculture, energy, and transport.

The Research Ireland Frontiers for the Future Programme funds high-risk, high-reward research programmes and innovative, collaborative research with the potential to deliver economic and societal impact.
Announcing the awards, **Minister Lawless** said:

"The Research Ireland Frontiers for the Future programme supports the development of world-class research across a range of disciplines. The awardees – spanning 9 research institutions nationwide – have brought forward novel and innovative ideas with strong potential to deliver impactful solutions for major challenges facing society today. The programme itself promotes gender balance and provides opportunities for emerging investigators returning to research. I look forward to seeing the awardees' progress over the coming years."

Welcoming the announcement, **Celine Fitzgerald, Interim Chief Executive of Research Ireland,** commented:

"Our Frontiers for the Future Programme is driven by feedback from the research community and represents a strong commitment to developing future talent in key areas. These 23 awards will fund a total of 86 research positions, comprising Postdocs, PhDs, Research Assistants and support staff. I'm very pleased with the opportunities that this targeted investment is creating, and greatly encouraged that crucial research on pressing issues will be facilitated as a result."

Examples of the initiatives being funded include:

• AI for diagnostic imaging, with a focus on cardiac MRI (Dublin City University);
• Investigating long-term effects of COVID-19 on children's gut bacteria, social skills, and language development (RCSI University of Medicine and Health Sciences);
• Mining micro-organisms living in seaweed to identify novel compounds with strong potential for crop improvement (Technological University of the Shannon);
• Machine Learning to tackle complex issues using varied and sensitive data whilst ensuring data privacy and clear communication (University of Limerick).

The Frontiers for the Future awardees are from the following research bodies: RCSI University of Medicine and Health Sciences, Dublin City University, Trinity College Dublin, Teagasc, Technological University of the Shannon, University College Dublin, University College Cork, University of Galway, and University of Limerick.

Photo caption: *Minister for Further and Higher Education, Research, Innovation and Science, James Lawless TD today announced €23.6 million to support 23 research projects under Research Ireland's Frontiers for the Future Programme. Among the successful projects is the FLORAL study, which is examining the relationship of health outcomes and gut microbiome in children born during and after the COVID-19 pandemic. Pictured at RCSI University of Medicine and Health Sciences were (left-right): Minister Lawless; Prof. Jonathan Hourihane, Lead of the FLORAL study, Celine Fitzgerald, Interim CEO of Research Ireland; five-year old Eleanor, who was part of the original study of infants born in 2020; and her mother, Monica. (Photography: Jason Clarke)*

Chemistry and Related Sciences around the World

Chemistry is presented here under specific topics to enable easy and quick access to a smaller section of interest to the reader.

Topic 1. General Chemistry
Topic 2. Organic Chemistry, Synthesis and Catalyst Chemistry
Topic 3. Analytic Chemistry, Sensors, Diagnostics & Spectroscopy
Topic 4. Material Chemistry & Sciences
Topic 5. Electrochemistry, Battery Chemistry & Technology
Topic 6. Photochemistry, Solar Cell Chemistry & Technology
Topic 7. Chemistry & Artificial Intelligence

The chemistry topics are interspersed with other topics and ads

Medicinal Chemistry, Chemical Biology & Life Sciences will stand on its own

General Chemistry

Dynamic anti-correlations of water hydrogen bonds | Nature Communications

1 December

Dynamic anti-correlations of water hydrogen bonds | Nature Communications

DOI: https://doi.org/10.1038/s41467-024-54804-y

Scientists Just Measured an Atom on the Brink of Existence

1 December

Scientists Just Measured an Atom on the Brink of Existence

DOI: 10.1103/PhysRevLett.132.152501

Reply to: An approach to the resolution of the dispute on collective atomic interactions | Nature Communications

30 November

Reply to: An approach to the resolution of the dispute on collective atomic interactions | Nature Communications

DOI: https://doi.org/10.1038/s41467-024-54553-y

Liquid water molecules are inherently asymmetric: New insight into the bonds between water molecules

4 December

Liquid water molecules are inherently asymmetric: New insight into the bonds between water molecules

DOI: 10.1038/s41467-024-54804-y

Record-Breaking Catalyst Turns CO2 Into Fuel With Incredible Efficiency

3 December

Record-Breaking Catalyst Turns CO2 Into Fuel With Incredible Efficiency

DOI: 10.1002/adfm.202417223

Turning Pollution Into Profit: Scientists Solve Decades-Old Catalyst Deactivation Problem

5 December

Turning Pollution Into Profit: Scientists Solve Decades-Old Catalyst Deactivation Problem

DOI: 10.1038/s41467-024-50729-8

Palladium-catalyzed remote internal C(sp3)−H bond chlorination of alkenes | Nature Communications

5 December

Palladium-catalyzed remote internal C(sp3)−H bond chlorination of alkenes | Nature Communications

DOI: https://doi.org/10.1038/s41467-024-54896-6

Less is more: Why an economical iridium catalyst works so well

6 December

Less is more: Why an economical iridium catalyst works so well

DOI: 10.1021/acscatal.4c03562

A Nobel Prize For Chemistry Work 'Totally Separate From Biology'

2 December

A Nobel Prize For Chemistry Work 'Totally Separate From Biology' | Science Friday | WNYC Studios

Luminescent Fe(III) Complex Sensitizes Aerobic Photon Upconversion and Initiates Photocatalytic Radical Polymerization | Journal of the American Chemical Society

10 December

Luminescent Fe(III) Complex Sensitizes Aerobic Photon Upconversion and Initiates Photocatalytic Radical Polymerization | Journal of the American Chemical Society
DOI: https://doi.org/10.1021/jacs.4c14248

Mechanochemical nitrogen fixation catalysed by molybdenum complexes | Nature Synthesis

9 October
Mechanochemical nitrogen fixation catalysed by molybdenum complexes | Nature Synthesis
DOI: https://doi.org/10.1038/s44160-024-00661-y

Hydrogen's dual nature helps reveal hidden catalytic processes

13 December
Hydrogen's dual nature helps reveal hidden catalytic processes
DOI: 10.1038/s41929-024-01262-w

The first hexa-valent nickel complex | Department of Chemistry

13 December
The first hexa-valent nickel complex | Department of Chemistry
DOI: https://doi.org/10.1021/jacs.4c12125

Unique copper nanocluster design boosts CO_2 reduction selectivity

13 December
Unique copper nanocluster design boosts CO_2 reduction selectivity
DOI: 10.1002/smll.202409910

Hydrogen and nitrogen fused for first time ever: The result is something strange and powerful

18 December
Hydrogen and nitrogen fused for first time ever: The result is something strange and powerful

Predicting emergence of crystals from amorphous precursors with deep learning potentials | Nature Computational Science

18 December
Predicting emergence of crystals from amorphous precursors with deep learning potentials | Nature Computational Science
DOI: https://doi.org/10.1038/s43588-024-00752-y

Eco-friendly reactor mimics lightning to produce ammonia from air and water

19 December
Eco-friendly reactor mimics lightning to produce ammonia from air and water
DOI: 10.1021/jacs.4c12858

An efficient multi-gram access in a two-step synthesis to soluble, nine-atomic, silylated silicon clusters | Nature Communications

23 December
An efficient multi-gram access in a two-step synthesis to soluble, nine-atomic, silylated silicon clusters | Nature Communications
DOI: https://doi.org/10.1038/s41467-024-55211-z

Dual-fluorescent starch biopolymer films containing 5-(4-nitrophenyl)-1,3,4-thiadiazol-2-amine powder as a functional nanofiller | Scientific Reports

28 December
Dual-fluorescent starch biopolymer films containing 5-(4-nitrophenyl)-1,3,4-thiadiazol-2-amine powder as a functional nanofiller | Scientific Reports
DOI: https://doi.org/10.1038/s41598-024-82853-2

What Are Electrons Made Of? Unveiling the Mystery! - Glass Almanac
25 December
What Are Electrons Made Of? Unveiling the Mystery! - Glass Almanac

Fraser Stoddart, Nobel laureate and professor at University of Hong Kong, dies | South China Morning Post
31 December
Fraser Stoddart, Nobel laureate and professor at University of Hong Kong, dies | South China Morning Post

Tribute to alumnus and Nobel winner Sir Fraser Stoddart | The University of Edinburgh
6 January
Tribute to alumnus and Nobel winner Sir Fraser Stoddart | The University of Edinburgh

James Fraser Stoddart obituary: chemist and nanotechnology pioneer who built molecular machines (subscription)
28 Jan
James Fraser Stoddart obituary: chemist and nanotechnology pioneer who built molecular machines

Unlocking the hidden power of boiling — for energy, space, and beyond | MIT News | Massachusetts Institute of Technology
2 January 2025
Unlocking the hidden power of boiling — for energy, space, and beyond | MIT News | Massachusetts Institute of Technology

How do mosquito repellents work? A chemistry expert explains
5 January
How do mosquito repellents work? A chemistry expert explains

Magnetic properties of different phases iron oxide nanoparticles prepared by micro emulsion-hydrothermal method | Scientific Reports
6 January
Magnetic properties of different phases iron oxide nanoparticles prepared by micro emulsion-hydrothermal method | Scientific Reports
DOI: https://doi.org/10.1038/s41598-025-85145-5

Factors governing H3+ formation from methyl halogens and pseudohalogens
6 January
Factors governing $${\rm H}_{3}^{+}$$ formation from methyl halogens and pseudohalogens | Nature Communications
DOI: https://doi.org/10.1038/s41467-024-55065-5

Unlocking the Potential of Platinum: New Catalyst Enhances CO2 Reduction Efficiency
6 January
Unlocking the Potential of Platinum: New Catalyst Enhances CO2 Reduction Efficiency
DOI: 10.1093/nsr/nwae361

Researchers tune active sites of bimetallic catalysts with atomic precision
8 January
Researchers tune active sites of bimetallic catalysts with atomic precision
DOI: 10.1016/j.chempr.2024.11.018 and
How Scientists Are Using Atomic Precision to Supercharge Chemistry

10 January
How Scientists Are Using Atomic Precision to Supercharge Chemistry
DOI: 10.1016/j.chempr.2024.11.018

New approach merges theoretical fundamentals with experimental studies of the proton's structure

13 January
New approach merges theoretical fundamentals with experimental studies of the proton's structure
DOI: 10.1103/PhysRevD.110.074016

Hybrid cascade process selectively converts CO_2 into methanol

13 January
Hybrid cascade process selectively converts CO_2 into methanol
DOI: 10.1002/anie.202422882

Computational chemistry method can wring more information out of electronic structure calculations

14 January
Computational chemistry method can wring more information out of electronic structure calculations
DOI: 10.1038/s43588-024-00747-9

Advanced techniques paint a more accurate picture of molecular geometry in metal complexes

13 January
Advanced techniques paint a more accurate picture of molecular geometry in metal complexes
DOI: 10.1021/jacs.4c00817

Heavy dipnictogen chemistry: Researchers create heterocycles with more than one antimony atom

16 January
Heavy dipnictogen chemistry: Researchers create heterocycles with more than one antimony atom
DOI: 10.1021/jacs.4c15626

Chemicals industry accused of pre-emptive strike against incoming PFAS ban | Euronews

15 January
Chemicals industry accused of pre-emptive strike against incoming PFAS ban | Euronews

One-pot Chemo Selective Aerobic Cascade Synthesis of Allyl-Aryl Sulfoxides Enabled by Photoinduced Na2 - Eosin Y and TEMPO

17 January
One-pot Chemo Selective Aerobic Cascade Synthesis of Allyl-Aryl Sulfoxides Enabled by Photoinduced Na2 - Eosin Y and TEMPO | Organic Chemistry | ChemRxiv | Cambridge Open Engage
DOI: https://doi.org/10.26434/chemrxiv-2025-6c23s
Download: One-pot Chemo Selective Aerobic Cascade Synthesis of Allyl-Aryl Sulfoxides Enabled by Photoinduced Na2 - Eosin Y and TEMPO | Organic Chemistry | ChemRxiv | Cambridge Open Engage

Enantioselective construction of silicon-stereogenic vinylsilanes from simple alkenes | Nature Communications

18 January
Enantioselective construction of silicon-stereogenic vinylsilanes from simple alkenes | Nature Communications
DOI: https://doi.org/10.1038/s41467-025-56232-y

Synthesis and Characterization of Bimetallic Copper (I) Complexes Supported by a Hexadentate Naphthyridine-Based Macrocycle Ligand | Inorganic Chemistry | ChemRxiv | Cambridge Open Engage

20 January
Synthesis and Characterization of Bimetallic Copper (I) Complexes Supported by a Hexadentate Naphthyridine-Based Macrocycle Ligand | Inorganic Chemistry | ChemRxiv | Cambridge Open Engage
DOI: https://doi.org/10.26434/chemrxiv-2025-d77dr
Download: synthesis-and-characterization-of-bimetallic-copper-i-complexes-supported-by-a-hexadentate-naphthyridine-based-macrocycle-ligand.pdf

Watch "Nobel Prize lecture: Demis Hassabis, Nobel Prize in Chemistry 2024" on YouTube

17 Jan
https://youtu.be/YtPaZsasmNA?si=H729bAMEJs53tQ4g
Nobel Prize lecture: Demis Hassabis, Nobel Prize in Chemistry 2024

Why You Can't Combine All The Elements Of The Periodic Table In A Single Compound | IFLScience

21 January
Why You Can't Combine All The Elements Of The Periodic Table In A Single Compound | IFLScience

Atomic pair catalyst converts methane to acetic acid with high efficiency

21 January
Atomic pair catalyst converts methane to acetic acid with high efficiency
DOI: 10.1038/s41467-024-54061-z

Using infrared heat transfer to modify chemical reactions

20 January
Using infrared heat transfer to modify chemical reactions
DOI: 10.1038/s41557-024-01723-6

Ceramic catalyst uses sodium and boron to drive sustainable industrial reactions

21 January
Ceramic catalyst uses sodium and boron to drive sustainable industrial reactions
DOI: 10.1002/anie.202410961

Standardized Approach for Diversification of Complex Small Molecules via Aryl Thianthrenium Salts | Journal of the American Chemical Society

21 January
Standardized Approach for Diversification of Complex Small Molecules via Aryl Thianthrenium Salts | Journal of the American Chemical Society
DOI: https://doi.org/10.1021/jacs.4c14391

Molten Sn solvent expands liquid metal catalysis | Nature Communications

21 January
Molten Sn solvent expands liquid metal catalysis | Nature Communications
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For the first time, we know the shape of electrons, thanks to a breakthrough in quantum physics

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How Scientists Mapped the Shape of an Electron?

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Unique five-atom bismuth ring synthesized

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Strong nuclear force calculations explain multiscale phenomena in atomic nuclei

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Synthesis, characterization, quantum chemical modelling, molecular docking, in silico and in vitro assessment of 3-(2-bromo-5-fluorophenyl))-1-(thiophen-2-yl)prop-2-en-1-one | Scientific Reports

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Chemistry textbooks need rewriting after new Cardiff University discovery

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Researchers Shatter 100-Year-Old Rule in Organic Chemistry!

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Leading lights of chemistry community celebrated in 2025 New Year's Honours

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Aza-[4 + 2]-cycloaddition of benzocyclobutenones into isoquinolinone derivatives enabled by photoinduced regio-specific C–C bond cleavage | Nature Communications

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New Test Detects Tainted Olive Oil in Record Time | Technology Networks
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Ultrafast electron imaging captures never-before-seen nuclear motions in hydrocarbon molecules excited by light

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Real-time fluorescent sensor could allow for precise monitoring of wine quality

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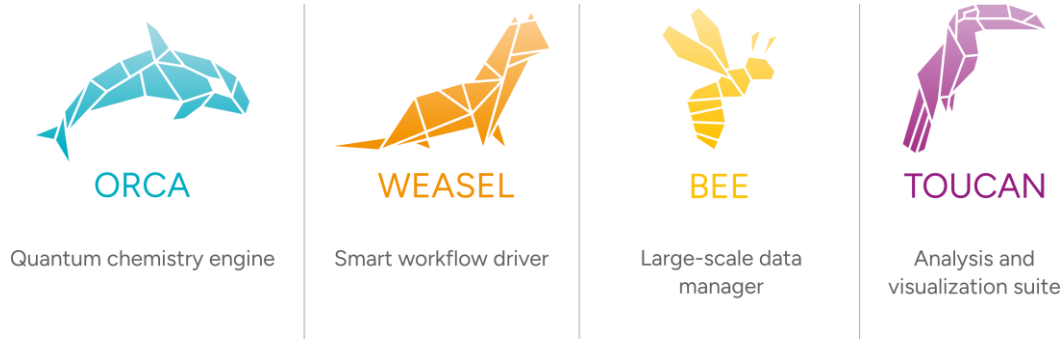

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Website: http://www.gpescientific.ie

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Engineering DNA to mimic biological catch bonds with 'fish-hook' system

27 November
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Sick animals suggest COVID pandemic started in Wuhan market (Subscription)
4 December
Sick animals suggest COVID pandemic started in Wuhan market

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3 December
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New insights into protein–protein interaction modulators in drug discovery and therapeutic advance | Signal Transduction and Targeted Therapy
6 December
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Researchers devise a quicker, more efficient way to make life-saving molecules | Folio
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Researchers devise a quicker, more efficient way to make life-saving molecules | Folio

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A bioinspired sulfur–Fe–heme nanozyme with selective peroxidase-like activity for enhanced tumor chemotherapy | Nature Communications
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Method of the Year 2024: spatial proteomics | Nature Methods
6 December
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World's First "Molecular Movie": Witness DNA Becoming Life's Blueprint in Real-Time
6 December
World's First "Molecular Movie": Witness DNA Becoming Life's Blueprint in Real-Time
DOI: 10.1038/s41586-024-08308-w

The Characters Behind the Biology

Drawing proteins as ribbons and sheets swirling and twisting around each other — a depiction of the molecules that quickly became as ubiquitous as it is beautiful.
9 December
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Protein engineering research reveals the mysteries of life, enabling advances in pharmaceuticals

5 December
Protein engineering research reveals the mysteries of life, enabling advances in pharmaceuticals

Structure-based drug design with equivariant diffusion models | Nature Computational Science

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Structure-based drug design with equivariant diffusion models | Nature Computational Science
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New antidote could save lives from deadly hydrogen sulfide gas

10 December
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Longevity Breakthrough: New Protein Discovery Could Be the Key to Healthier Aging

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Harnessing Oxetane and Azetidine Sulfonyl Fluorides for Opportunities in Drug Discovery | Journal of the American Chemical Society

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Stabilized ferrocene molecules result in the world's smallest electrically controlled molecular machine

12 December
Stabilized ferrocene molecules result in the world's smallest electrically controlled molecular machine
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McGill researchers reveal how life-saving molecules are created | Newsroom - McGill University

13 December
McGill researchers reveal how life-saving molecules are created | Newsroom - McGill University

DNA's Secret Dance: How Molecular Machines Twist and Loop Life's Code

14 December
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Decoding a Decade-Long Puzzle: Scientists Complete First-Ever Total Synthesis of Natural Anticancer Compound

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Creating 'Mirror Life' Could Be Disastrous, Scientists Warn

14 December
Creating 'Mirror Life' Could Be Disastrous, Scientists Warn | Scientific American

Design of pseudo symmetric protein hetero-oligomers | Nature Communications

18 December
Design of pseudosymmetric protein hetero-oligomers | Nature Communications
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Nano drug delivery system heralds safer era for drug development

18 December
Nano drug delivery system heralds safer era for drug development

Nano drug delivery system eliminates need for complicated carriers

18 December
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New synthesis technique cuts drug development time and cost

19 December
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'Achilles Heel' of Drug-Resistant Bacteria Has Been Found, Scientists Say : ScienceAlert

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'Achilles Heel' of Drug-Resistant Bacteria Has Been Found, Scientists Say : ScienceAlert
DOI: 10.1126/sciadv.adq5249

UAlbany professor works with AI firm on drug discovery research
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UAlbany professor works with AI firm on drug discovery research

Eco-friendly chlorine method could transform drug and chemical production
2 January
Eco-friendly chlorine method could transform drug and chemical production
DOI: 10.1038/s44160-024-00698-z

Introducing HORNET, a novel RNA structure visualization method that correlates sequence and 3D topology
31 December
Introducing HORNET, a novel RNA structure visualization method that correlates sequence and 3D topology
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Electron microscopy captures enzyme step in antibiotic production
6 January
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How a single nitrogen atom could transform the future of drug discovery
6 January
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6 January
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Scientists create vast library of compounds to target disease proteins
6 January
Scientists create vast library of compounds to target disease proteins
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Freely accessible database maps protein-lipid interactions for research and education
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Chemists unlock potential of ketone and ester molecules, paving way for greener and more efficient drug development
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Main cause of sunburn is identified, it's time to rewrite the textbooks - Earth.com

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23 January
Curiosity-driven experiment helps unravel antibiotic-resistance mystery
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Scientists Identify Vital Fat-Burning Protein That Could Aid Weight Loss : ScienceAlert

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Imaging research on monoclonal antibodies sheds light on protein dynamics for biopharmaceutical development
30 January
Imaging research on monoclonal antibodies sheds light on protein dynamics for biopharmaceutical development

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Complex model of molecular 'wear-and-tear' shines light on how proteins age

3 February
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A new ‘mini-CRISPR’ flexes its editing power in monkey muscles

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A new ‘mini-CRISPR’ flexes its editing power in monkey muscles | Science | AAAS

Molecular simulations provide new insights into the dynamics of supercoiled DNA

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What’s the Difference Between Cas9 and Cas12a Nucleases? | The Scientist

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Silver Nanoparticles in Packaging Can Contaminate Dry Foods | Technology Networks
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The spliceosome: An atomic-level look into how cells avoid errors when manufacturing mRNA

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Solving the drug solubility problem with silica nanoparticles

9 February
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Study reveals how RNA travels between cells to control genes across generations

5 February
Study reveals how RNA travels between cells to control genes across generations
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Scientists recode the genome for programmable synthetic proteins

6 Feb
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Tiny water-based reactors could help pharmaceutical industry avoid toxic solvents

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Tiny water-based reactors could help pharmaceutical industry avoid toxic solvents
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Scientists Uncover New Secrets of Insulin Production

11 February
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CRISPR system variant shows a novel DNA cleavage mechanism

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Plant extract inspires new chemistry and new early lead against triple-negative breast cancer

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Plant extract inspires new chemistry and new early lead against triple-negative breast cancer
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Nanoparticle-Delivered Pain Medication Could Help Address the Opioid Crisis

7 February
How Nanoparticle Drug Delivery Could Solve the Opioid Crisis | Technology Networks

Virtual fragment screening for DNA repair inhibitors in vast chemical space | Nature Communications

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Circular mRNA produces 200 times more protein, enhancing precision therapy potential

19 February
Circular mRNA produces 200 times more protein, enhancing precision therapy potential
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Time to update textbooks on electron transport chain in mitochondria, researchers say

19 February
Time to update textbooks on electron transport chain in mitochondria, researchers say
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21 February
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21 February
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Researchers Discover a Serious Hidden Risk With Many Generic Drugs

24 February
Researchers Discover a Serious Hidden Risk With Many Generic Drugs : ScienceAlert
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Invisible DNA lurks everywhere in the environment — and we're on the verge of decoding its secrets | Live Science

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Invisible DNA lurks everywhere in the environment — and we're on the verge of decoding its secrets | Live Science

RNA Editing Hits the Clinic, Fueling New Hope for Rare and Common Diseases – BioSpace

24 February
RNA Editing Hits the Clinic, Fueling New Hope for Rare and Common Diseases - BioSpace

Computational solution to model 3D RNA structures could speed medical discoveries by decades

24 February
Computational solution to model 3D RNA structures could speed medical discoveries by decades
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Rapid peptide synthesis using a methylimidazolium sulfinyl fluoride salt | Communications Chemistry
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DNA origami suggests route to reusable, multifunctional biosensors

24 February
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DOI: 10.1073/pnas.2311279121

8th Irish Biological Inorganic Chemistry Society Symposium (IBICS-8)

Report by: Christopher S. Burke*, Tara McInerney, Rebecca Galway, James Stack and William Daly.

a. Event Date: 06/12/2024

b. Venue: Western Gateway Building, University College Cork

c. Event Type: Symposium

d. Report received: 14/02/2025

e. DOI: 10.5281/zenodo.14872697

f. http://zenodo.org/communities/ice/

Local Organising Committee: Christopher S. Burke (Chair),[a] Orla Ni Dhubhghaill,[a] Jerry Reen,[a] William Daly,[a] James Stack,[a] Tara McInerney,[a] and Rebecca Galway.[a]

[a] University College Cork. *For further information on the event, contact: christopherburke@ucc.ie

Organisation: Irish Biological Inorganic Chemistry Society (IBICS).

Website: https://ibics.ie

Event Sponsors

Royal Society of Chemistry Republic of Ireland Local Section, Institute of Chemistry of Ireland, CRC Press, MSD, CEM, Particular Sciences, Mason Technology, Accuscience, GPE/Julabo, Scientific Laboratory Supplies (SLS)/Ohaus, Medical Supply Company (MSC).

Summary

The 8th Symposium of the Irish Biological Inorganic Chemistry Society (IBICS-8) was held at University College Cork on Friday, 6th December 2024. The annual IBICS symposia showcase recent work from researchers who work at the interface of inorganic chemistry and the life sciences, and provides an opportunity for networking between society members and industry representatives. At IBICS-8, over 70 attendees were present, including academics at all levels, from early career researchers to principal investigators, and industry sponsors and exhibitors. Two international plenary speakers headed the scientific programme; Prof. Tatjana Parac-Vogt (KU Leuven) and Dr. Jennifer Cavet (The University of Manchester). Three Ireland-based invited lectures were presented by Prof. Dmitri Papkovsky (UCC), Prof. Andrew Kellett (DCU) and Dr. Joseph Byrne (UCD). Aligned with the spirit of IBICS, the remaining contributions to the symposium came from early career researchers with several excellent

presentations, six flash presentations, and thirteen poster presentations. The event was a huge success, thanks to the strong engagement from our Irish biological inorganic community and the fantastic financial support from industry sponsors.

Attendees

Postgraduate and postdoctoral researchers, academics, and industry exhibitors/representatives made up most of the 70+ attendees at IBICS-8, working diversely across fields of inorganic chemistry and its interface with the life sciences. There was an excellent balance of female and male representation, from across different Irish institutions and beyond, and this was reflected in our symposium programme (Table 1).

Target audience: academics, postgraduate researchers, postdoctoral researchers, early career (academia).

Programme

IBICS-8 was a full one-day event, running from welcome and registration at 10am to closing remarks and reception at 6pm. Across three sessions, the scientific programme comprised eleven oral presentations contributed by two international plenary speakers, three invited Ireland-based speakers, the IBICS Gold Medal Award winner, and five early career researchers. In addition, six flash presentations across two quick-fire sessions showcased a sample of the thirteen poster presentations that were displayed at two designated poster sessions sponsored by the RSC Republic of Ireland Local Section. Each oral and flash session was chaired by a leading academic in the field of bioinorganic chemistry. The IBICS AGM was held during the lunch break of the symposium, and several other short breaks enabled a good opportunity for networking.

Table 1. IBICS-8 Scientific Programme

Time	Speaker and title of presentation
10:00	Registration, coffee and poster setup
10:30	Opening remarks – Dr. Luca Ronconi, IBICS President
	Session 1 - Chair: Dr. Orla Ni Dhubhghaill
10:40	**Plenary: Dr. Jennifer S. Cavet** (University of Manchester) *Metals at the Host-Pathogen Interface: Strategies for Overcoming Metal-Stress in Gastrointestinal Pathogens*
11:20	Dr. Joshua McLean (Royal College of Surgeons in Ireland) *Design and Synthesis of Clickable E3 Ligase Ligands for Novel Metallo-PROTAC Development*
11:35	Ryan Madden (Dublin City University) *Ru(II) tris-Heteroleptic Switch-on Probes for Selective Targeting of Pancreatic Cancer*
11:50	**Invited: Prof. Dmitri Papkovsky** (University College Cork) *Phosphorescent Metalloporphyrins and Optochemical Sensors for Cell Analysis*
12:20	**ICI Flash Session 1** - Chair: Dr. Diego Montagner *Sponsored by ICI*
12:35	Lunch (provided)
12:35	**Poster Session 1** *Sponsored by RSC Republic of Ireland Local Section*
13:25	IBICS Annual General Meeting
	Session 2 - Chair: Dr. Jerry Reen
13:55	**Invited: Prof. Andrew Kellett** (Dublin City University) *Recent Advances in Artificial Gene Editing and DNA Targeted Metallodrug Design*
14:25	Ella O'Sullivan (TU Dublin) *Investigation of Regulated Cell Death (RCD) Modalities in Novel Copper (II), Manganese (II) and Silver (I) Complexes Containing Dicarboxylate and 1,10-Phenanthroline Ligands*
14:40	Frederica Brescia (University of Galway) *Design and Development of Gold(III)-Glycoconjugates as Antiviral Agents Against SARS-CoV-2*
14:55	**Invited: Dr. Joseph Byrne** (University College Dublin) *Glycoconjugate Metal Complexes as Anti-adhesives against Pathogens*
15:25	**ICI Flash Session 2** - Chair: Prof. Orla Howe *Sponsored by ICI*
15:40	**Poster Session 2** *Sponsored by RSC Republic of Ireland Local Section*
	Session 3 - Chair: Prof. Michael Devereux
16:40	Eleanor Windle (University College Dublin) *Disaggregation of Metallo-phthalocyanines by Guanine-rich Nucleic Acid Sequences Monitored with Steady-state and Ultrafast Spectroscopies*
16:55	**Plenary: Prof. Tatjana N. Parac-Vogt** (KU Leuven) *Artificial Enzymes Based on Metal Oxo-clusters: from Discrete Species to Extended Materials*
17:35	**IBICS Postgraduate Gold Medal Award** Rhianne Curley (Dublin City University) *Visualising Stress Granule Dynamics with an RNA Guanine Quadruplex Targeted Ruthenium(II) Peptide Conjugate*
17:55	Prize-giving and closing remarks – Dr. Luca Ronconi
18:00	Wine reception

Proceedings

Dr. Christopher Burke (UCC), Chair of the local organising committee, warmly welcomed all attendees to UCC at its Western Gateway Building.

The IBICS president, **Dr. Luca Ronconi** (University of Galway), officially opened the symposium giving an overview of the history of IBICS symposia and the scientific programme to follow.

Session 1 – Chair: Dr. Orla Ni Dhubhghaill (UCC)

Our first international *plenary speaker*, **Dr. Jennifer Cavet** from The University of Manchester kicked off scientific presentations. Jen's research interests focus on infectious disease, including to identify and examine the roles of metal homeostasis and metal sensing proteins in a variety of

different bacterial pathogens. Her plenary lecture described four research stories centred on copper, zinc, and manganese transporters across different *Salmonella, Listeria, Campylobacter* and *Helicobacter* bacteria, discussing their associated roles and contributions to infection.

Next, **Dr. Joshua McLean** (RCSI, Griffith research group) presented on proteolysis targeting chimeras (PROTACs) and emerging work on the design and synthesis of ligase ligands that are amenable to click chemistry with bioactive Pt or Au complexes, including under bioorthogonal conditions. A gold metallo-PROTAC derivative was shown to exhibit high potency under biological evaluation.

Ryan Madden (DCU, Keyes research group) then presented on his work in developing a new light-switching tris-heteroleptic Ru(II) polypyridyl complex that selectively labels human pancreatic cancer cells for high-contrast fluorescence bioimaging diagnostics. Ryan also described ongoing parallel work on identifying peptide sequences and their target protein receptors that are upregulated following chemotherapy resistance.

Prof. Dmitri Papkovsky (UCC) followed next as our first *invited speaker*. Dmitri is a Professor at the UCC School of Biochemistry and Cell Biology and his research interests include phosphorescence based probes for sensing and imaging of cell and tissue oxygenation, live FLIM/PLIM microscopy, and their use to study roles of O_2 in biological systems, cell metabolism, bioenergetics and common disease states. His talk discussed his work on photoluminescent porphyrin dye systems as applied for cell analysis, including pH and O_2 sensing and the link to monitoring oxygen consumption and extracellular acidification rates.

Following lunch and the first poster session, the **IBICS AGM** was held with good attendance from members at the symposium.

Session 2 – Chair: Dr. Jerry Reen (UCC)

Restarting proceedings after the AGM was our second *invited speaker*, **Prof. Andrew Kellett** (DCU), who is Professor of Inorganic and Medicinal Chemistry in the School of Chemical Sciences at Dublin City University (DCU). His research interests focus on the discovery of metallodrugs, artificial gene editing tools, and DNA damage and repair. Andrew presented new work on artificial metallonuclease scaffolds that are built via click chemistry, including a bioactive C_3-symmetric ligand and its copper complexes that demonstrate capability for therapy through DNA damage.

Next, **Ella O'Sullivan** (TU Dublin, Howe and Devereaux research groups) presented recent work on Cu(II), Mn(II), and Ag(I) complexes bearing dicarboxylate and phenanthroline ligands. Ella described the relative therapeutic efficacy and differences in mechanisms of action against cancerous and non-cancerous cells based on the metal ion, elucidated from data from several assays and spectroscopic imaging techniques.

Frederica Brescia (University of Galway, Ronconi research group) then presented on a new approach to antiviral therapy using Au(III) glycoconjugates based on a scaffold that uses a linker bridge between monosaccharides and chemoactive gold (III) dithiocarbamato moieties that are posited to interact with the zinc-finger domain of SARS-CoV-2 papain-like protease.

 10.5281/zenodo.14872697 -p 104

Dr. Joseph Byrne (UCD) closed out this session as our third *invited speaker*. Joe is a Lecturer in Bioinorganic Chemistry at UCD and his research interests are in glycoscience, inorganic chemistry, luminescence and antimicrobial resistance. Joe communicated some recent research from his team, including Ru(II) glycoclusters with ranging capability to inhibit *P. aeruginosa* biofilms based on the nature of the carbohydrate motif, and approaches to targeting LecA lectin with emissive lanthanide complexes and metal-galactoside derivatives.

Session 3 – Chair: Prof. Mick Devereaux (TU Dublin)

The final session commenced with a presentation from **Eleanor Windle** (UCD, Quinn research group), who described the dual photodynamic therapy and photothermal therapy applications of Zn-phthalocyanine that depends on its aggregation and that can be disrupted by binding to guanine-rich nucleic acid sequences, as examined through a host of steady-state and time-resolved spectroscopic techniques.

The next contribution came from our second international *plenary speaker*, **Prof. Tatjana Parac-Vogt** from the Department of Chemistry at KU Leuven (Belgium). Tatjana's main research lines are the development of metal cluster-based complexes and materials such as polyoxometalates (POMs) and metal-organic frameworks (MOFs) for biologically inspired reactions with biomolecules and model systems. Her group is also creating new hybrid structures based on polyoxometalates using principles of biomolecular recognition and supramolecular chemistry. Accordingly, Tatjana's plenary lecture described her team's work on investigating catalytic MOF nanozyme structures and POM systems with embedded strong Lewis acid metal cations as artificial protease enzymes.

The final oral presentation of the symposium was given by **Rhianne Curley** (DCU, Keyes research group), who is this years' winner of the IBICS Postgraduate Gold Medal Award. Rhianne's award lecture centred on her recent PhD work on peptide-directed Ru(II) complexes that target RNA G-quadruplexes in live cancer cells to induce stress granule formation, and with capability to image this process via confocal fluorescence microscopy.

ICI Flash Sessions –

Session Chairs: Prof. Orla Howe (TU Dublin) and Dr. Diego Montagner (MU)

Six flash presentations were delivered across two flash presentation sessions, and were delivered by; Agnieska Kawalerska (TUD), Jack Daly (UCC), Amélia Auville (UCD), Karina Chan (RCSI), Daryl Reidy (MU), and Baile Wu (UCC). All flash presenters also contributed poster presentations to the Poster Sessions.

RSC Republic of Ireland Local Section Poster Sessions

Two poster sessions were held to maximise engagement and networking opportunities. In addition to the flash presenters listed above, poster presentations were also contributed by; Manal Alrashidi (University of Galway), Guilia Ferrari (MU), Judit Fodor (TCD), Conor Newsome (DCU), Stephen O'Sullivan (DCU), James Stack (UCC), and Leila Tabrizi (DCU).

The symposium was closed out by IBICS president, **Dr. Luca Ronconi**, with the presentation of prizes, his farewell address, and an invitation for all to join the wine reception for further discussion on the excellent presentations delivered throughout the symposium.

Figure 1. Presentation of gifts to plenary speakers, Dr. Jen Cavet (left) and Prof. Tatjana Parac-Vogt (right).

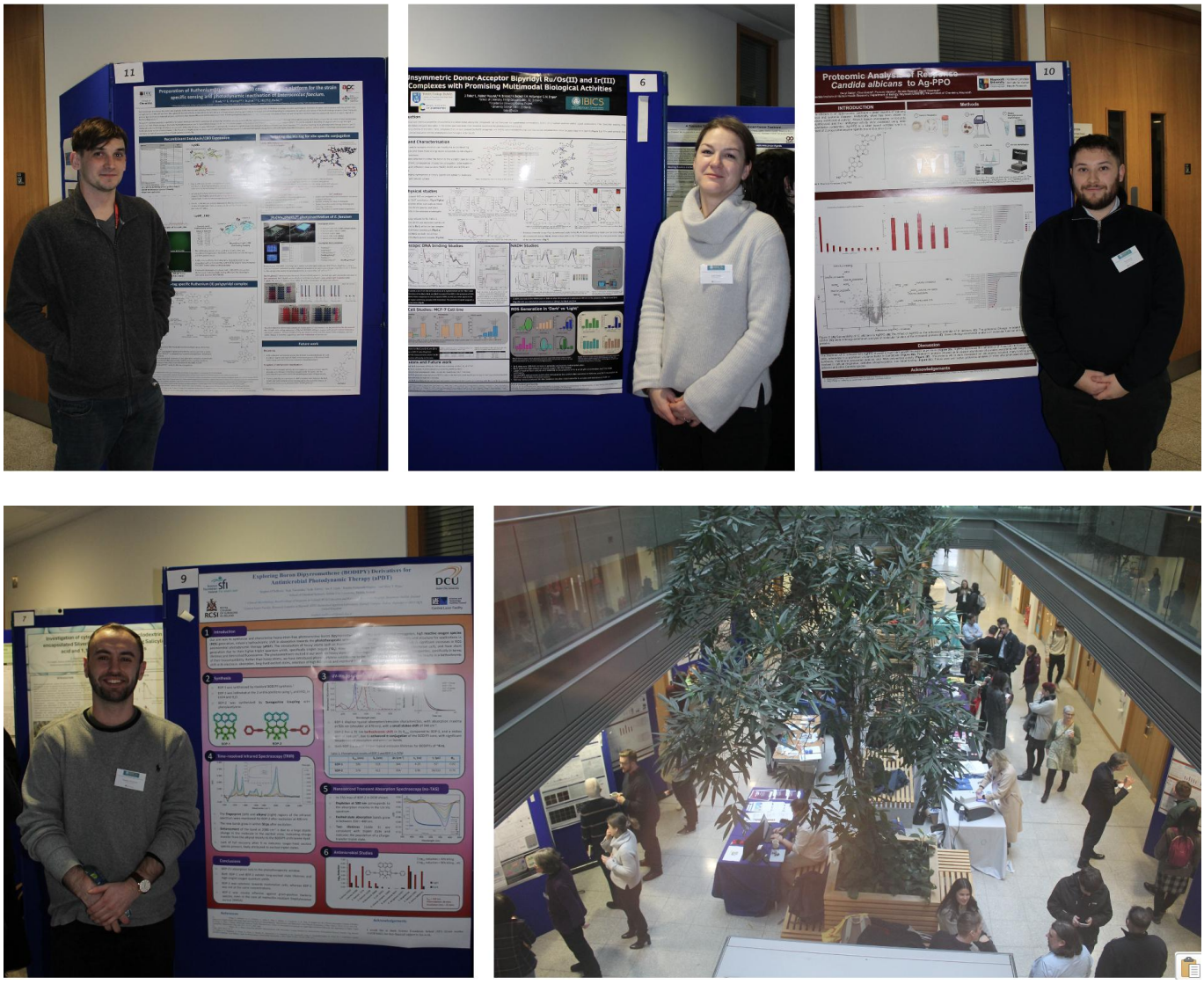

Figure 2. Some pictures from the Poster Sessions, including James Stack (Poster 11), Judit Foder (Poster 6), Daryl Reidy (Poster 10), and Stephen O'Sullivan (Poster 9).

Figure 3. Some pictures from across the symposium, including during the scientific programme, the welcome reception, poster sessions and closing wine reception.

Prizes

The **IBICS Postgraduate Gold Medal** was this year awarded to **Rhianne Curley** from Dublin City University. Rhianne, who is a final year PhD student under the supervision of Prof. Tia Keyes, focusses her research on the application of novel luminescent charge transfer compounds for live cell imaging and phototherapy, with the goal of advancing both diagnostic and therapeutic technologies. She has presented her work at numerous international conferences, earning presentation awards, and has published in prestigious journals such as *Angewandte Chemie*. The judging committee also recognised **Paul O'Dowd (RCSI) as a Highly Commended Runner-Up**.

The IBICS Postgraduate Gold Medal is awarded annually to one PhD student who has distinguished themselves across a range of criteria throughout their PhD with a focus on research performance, achievements and impact in the field of medicinal and biological inorganic chemistry across the island of Ireland. This year, the IBICS award selection committee was impressed by the high standard of applications that this medal continues to attract and strongly encouraged eligible researchers to apply to future competitions.

Figure 4. Dr. Luca Ronconi (IBICS President), presenting Rhianne Curley with the 2024 IBICS Postgraduate Gold Medal Award.

The IBICS president presented three sponsored prizes during the closing remarks of the symposium. Awardees in each category were selected by our independent panel of judges.

Firstly, the **MSD Best Oral Presentation** was awarded to **Ella O'Sullivan** (TU Dublin) who spoke on *Investigation of Regulated Cell Death (RCD) modalities in novel Copper(II), Manganese(II) and Silver(I) complexes containing dicarboxylate and 1,10-Phenanthroline ligands*. Ella is supervised by Prof. Orla Howe and Prof. Mick Devereaux (both TU Dublin). IBICS is grateful to MSD for their support of this prize as our exclusive silver-tier sponsor at IBICS-8.

Next, the **ICI Flash Prize** for the best flash presentation was awarded to **Karina Chan** from RCSI. Karina, who is supervised by Dr. Darren Griffith (RCSI), provided highlights from her work on the *Development of Pt-PROTACs to degrade Pt-binding Proteins*. As part of her prize, Karina was awarded a copy of *Targeted Metallo-Drugs: Design, Development, and Modes of Action* (Edited by Etelka Farkas & Celine J. Marmion) courtesy of the kind sponsorship of CRC Press - Taylor & Francis Group.

Lastly, the **RSC Republic of Ireland Local Section Best Poster Prize** was awarded to **Jack Daly** from University College Cork for communicating his work on *N,N-disubstituted-N'-acylthiourea metal(II) complexes as use for antifungal agents, the good, the bad, and the molecular geometry*. Jack is supervised by Dr. Davide Tiana and Dr. Dave Otway (both UCC).

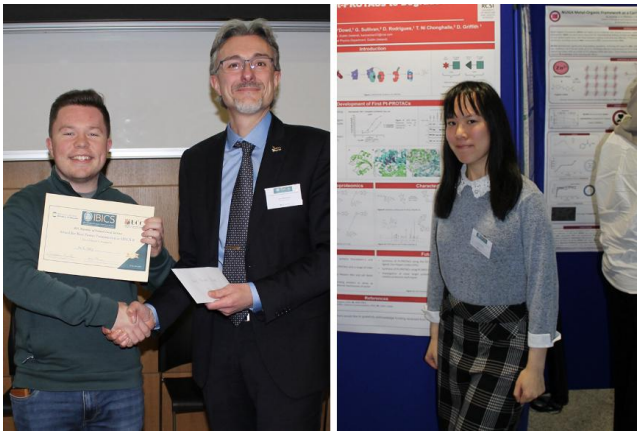

Figure 5. RSC Republic of Ireland Local Section Best Poster Prize was awarded to Jack Daly (left) and the ICI Flash Prize for the best flash presentation was awarded to Karina Chan (right).

The Irish Biological Inorganic Chemistry Society (IBICS)

The IBICS Mission Statement: The Irish Biological Inorganic Chemistry Society (IBICS) – is a learned Society engaging a multi-disciplinary community of scientists seeking to advance research that crosses the interface between medicinal inorganic chemistry and biology in Ireland. The Society's mission is to develop, foster and promote a strong national network of scientists collaborating in research areas such as

 10.5281/zenodo.14872697 -p 108

biology, chemistry, physics and medicine with an interest in biological inorganic chemistry.

The next symposium of the Irish Biological Inorganic Chemistry Society (IBICS-9) will take place at Maynooth University during the final quarter of 2025, being led by Dr. Diego Montagner. Please see the IBICS website for event updates (https://ibics.ie). IBICS welcomes any support for its symposia and the future activities of its members.

Acknowledgements

IBICS-8 was made possible by generous financial support from our sponsors: **Royal Society of Chemistry Republic of Ireland Local Section, Institute of Chemistry of Ireland, CRC Press, MSD, CEM, Particular Sciences, Mason Technology, Accuscience, GPE/Julabo, Scientific Laboratory Supplies (SLS)/Ohaus, Medical Supply Company (MSC).** Many of our sponsors exhibited at the event and contributed to a vibrant meeting.

The local organising committee is grateful to the IBICS Steering Committee for additional support, particularly Luca Ronconi, Diego Montagner, Deirdre Fitzgerald-Hughes, Joseph Byrne, Mick Devereaux, Orla Howe and Celine Marmion. The local committee also thanks our colleagues at UCC for facilitating our hosting of IBICS-8, including Dave Otway for his help with photography.

Figure 6. IBICS-8 local organising committee, from left: Tara McInerney, Rebecca Galway, William Daly, Christopher Burke, Orla Ni Dhubhghaill, Jerry Reen, James Stack.

Previous Events in this Series

- 8th Symposium of the Irish Biological Inorganic Chemistry Society (IBICS-8), University College Dublin, DOI:10.5281/zenodo.14052293
- Programmes and event reports for all previous IBICS symposia are available at: https://ibics.ie/ibics-symposia

Green Hydrogen, Hydrogen Electrolysers, Fuel Cells, Chemistry & Technology (Including “Green Ammonia”)

New Solar Discovery Could Revolutionize Hydrogen Production
21 December
New Solar Discovery Could Revolutionize Hydrogen Production
DOI: 10.1021/acs.jpcc.4c04169

Scientists capture futuristic energy source using artificial photosynthesis technology: 'The possibilities are exciting'
18 December
Scientists capture futuristic energy source using artificial photosynthesis technology: 'The possibilities are exciting'

Revolutionizing Clean Energy: Researchers Develop Breakthrough Hydrogen Nanoreactor - Hydrogen Central
27 December
Revolutionizing Clean Energy: Researchers Develop Breakthrough Hydrogen Nanoreactor - Hydrogen Central

Revolutionary 'Super Steel' produces green hydrogen directly from seawater - The Brighter Side of News
31 December
Revolutionary 'Super Steel' produces green hydrogen directly from seawater - The Brighter Side of News

Sunlight Can Split Water Directly Into Hydrogen For The Fuel Of The Future - Hydrogen Central
27 December
Sunlight Can Split Water Directly Into Hydrogen For The Fuel Of The Future - Hydrogen Central

Self-improving catalyst boosts hydrogen generation from ammonia
9 January
Self-improving catalyst boosts hydrogen generation from ammonia
DOI: doi.org/10.1039/D4SC06382A

Clean hydrogen in minutes: Microwaves deliver clean energy faster
21 January
Clean hydrogen in minutes: Microwaves deliver clean energy faster
DOI: 10.1039/D4TA05804F

Enhanced solar hydrogen production via reconfigured semi-polar facet/cocatalyst heterointerfaces in GaN/Si photocathodes | Nature Communications
21 January
Enhanced solar hydrogen production via reconfigured semi-polar facet/cocatalyst heterointerfaces in GaN/Si photocathodes | Nature Communications
DOI: https://doi.org/10.1038/s41467-024-55743-4

A scalable solar-driven photocatalytic system for separated H2 and O2 production from water | Nature Communications
24 January
A scalable solar-driven photocatalytic system for separated H2 and O2 production from water | Nature Communications
DOI: https://doi.org/10.1038/s41467-025-56314-x

New water splitting catalyst makes green hydrogen without expensive metals

28 January
New water splitting catalyst makes green hydrogen without expensive metals
DOI: 10.1039/D4EE04528A

This Groundbreaking Hydrogel Generates Hydrogen and Oxygen via Artificial Photosynthesis (Using Water and Light) - Glass Almanac

31 January
This Groundbreaking Hydrogel Generates Hydrogen and Oxygen via Artificial Photosynthesis (Using Water and Light) - Glass Almanac

Germany wakes up the world from the hydrogen dream: The circle-shaped engine is the future

1 February
Germany wakes up the world from the hydrogen dream: The circle-shaped engine is the future

Hydrogen cracked from imported green ammonia could be cheaper in Europe than EU-made green H2: BNEF

12 February
Hydrogen cracked from imported green ammonia could be cheaper in Europe than EU-made green H2: BNEF | Hydrogen Insight

Novel catalyst enhances oxygen evolution reaction in acidic conditions to boost green hydrogen production

14 February
https://phys.org/news/2025-02-catalyst-oxygen-evolution-reaction-acidic.html
DOI: 10.1002/anie.202422707

Scientists create hydrogen with no direct CO_2 emissions at source

13 February
Scientists create hydrogen with no direct CO_2 emissions at source
DOI: 10.1126/science.adt0682

The promise of green iron, steel and ammonia is keeping the green hydrogen dream alive

21 February
https://theconversation.com/the-promise-of-green-iron-steel-and-ammonia-is-keeping-the-green-hydrogen-dream-alive-250410

Rational design of precatalysts and controlled evolution of catalyst-electrolyte interface for efficient hydrogen production | Nature Communications

22 February
https://www.nature.com/articles/s41467-025-57056-6
DOI: https://doi.org/10.1038/s41467-025-57056-6

Hydrogen Electrolysers

Pulsing electricity to an electrolyser can halve the power needed to produce each kilo of hydrogen: study

25 February
Pulsing electricity to an electrolyser can halve the power needed to produce each kilo of hydrogen: study | Hydrogen Insight

Fuel Cells

This engine burns water instead of gasoline: Germany shows what the future holds

17 Jan
This engine burns water instead of gasoline: Germany shows what the future holds

X-ray study sheds light on cost-effective fuel cell material that could rival platinum

7 February
X-ray study sheds light on cost-effective fuel cell material that could rival platinum
DOI: 10.1038/s41929-025-01289-7

Green Ammonia

No Retorts

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Phys. Chem. Chem. Phys., 2025, **27**
21 February 2025, Issue 7,
Page 3513 to 4008
DOI:10.1039/D4CP03468F

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25 November
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Why UN climate change summits are 'fundamentally flawed'

27 November
https://theconversation.com/why-un-climate-change-summits-are-fundamentally-flawed-244671

The true cost of methane abatement: A crucial step in oil and gas decarbonization

21 November
The true cost of methane abatement: A crucial step in oil and gas decarbonization | McKinsey

World Economic Forum Creates A Road Map For A Renewable Energy Future – CleanTechnica

2 December
World Economic Forum Creates A Road Map For A Renewable Energy Future - CleanTechnica

Global plastic talks collapse as oil states rebel

1 December
Global plastic talks collapse as oil states rebel

The future cement industry: A cementitious 'golden age'?

25 November
The future of supplementary cementitious materials | McKinsey

Climate-friendly farming: Scientists find feeding grazing cattle seaweed cuts methane emissions by almost 40%

22 December
Climate-friendly farming: Scientists find feeding grazing cattle seaweed cuts methane emissions by almost 40%
DOI: 10.1073/pnas.2410863121

Methane review offers nothing new, but it was never meant to – Newsroom

5 December
Methane review offers nothing new, but it was never meant to - Newsroom

Could a pill for cows help solve Ireland's methane problem?

4 December
Could a pill for cows help solve Ireland's methane problem?

Life without chemical fertiliser is hard for farmers to fathom, but they could be in clover – The Irish Times

30 November
Life without chemical fertiliser is hard for farmers to fathom, but they could be in clover – The Irish Times

Sails are making a triumphant comeback as cargo shipping looks to slash its huge carbon footprint with the power of wind | Fortune Europe

4 December
Sails are making a triumphant comeback as cargo shipping looks to slash its huge carbon footprint with the power of wind | Fortune Europe

Quick climate dictionary: what actually is a carbon footprint? — The Conversation5 5 5 December
Quick climate dictionary: what actually is a carbon footprint?

Could Ireland become a green energy superpower? | Newstalk
5 December
Could Ireland become a green energy superpower? | Newstalk

Better ways to recover metals needed for technology from electronic waste could benefit the environment and human health
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China's new iron making method boosts productivity by 3,600 times
8 December
China's new iron making method boosts productivity by 3,600 times

Can sustainable fuels replace current aviation fuel?
9 December
Can sustainable fuels replace current aviation fuel?

Nothing lasts forever: Huang finds solutions to break down 'forever chemicals' - UGA Research News
5 December
Nothing lasts forever: Huang finds solutions to break down 'forever chemicals' - UGA Research News

Forever chemicals widespread in European waters – report
10 December
Forever chemicals widespread in European waters - report

Arctic tundra is now emitting more carbon than it absorbs, US agency says | Arctic | The Guardian
10 December
Arctic tundra is now emitting more carbon than it absorbs, US agency says | Arctic | The Guardian

Nitrogen 'concentrations' in rivers at lowest level since 2016 - EPA - Agriland.ie
11 December
Nitrogen 'concentrations' in rivers at lowest level since 2016 - EPA

Reflections post COP29: The landscape has shifted—are you adapting fast enough?
11 December
Reflections post COP29: The landscape has shifted—are you adapting fast enough? | McKinsey

Liquefied Gas Blows Away Pipeline Gas And Coal In Emissions To Europe, Asia
17 December
Liquefied Gas Blows Away Pipeline Gas And Coal In Emissions To Europe, Asia

Scientists Transform CO2 Into Super-Strong 3D Printed Concrete
23 December
Scientists Transform CO2 Into Super-Strong 3D Printed Concrete
DOI: 10.1016/j.ccst.2024.100306

This devastating synthetic gas is spreading: 3,500 times more impactful than CO2

23 December

This devastating synthetic gas is spreading: 3,500 times more impactful than CO2

Polyphenol Derived Natural Deep Eutectic Solvents for High Efficiency Cathode Recycling of Li-Ion Batteries | ACS Sustainable Resource Management

18 December

Polyphenol Derived Natural Deep Eutectic Solvents for High Efficiency Cathode Recycling of Li-Ion Batteries | ACS Sustainable Resource Management

DOI: https://doi.org/10.1021/acssusresmgt.4c00421

The dreaded dark oxygen, discovered for the first time: It's doing something strange under the sea

26 December

https://www.eldiario24.com/en/the-dreaded-dark-oxygen-discovered-for/6515

Research team stunned after unexpectedly discovering new method to break down plastic: 'The plastic is gone ... all gone'

30 December

Research team stunned after unexpectedly discovering new method to break down plastic: 'The plastic is gone ... all gone'

Microplastics found in multiple human organ tissues correlated with lesions

30 December

Microplastics found in multiple human organ tissues correlated with lesions

DOI: 10.1016/j.trac.2024.118114

Climate startup develops technology that could disrupt the concrete industry: 'No one in the world has [done this]'

1 January

Climate startup develops technology that could disrupt the concrete industry: 'No one in the world has [done this]'

The Dark Side of Electric Vehicles: A Hidden Pollution Problem

29 December

The Dark Side of Electric Vehicles: A Hidden Pollution Problem

DOI: 10.1021/acs.est.4c02694

Japanese researchers develop method to break down PFAS 'forever chemicals' - The Japan Times

5 January

Japanese researchers develop method to break down PFAS 'forever chemicals' - The Japan Times

Contributions of countries without a carbon neutrality target to limit global warming | Nature Communications

7 January

Contributions of countries without a carbon neutrality target to limit global warming | Nature Communications

DOI: https://doi.org/10.1038/s41467-024-55720-x

Untapped potential: Construction materials could store billions of tons of CO_2 annually

9 January

https://techxplore.com/news/2025-01-untapped-potential-materials-billions-tons.html

DOI: 10.1126/science.adq8594

Earth breaches 1.5 °C climate limit for the first time: what does it mean?
10 January
Earth breaches 1.5 °C climate limit for the first time: what does it mean?
DOI: https://doi.org/10.1038/d41586-025-00010-9

Sustainable cement: An electrochemical process to help neutralize cement industry CO_2 emissions
11 Jan
Sustainable cement: An electrochemical process to help neutralize cement industry CO_2 emissions
DOI: 10.1039/D4EE03529A

Carbon storage mystery emerges in the Southern Ocean - Earth.com
13 January
Carbon storage mystery emerges in the Southern Ocean - Earth.com

What We're Missing About the Cause of the LA Wildfires
9 January
What We're Missing About the Cause of the LA Wildfires – Mother Jones

New filter captures and recycles aluminum from manufacturing waste
7 January
New filter captures and recycles aluminum from manufacturing waste | MIT News | Massachusetts Institute of Technology

Major study reveals plants now absorbing 30% more CO2 worldwide - The Brighter Side of News
12 January
Major study reveals plants now absorbing 30% more CO2 worldwide - The Brighter Side of News

Protein that protects biological nitrogen fixation from oxidative stress could reduce reliance on synthetic fertilizers
15 January
Protein that protects biological nitrogen fixation from oxidative stress could reduce reliance on synthetic fertilizers
DOI: 10.1038/s41586-024-08355-3

Planet-warming carbon dioxide levels rose more than ever in 2024 - BBC News
17 January
Planet-warming carbon dioxide levels rose more than ever in 2024

Dual-reactor system converts CO_2 to consumable single-cell protein
18 January
Dual-reactor system converts CO_2 to consumable single-cell protein
DOI: 10.1016/j.ese.2025.100525

Scientists discover game-changing property of abundant metal — here's how it could help solve a global issue (CO_2 capture)
19 January
Scientists discover game-changing property of abundant metal — here's how it could help solve a global issue

Lobbying in 'forever chemicals' industry is rife across Europe – the inside story of our investigation — The Conversation
21 January
Lobbying in 'forever chemicals' industry is rife across Europe – the inside story of our investigation

Nickel mining a serious concern for climate action, reveals study
21 January
Nickel mining a serious concern for climate action, reveals study
DOI: 10.1038/s41467-024-55703-y

Polymer editing can upcycle waste into higher-performance plastics
17 January
Polymer editing can upcycle waste into higher-performance plastics
DOI: 10.1021/jacs.4c10588

Five ways to cut emissions from shipping
22 January
Five ways to cut emissions from shipping

Synthetic Chemicals are Everywhere, but We Know Little About How They Affect Our Health | The Scientist
23 January
Synthetic Chemicals are Everywhere, but We Know Little About How They Affect Our Health | The Scientist

Trump voters are not the obstacle to climate action many think they are
27 January
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South Korean Scientists Unveil Revolutionary Method to Combat Plastic Menace - Glass Almanac
28 Jan
South Korean Scientists Unveil Revolutionary Method to Combat Plastic Menace - Glass Almanac

As carbon dioxide builds up in the atmosphere, many companies are working to capture it | GBH
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Revolutionizing Carbon Capture: Scientists Unveil New CO2 Reaction Pathways
DOI: 10.1073/pnas.2406356121

Refrigeration Hasn’t Changed in 70 Years – This Breakthrough Is Changing Everything
1 February
Refrigeration Hasn’t Changed in 70 Years – This Breakthrough Is Changing Everything
DOI: 10.1016/j.joule.2025.101822

Bioplastics: Lack of standardization and clear rules hinders sustainable consumption, says study

5 Feb. 25
Bioplastics: Lack of standardization and clear rules hinders sustainable consumption, says study

Climate change target of 2C is ‘dead’, says renowned climate scientist | Climate crisis | The Guardian

4 Feb
Climate change target of 2C is ‘dead’, says renowned climate scientist | Climate crisis | The Guardian

Billions for 'unproven' carbon capture technology will have 'very significant' impact on energy bills, MPs warn | Money News | Sky News

7 February
Billions for 'unproven' carbon capture technology will have 'very significant' impact on energy bills, MPs warn | Money News | Sky News

Climate Science’s Blind Spot: New Particles Matter More Than We Thought

4 February
Climate Science’s Blind Spot: New Particles Matter More Than We Thought
DOI: https://doi.org/10.1016/j.oneear.2024.12.005

Can this revolutionary plastics-recycling plant help solve the pollution crisis?

4 February
Can this revolutionary plastics-recycling plant help solve the pollution crisis?
DOI: https://doi.org/10.1038/d41586-025-00293-y

Is carbon capture tech more viable than renewable energy? Stanford study has an answer

16 February
https://theprint.in/scientifix/is-carbon-capture-tech-more-viable-than-renewable-energy-stanford-study-has-an-answer/2496747 and

Energy, Health, and Climate Costs of Carbon-Capture and Direct-Air-Capture versus 100%-Wind-Water-Solar Climate Policies in 149 Countries

9 February
Energy, Health, and Climate Costs of Carbon-Capture and Direct-Air-Capture versus 100%-Wind-Water-Solar Climate Policies in 149 Countries | Environmental Science & Technology
DOI: https://doi.org/10.1021/acs.est.4c10686

Researchers invent groundbreaking device to extract dangerous chemicals from water: 'A game changer'

16 Feb
https://www.yahoo.com/tech/researchers-invent-groundbreaking-device-extract-110014606.html

We use 30 billion tonnes of concrete each year — here’s how to make it sustainable

25 February
We use 30 billion tonnes of concrete each year — here’s how to make it sustainable
DOI: https://doi.org/10.1038/d41586-025-00568-4

Biotechnology with a Chemistry Emphasis

Molecular basis for the diversification of lincosamide biosynthesis by pyridoxal phosphate-dependent enzymes | Nature Chemistry

6 December
Molecular basis for the diversification of lincosamide biosynthesis by pyridoxal phosphate-dependent enzymes | Nature Chemistry
DOI: https://doi.org/10.1038/s41557-024-01687-7

Parahydrogen-enhanced magnetic resonance identification of intermediates in [Fe]-hydrogenase catalysis | Nature Catalysis

13 December
Parahydrogen-enhanced magnetic resonance identification of intermediates in [Fe]-hydrogenase catalysis | Nature Catalysis
DOI: https://doi.org/10.1038/s41929-024-01262-w

Chemoenzymatic Diazo Synthesis Enabled by Enzymatic Halide Recycling with Vanadium-Dependent Haloperoxidases | Catalysis | ChemRxiv | Cambridge Open Engage

12 December
Chemoenzymatic Diazo Synthesis Enabled by Enzymatic Halide Recycling with Vanadium-Dependent Haloperoxidases | Catalysis | ChemRxiv | Cambridge Open Engage
DOI: https://doi.org/10.26434/chemrxiv-2024-f0w08
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Super-Enzyme Enhances Carbon Capture by 90%

15 December
Super-Enzyme Enhances Carbon Capture by 90%
DOI: 10.1021/acs.est.4c04291

From sunlight to hydrogen: Researchers unveil structure of photosynthetic catalyst

12 December
From sunlight to hydrogen: Researchers unveil structure of photosynthetic catalyst
DOI: 10.1038/s41467-024-53476-y

Biomimetic Synthesis of Azorellolide via Cyclopropylcarbinyl Cation Chemistry | Journal of the American Chemical Society

18 December
Biomimetic Synthesis of Azorellolide via Cyclopropylcarbinyl Cation Chemistry | Journal of the American Chemical Society
DOI: https://doi.org/10.1021/jacs.4c14664

CO_2-eating bacteria can recycle carbon from chimney smoke directly into new products

19 December
CO_2-eating bacteria can recycle carbon from chimney smoke directly into new products
DOI: 10.1038/s41467-024-51700-3

New device harnesses microwave flow reaction to convert biomass into useful sugars

10 January
New device harnesses microwave flow reaction to convert biomass into useful sugars
DOI: 10.1021/acssuschemeng.4c07690

Engineered enzyme could transform how essential chemicals and medicines are made
15 January

Engineered enzyme could transform how essential chemicals and medicines are made
DOI: 10.1038/s41586-025-08611-0

Accelerated enzyme engineering by machine-learning guided cell-free expression | Nature Communications
20 January
Accelerated enzyme engineering by machine-learning guided cell-free expression | Nature Communications
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Bio-Engineered “Super Glue” Sets New Strength Record – Could Transform $50 Billion Industry
21 January
Bio-Engineered “Super Glue” Sets New Strength Record – Could Transform $50 Billion Industry
DOI: 10.1126/science.adr7175

AI Accelerates Enzyme Engineering
23 January
AI Accelerates Enzyme Engineering

Biocatalytic enantioselective formation and ring-opening of oxetanes | Nature Communications
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Biocatalytic enantioselective formation and ring-opening of oxetanes | Nature Communications
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Biodegradable Nylon Precursor Developed Using Artificial Photosynthesis
24 January
Eco-Friendly Nylon Precursors Made From Biomass | Technology Networks
DOI: 10.1039/D4SE01215A

Scientists use AI to design life-like enzymes from scratch
13 February
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DOI: https://doi.org/10.1038/d41586-025-00488-3

AI used to design a multi-step enzyme that can digest some plastics - Ars Technica
14 February
AI used to design a multi-step enzyme that can digest some plastics - Ars Technica
DOI: http://dx.doi.org/10.1126/science.adu2454

New findings on the power of enzymes could reshape biochemistry
14 February
New findings on the power of enzymes could reshape biochemistry
DOI: 10.1126/science.ado5068

Enzymes are the engines of life—machine learning could help scientists design new ones
16 Feb
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A concise enzyme cascade enables the manufacture of natural and halogenated protoberberine alkaloids | Nature Communications

23 February

A concise enzyme cascade enables the manufacture of natural and halogenated protoberberine alkaloids | Nature Communications
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Science & Truth, Trust & Science Communication and Scientific Publication

Crossref suspends company's membership after Retraction Watch report – Retraction Watch

2 December
Crossref suspends company's membership after Retraction Watch report – Retraction Watch

Funding research for economic return sounds good – but that's not how science really works

5 December
Funding research for economic return sounds good – but that's not how science really works

Prize sensitive: Is it time for a change in how the Nobels are awarded? - Hindustan Times

6 December
Prize sensitive: Is it time for a change in how the Nobels are awarded? - Hindustan Times

This fearless science sleuth risked her career to expose publication fraud (Limited Access)

9 December
This fearless science sleuth risked her career to expose publication fraud
DOI: https://doi.org/10.1038/d41586-024-03894-1

Open access for all: Empowering researchers and communities worldwide | For Researchers | Springer Nature

21 October 2024 received 13/12/2024
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To write successful scientific grant proposals, I had to learn to take risks | Science | AAAS

12 December
To write successful scientific grant proposals, I had to learn to take risks | Science | AAAS

Pioneering journal eLife faces major test after loss of impact factor

18 December
Pioneering journal eLife faces major test after loss of impact factor
DOI: doi: https://doi.org/10.1038/d41586-024-04199-z

Can novelty scores on papers shift the power dynamics in scientific publishing?

20 December
Can novelty scores on papers shift the power dynamics in scientific publishing?
DOI: doi: https://doi.org/10.1038/d41586-024-04021-w

Journal that published faulty black plastic study removed from science index - Ars Technica

19 December
Journal that published faulty black plastic study removed from science index - Ars Technica

Your black plastic kitchen utensils aren't so toxic after all: But you should still toss them, group says

20 December
Your black plastic kitchen utensils aren't so toxic after all: But you should still toss them, group says

DOI: 10.1016/j.chemosphere.2024.143903

U.S. science funding agencies roll out policies on free access to journal articles | Science | AAAS
20 December
U.S. science funding agencies roll out policies on free access to journal articles | Science | AAAS

'WithdrarXiv' database of 14,000 retracted preprints launches (subscription access)
6 January
'WithdrarXiv' database of 14,000 retracted preprints launches
DOI: https://doi.org/10.1038/d41586-025-00011-8

High profile chemistry journal removed from Web of Science index | News | Chemistry World
9 January
https://www.chemistryworld.com/news/high-profile-chemistry-journal-removed-from-web-of-science-index/4020769.article

[Shared Post] Science paper by Toronto lab retracted
9 January
Science paper by Toronto lab retracted – Retraction Watch

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13 January
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27 January
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‘Stamp out paper mills’ — science sleuths on how to fight fake research
27 January
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Thousands of highly cited scientists have at least one retraction
31 January
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Bogus scientific papers are enriching fraudsters and slowing lifesaving medical research

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Weekend reads: ‘Invasion of the journal snatchers;’ our paper mill investigation; highly cited, highly retracted – Retraction Watch

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Many interesting chemistry related articles and videos are available at:

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How the world's biggest laser smashed a nuclear-fusion record

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5 December
Canada turns on the fusion reactor of the millennium: 600 million neutrons per second

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3 December
Scientists achieve major milestone with high-energy, donut-shaped vacuum chamber: 'An absolutely unique experimental arena'

US achieves fusion breakthrough with new stellarator plasma method
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US achieves fusion breakthrough with new stellarator plasma method

Tokamak Energy's fusion facility to get game-changer upgrade as US, UK join hands
7 December
Tokamak Energy's fusion facility to get game-changer upgrade as US, UK join hands

Scientists deliver major breakthrough on journey to harness 'holy grail' of energy production: 'It was surprising how big the improvement was'
5 December
Scientists deliver major breakthrough on journey to harness 'holy grail' of energy production: 'It was surprising how big the improvement was'

A Breakthrough Competing with Nuclear Fusion: A Radical Change for Future Energy Production
14 December
A Breakthrough Competing with Nuclear Fusion: A Radical Change for Future Energy Production

Canada fires the reactor of the century: 600 million neutrons per second
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Canada fires the reactor of the century: 600 million neutrons per second

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20 December
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Researchers address material challenges to make commercial fusion power a reality

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France runs fusion reactor for record 22 minutes

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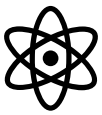

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Materials tested at 1,400°F to make safer molten salt reactors

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19 February
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10th EuChemS Chemistry Congress

Save The Date!

12-16 July 2026

Antwerp, Belgium

kvcv EuChemS www.euchems2026.eu

The Royal Flemish Chemical Society (KVCV) is delighted and honoured to host the 10th EuChemS Chemistry Congress (ECC10), July 12-16, 2026 in Antwerp, Belgium in the Flanders Meeting & Convention Centre Antwerp (FMCCA).

The 10th EuChemS Chemistry Congress will have an exciting scientific programme with world-leading plenary speakers, invited speakers and short oral presentations, supplemented with a series of poster presentations.

This Congress is the 10th in a series that started in Budapest in 2006, and since then has been held in several cities across Europe before reaching Antwerp. The EuChemS Congresses are noted for their excellent scientific level. They allow all the attendees and participants to listen to and interact with some of the most celebrated researchers in the world.

Antwerp is a metropolis on a human scale, situated in the heart of Europe, and has a lot to offer. Despite its relatively small size, it boasts the biggest port area in Europe and a vast offering of cultural, historical, and culinary delights enhanced by more than 170 nationalities. Antwerp is home to shopping centres, boutiques, museums, start-up hubs, premium hotels, and the historical home of Rubens. Additionally, the world's largest diamond trade hub is within walking distance. Antwerp embraces heritage and innovation, business and leisure, global ambitions, and a genuine concern for nurturing a highly enjoyable quality of life for all its residents and visitors.

Antwerp houses the largest integrated chemical cluster of Europe, extending over the borders into The Netherlands, and Nordrhein-Westfalen in Germany, to form a chemical 'centre of gravity'. The chemical companies in these three regions are strongly interconnected and offer innovative solutions for the global challenges of today and tomorrow. Moreover, there is also an important pharma and life sciences industry.

The FMCCA state-of-the art congress centre is located in the heart of Antwerp, right next to Antwerp Central train station, making it easily accessible domestically, as well as internationally. It is directly connected to and provides magnificent views on the green oasis that is the Zoo, right next to it. FMCCA, which only opened in 2016, is equipped with state-of-the-art audiovisual equipment, lighting, and other technical amenities. FMCCA is surrounded by nature, tropical animals and the most beautiful garden. The venue is committed to sustainability and eco-friendliness, with various measures in place to minimise its environmental impact. This philosophy is also translated into delicious, often vegetarian dishes and high-quality choices. By hosting the ECC at FMCCA, we directly support the field of animal welfare, heritage, breeding programmes, research and nature conservation worldwide through the Antwerp ZOO Society.

EuChemS News & Updates

European Chemical Society

EuChemS releases 2024 Yearbook

Feb 13, 2025
https://www.euchems.eu/euchems-2024-yearbook-release

EuChemS is pleased to announce the release of its 2024 Yearbook, offering a comprehensive overview of the organization's events, policy contributions, awards, and communications throughout the year. The Yearbook provides insight into EuChemS' efforts to support the chemistry community and foster scientific collaboration across Europe.
To explore the full content of the Yearbook and learn more about EuChemS' work in 2024, click here to visit the online version.

Encouraging Women into Careers in the Chemical Sciences

November 14, 2024

Women have not been represented well enough in the STEM disciplines in most countries around the world, despite their accomplishments in their fields. Unfortunately, they continue to represent only a small proportion of faculty members in science and technology fields, especially at more prestigious research institutions. Therefore, supporting young women scientists in their career development is crucial.

This issue was one of the main goals that directed my career as a chemistry teacher, chemistry education researcher, and mentor of chemistry teachers. I wanted to help my graduate students as well as my high school chemistry students to gain a sense of ownership and recognize that they are professionals. In addition, supporting teachers in broadening their knowledge by linking chemistry to societal issues, economic issues and to other disciplines such as biology, physics, and history. I always believed, that by giving light and warmth to students, teachers and early career researchers, together with international collaborations, we may set them on career paths in chemistry that in turn may impact many others all over the world.

In Israel, over a span of more than forty years as a previous chemistry high school teacher, and as a scientist in chemistry education in Israel, at the Weizmann Institute of Science, I was teaching high school chemistry students in a disadvantaged region; conducting professional development programs for chemistry teachers; teaching chemistry and chemistry education courses for graduate chemistry

students; advising and supervising graduate chemistry students. Over two-thirds of the students and teachers were women, and almost 20% of them were from the Arab sector of Israel.

The high school chemistry students that I taught were raised up in families from low social economic situation. Teaching them advanced chemistry, based on relevant and everyday happenings, together with care and personal teaching and learning strategies, helped in raising their motivation towards chemistry studies, as well as their self-efficacy.

Three programs will serve as examples for workshop and professional development programs for chemistry teachers in Israel:

- Professional Learning Communities (PLCs) for chemistry teachers and the Rothschild-Weizmann MSc Program for excellent chemistry teachers. The research findings show that these activities carried out in Israel, through international collaborations, impacted teachers and students of the Jewish and Arab sectors, including those on the West Bank.

- An MSc program for excellent chemistry teachers (Rothschild-Weizmann MSc Program). Each year since 2008, continuing today, I taught chemistry students (from all sectors in Israel), who are current high school teachers seeking knowledge and support for their careers. So far, almost 100 chemistry teachers have undergone this program, while most of them are women.

- A ten-years professional development chemistry program for biology teachers in the Upper Galilee: Preparing biology teachers to become chemistry teachers, due to shortage of chemistry teachers in this region (1989-1999). 40 teachers (80% women) participated in this program. This program served as a model for an additional similar course at the Weizmann Institute, due to lack of chemistry teachers in Israel.

My international collaboration also consisted of workshops and seminars for chemistry scholars as well as for teachers, as well as of studies about women's careers. For example:

- A three-year European project "Addressing Attractiveness of Science Career (SciCar)", IUPAC Gender Gap Committee, in which I was a member, offered recommendations for developing initiatives to encourage suitable environments for women's careers in chemistry.

- I was a mentor in NARST Early Career Institute (ECI), aimed at supporting scholars who are beginning their careers

- During October 2013, I participated in an exhibit created for the Museum of the Civilizations of Europe in Marseilles. In the exhibit, nine women from the Mediterranean countries (including me) told their life stories in a filmed monologue, screened on a wall in the museum.

In summary, my experience over the years convinced me that loving my profession, and believing in what I am doing, are the main components to success. The passion to research a domain in which I am involved with my mind and with my soul, kept me moving on even when I faced difficulties. I am happy that I managed to cover a variety of chemistry education research and practice components, including the work done with students, teachers, and policy makers. I always felt the importance of stressing the point of education through chemistry, and not just teaching or learning chemistry.

EuChemS welcomes new Executive Board Members

Nov 21, 2024

The 2024 EuChemS General Assembly, held from 23–25 October in Berlin, elected three new members to its Executive Board: Tom Kinzel, Renata Oriňaková, and Jeroen Cornelissen. The election, chaired by EuChemS President Angela Agostiano, strengthens the organisation with diverse expertise from chemistry, academia, and industry.

Tom Kinzel, Managing Director of the German Chemical Society (GDCh), has extensive experience in academia and the pharmaceutical industry, including at MIT and Bayer Pharma. He aims to enhance collaboration, global leadership, and societal impact within the chemical community. Renata Oriňaková, Vice-Dean at Pavol Jozef Šafárik University, specializes in electrochemical production and nanomaterials, with significant contributions to physical chemistry. Jeroen Cornelissen, Professor at the University of Twente, is renowned for his work in polymer and supramolecular chemistry, particularly in chemical virology and nanotechnology.

In addition to these new board members, Francesco Peri has been appointed as the Professional Networks representative, and Thomas Vranken will serve as the liaison and local organiser for the 10th European Chemistry Congress (ECC10).

Javier García Martínez: Chair of the Scientific Committee at ECC10

Dec 9, 2024

Javier García Martínez, expert in sustainable energy and materials chemistry, has been appointed Chair of the Scientific Committee for the 10th European Chemistry Congress (ECC10). Known for his work in decarbonisation technologies and nanotechnology, Martínez has played a key role in enhancing energy efficiency and reducing CO2 emissions in the chemical industry.

Currently, he is the Director of the Molecular Nanotechnology Laboratory at the University of Alicante, Spain. His research focuses on catalysis and energy technologies, with innovations that have transformed industrial processes, leading to significant reductions in CO2 emissions.

In addition to his academic work, Martínez has held prominent positions in several global organisations, including serving as President of IUPAC during 2022-2023. He has also contributed his expertise on sustainability and innovation through the World Economic Forum and co-founded the Young Academy of Spain to support early career scientists.

As an entrepreneur, he co-founded Rive Technology, which successfully commercialised decarbonisation technologies now used across industries worldwide. His contributions have earned him numerous awards, including the Kathryn C. Hach Award for Entrepreneurial Success and the National Research Award from the King of Spain.

Scientific Leadership through Collaboration or Fair Competition

Feb 17, 2025. By Dr. Nineta Hrastelj, FRSC, EuChemS Secretary General

Science thrives on two fundamental forces: collaboration and competition.
Collaboration brings together diverse perspectives, fosters creativity, and accelerates progress. When scientists work together across disciplines, borders, and cultures, they can tackle complex challenges that no individual or team could solve alone. Think of the global collaboration during the COVID-19 pandemic, which led to the rapid development of vaccines. This is the power of working together.
On the other hand, **competition** drives excellence. It pushes us to innovate, to strive for better results, and to challenge the status quo. Healthy competition can be a catalyst for breakthroughs.
But here's the catch: **for competition to be fair, the playing field must be level.** And unfortunately, this is not always the case, especially for women in science.
We know that female scientists face more obstacles than their male colleagues. Whether it is unconscious bias, unequal access to leadership positions, or double standards in evaluating competence, competition in science is not always fair.
Some examples are well-documented also in scientific literature:

- Women receive less funding for research grants, despite submitting proposals of equal or higher quality.
- Women's contributions to scientific papers are often undervalued, and their authorships overlooked.
- Women in leadership roles still face higher scrutiny than men in similar positions. **So, how do we create a more equitable scientific community?**
  The answer lies in defining and **embedding** core values—**equity, respect, transparency, and accountability**—into everything we do as a scientific community.
  We need to go beyond just talking about these values and ensure that they become intrinsic to how we operate. This means:
- Setting clear **policies** on gender equity in hiring, funding, and leadership roles.
- **Applying** these policies consistently, not just when it is convenient.
- **Calling out biases**—not just when they are obvious, but especially when they are subtle.
- **Recognizing** and **rewarding** contributions from all scientists fairly. This requires persistence. Change does not happen overnight. But if we apply these values with consistency, they will slowly reshape the environments we work in. **Here, leadership plays a crucial role**. We need more women in leadership positions—not just for representation, but because diverse leadership leads to better decision-making and innovation. Science is also not just about data and experiments; it's about people, relationships, and empathy. Women bring unique perspectives and strengths to the table, and these qualities are essential for building a more inclusive and collaborative scientific community.

Some concrete **policy initiatives** are already being put in place. For example, the European Commission has been promoting gender equality in research and innovation through Gender Equality Plans (GEPs)—which are now a requirement for institutions receiving Horizon Europe funding.

But policies alone are not enough. We need a **cultural shift** in the way we see leadership in science. The landscape is improving. We now have the first female presidents of member societies, more women leading research teams, and greater visibility for women in STEM. But we have to keep moving in this direction.

The question is: How do we make sure that progress does not stall?

I believe we can all contribute to this change, in three practical ways:

1. **Mentorship and Sponsorship:** If you are in a position of influence, bring other women into the conversation, recommend them for leadership roles, and make sure their work is seen and valued.
2. **Institutional Accountability:** Push for real gender equity policies in your institutions, and insist that policies cannot exist only on paper.

3. **Courage to Challenge the Status Quo:** Speak up when you see bias, and be willing to challenge the systems that were not built for fairness. But do it constructively.

It is true—we are still operating within a system that has historically been shaped by men. And while progress has been made, we must acknowledge that the goal is not to replace one dominant group with another, but to **create a truly inclusive and balanced environment where all scientists, regardless of gender, can thrive.**

This is not a battle between male and female scientists. It is about a **shared responsibility** to build a system where ideas are judged on their merit, where competition is fair, and where collaboration is the driving force behind scientific progress.

So let me leave you with this thought: Science does not just need more women—it needs a culture that values diversity in leadership, fosters equity, and embraces respect as a fundamental principle. Only by working together can we create an environment where the best ideas flourish, where competition and collaboration reinforce each other, and where scientific excellence knows no barriers. Thank you for your attention. I wish you a fruitful discussion.

EuChemS invited to sign IUPAC Proclamation on funding for basic chemical research

Dec 19, 2024

President Angela Agostiano has signed the proclamation issued by the International Union of Pure and Applied Chemistry (IUPAC), which calls for governments worldwide to increase funding for basic chemical research. This invitation, extended to Agostiano on behalf of the European Chemical Society (EuChemS), is part of a global initiative involving national chemical societies from around the world.

The proclamation emphasises the urgent need to address six critical global challenges: atmospheric changes, sustainable energy, dwindling raw materials, water scarcity, food security, and health issues. It underscores the importance of basic research in chemistry as the foundation for future technologies that can provide solutions to these pressing problems. The document also highlights the transformative impact of past scientific discoveries, such as transistors, MRIs, CRISPR gene editing, and lithium-ion batteries, all of which originated from basic scientific research.

Agostiano's participation in signing this proclamation marks a pivotal moment for EuChemS and the global scientific community. It serves as a call to policymakers and governments to recognise the long-term benefits of investing in basic research, which can drive innovation, economic growth, and international collaboration. By advocating for increased funding, the proclamation stresses the role of chemistry in shaping a sustainable future.

The Rare Earth Elements: These high-tech enablers

Jan 31, 2025

This European Parliamentary meeting/online seminar is part of a series where we focus on various aspects of individual chemical elements and is a result of our EuChemS Periodic Table highlighting element availability, vulnerability and sustainability.

The rare-earth elements (REE) are a group of 17 elements comprising the metals of group 3 of the periodic table (scandium and yttrium) and the 15 lanthanides (lanthanum to lutetium). The term "rare-earth" is misleading because these elements occur more frequently than their name would suggest. However, these elements are only found in a few economically viable sources - primarily outside the EU. Therefore, REE are at the top of the EU's list of critical raw materials.

Although often not recognized, REE materials are part of many high-tech devices and important gadgets for our daily life. They can be found, for example, in smartphones, televisions, computers, lasers, missiles, camera lenses, fluorescent light bulbs, catalytic converters, batteries, propulsion motors, magnets, and contrast agents to name only a few applications.

Objectives

The purpose of the online seminar is to answer key questions such as:

- What is the impact of using REE on reserves, resources, geopolitics, and the environment?
- How can REE recycling be improved and embedded in the circular economy?
- What are the present and future applications of REE for optical devices, magnets, catalysts and devices for energy conversion?

Programme: https://www.euchems.eu/the-rare-earth-elements/#

Speakers: https://www.euchems.eu/the-rare-earth-elements/#

EuChemS organised Global Women's Breakfast 2025 to empower women in science and innovation

EuChemS' Global Women's Breakfast 2025 celebrated and empowered women in science, with discussions focused on breaking gender barriers in research and innovation.

Chiara Capodacqua,
EuChemS
February 14, 2025

EuChemS recently hosted its Global Women's Breakfast (GWB) event for 2025, an inspiring initiative to celebrate and empower women in science, technology, and innovation. This event, which took place online on 11 February 2025, was part of a global initiative with 397 breakfast events worldwide listed on the IUPAC map, aiming to empower women in science across the globe.

EuChemS' theme for this year's GWB, "Reaching for the Quarks," focused on the incredible potential of women in advanced scientific fields, highlighting the need for fair and equal opportunities in cutting-edge research and innovation. Thought leaders, researchers, and advocates came together to address the systemic barriers that women face in accessing and succeeding in scientific careers.

Angela Agostiano, President of EuChemS, hosted the event, while Noah Al-Shamery, Communication Team Lead of the European Young Chemists' Network (EYCN), guided participants in discussions on overcoming gender biases and promoting inclusivity in science. The event featured a distinguished lineup of speakers, including Iwona Gulaczyk, Giulia Napoli, Sílvia Osuna, and Snežana Zarić, who shared their experiences and insights from their respective fields, ranging from computational chemistry to forensic science.

In addition to EuChemS' event, Nineta Hrastelj, EuChemS Secretary General, was also invited to participate in the GWB2025 event in Romania. During this event, Nineta Hrastelj delivered a speech on *"Scientific Leadership through Collaboration and Fair Competition,"* addressing the challenges women face in accessing leadership roles, unconscious bias, and the need for systemic change to ensure equal opportunities.

The GWB2025 was an important platform for advancing gender equality, and through initiatives like these, EuChemS continues to support the global movement toward greater representation of women in scientific leadership and innovation.

https://erc.europa.eu/homepage

Consolidator Grants: ERC awards €678m in grants to back excellent research across Europe
3/12/2024
Consolidator Grants: ERC awards €678m in grants to back excellent research across Europe | ERC

Frontier research in CRISPR/Cas technology
3/12/2024
Frontier research in CRISPR/Cas technology | ERC

How ERC frontier research supports 'transformative change'
4 December
How ERC frontier research supports 'transformative change' | ERC

Europe must prioritize research and innovation to be competitive
17 January
https://www.weforum.org/stories/2025/01/europe-prioritize-research-innovation-competitive

134 researchers supported to turn their science into practice
23 January
134 researchers supported to turn their science into practice | ERC

New report reveals how ERC grantees commercialise their patented inventions
3/2/2025
New report reveals how ERC grantees commercialise their patented inventions | ERC

How pregnancy reshapes a mum's brain
4/2/2025
https://erc.europa.eu/projects-statistics/science-stories/how-pregnancy-reshapes-mums-brain

ERC President's speech to the European Parliament's ITRE Committee
19/2/2025
https://erc.europa.eu/news-events/news/erc-presidents-speech-european-parliaments-itre-committee

Scientists uncover missing link in static electricity mystery
20/2/2025
https://erc.europa.eu/news-events/news/scientists-uncover-missing-link-static-electricity-mystery

ERC Classes: How to communicate on your science project?
A number of videos about science communication are available in this link
2024
https://www.youtube.com/playlist?list=PLtv6FnsXqnXCcgQQXjqWEPG2Ekqc0VSO4
https://www.youtube.com/watch?v=fWDpajpbez4&list=PLtv6FnsXqnXCcgQQXjqWEPG2Ekqc0VSO4&index=1

CAS Insights

Are metal-organic frameworks at a commercial tipping point?
5 December
Are metal-organic frameworks at a commercial tipping point? | CAS

New technologies to combat counterfeit drugs
13 December
New technologies to combat counterfeit drugs | CAS

Scientific breakthroughs: 2025 emerging trends to watch Video
27 December
Top scientific discoveries and breakthroughs for 2025 | CAS

Co-occurring concepts reveal new research directions in immuno-oncology
10 January
Co-occurring concepts reveal new research directions in immuno-oncology | CAS

PPI inhibitors to fight cancer are making progress in clinical trials
24 January
PPI inhibitors to fight cancer are making progress in clinical trials | CAS

Webinar: Scientific breakthroughs and emerging trends to watch in 2025
27 December
Top scientific discoveries and breakthroughs for 2025 | CAS and
Webinar: Scientific breakthroughs and emerging trends to watch in 2025
30 January
Webinar: Scientific breakthroughs and emerging trends to watch in 2025 | CAS and
Scientific breakthroughs and emerging trends to watch in 2025: Expert webinar and panel (60 mins)
23 January
Scientific breakthroughs and emerging trends to watch in 2025: Expert webinar and panel | CAS

How weight loss drugs interrupt hunger
7 February
Infographic: How the latest weight loss drugs interrupt hunger | CAS

CAS Insights Report—CRISPR: Updates on the growing importance of this technology
19 February
CRISPA Report | CAS Insights
https://web.cas.org/marketing/pdf/INSGENENGREP102348-CAS-Insights-CRISPR-Report-Digital.pdf?utm_campaign=GLO_GEN_ANY_CIS_LDG&utm_medium=EML_CAS_ORG&utm_source=EM_CRISPR

Lithium-ion Battery Recycling

18 February

Lithium-ion Battery Recycling: Market and Innovation Trends for a Green Future | CAS

Report: Lithium-ion battery recycling report | CAS and Deloitte

Biomarkers show potential to improve autism diagnosis and treatment

21 February

Biomarkers show potential to improve autism diagnosis and treatment | CAS

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Physical Chemistry Chemical Physics
14 October 2024, Issue 38,
Page 24719 to 25252
https://doi.org/10.1039/D4CP02723J

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Scope

PCCP (*Physical Chemistry Chemical Physics*) is an international journal for the publication of cutting-edge original work in physical chemistry, chemical physics and biophysical chemistry. To be suitable for publication in *PCCP*, articles must include significant new physical insights; this is the prime criterion that referees, and the Editors will judge against when evaluating submissions.

The journal has a broad scope which includes spectroscopy, dynamics, kinetics, statistical mechanics, thermodynamics, electrochemistry, catalysis, surface science, quantum mechanics and theoretical developments play an important part in the journal. Interdisciplinary research areas such as polymers and soft matter, materials, nanoscience, surfaces/interfaces, and biophysical chemistry are especially welcomed whenever they include a physico-chemical approach.

PCCP is proud to be a Society journal and is co-owned by 19 national chemical societies. The journal is published by the Royal Society of Chemistry on a not-for-profit basis for the benefit of the whole scientific community.

Impact factor: 4.493*
Publishing frequency: 48 per year
Indexed in MEDLINE and Web of Science

https://www.idaireland.com

IDA Updates & Reports

Hovione Almost Doubles Spray Drying Capacity With Multi-Million Euro Investment In Cork, Ireland

25 /11/2024

Hovione, an international pharmaceutical contract development and manufacturing organisation (CDMO), today officially commissioned an expansion at its manufacturing facility in Ringaskiddy, Co. Cork.

The multi-million euro investment almost doubles the capacity of Hovione's spray drying facilities in Ireland and will create more than 20 new positions. This latest investment reinforces Hovione's position as the global leader in spray drying for pharma applications. This manufacturing technology is especially important for inhalable therapies and oral medications with low bioavailability, enabling more effective treatments. By improving how medicines work in the body, spray drying plays a crucial role in delivering reliable, high-quality healthcare solutions that make a real difference in patients' lives.

Deputising for the Mayor of the County of Cork, Cllr. Audrey Buckley said: "I am delighted to welcome this very significant investment and the creation of further highly skilled jobs in Cork today. It reinforces Hovione's commitment to the region and the innovative solutions it provides to the pharmaceutical industry in Ireland."

Michael McGrath, the European Commissioner Designate for Democracy, Justice and the Rule of Law said: "This latest investment highlights the success of Hovione's facility in Ringaskiddy, and underlines the continued resilience of Ireland's pharmaceutical manufacturing sector. I am delighted that Hovione will be shortly welcoming new team members to this expanded facility, and I wish both them and Hovione every success".

Jean-Luc Herbeaux, Hovione's Chief Executive said: "This newly opened facility further strengthens Hovione's position as the global CDMO of choice for spray drying development and manufacturing services. It also underscores our commitment to bringing first-in-class technology and world-leading manufacturing services to Irish shores. Ireland provides a superior environment for

pharmaceutical manufacturing, and we are delighted to be a part of it."

Michael Lohan, CEO, IDA Ireland, said: "Since operations began here 15 years ago, Hovione has made a significant contribution both locally and nationally through employment and investment alike and I am pleased to be here today to mark another step on that journey. We warmly welcome Hovione's commitment to investing in Cork and we wish them continued success."

This latest investment builds on the momentum of the recently announced spray drying capacity expansion at the Company's East Windsor, New Jersey, site. Hovione's continuous commitment to enhance capacity and capabilities highlight its strategy to remain at the forefront of pharmaceutical technology. For over 65 years, Hovione has fostered a culture of innovation and operational excellence, consistently redefining what a CDMO can achieve. This dedication fuels Hovione's mission to deliver world-class solutions to its pharmaceutical partners, enabling the launch and global supply of groundbreaking medicines that improve patients' lives.

BioMarin Announces Significant Investment and Expansion of Cork Facility

09/12/2024

BioMarin Pharmaceutical Inc. announced a €60 million investment in the expansion of its state-of-the-art facility in Shanbally, Co. Cork., with addition of a new, four-story laboratory facility that will enable the company to increase production capacity for currently approved medicines and create room for future growth.

The expansion adds to BioMarin's footprint in Ireland, where the company operates the manufacturing site in Shanbally, as well as a commercial office in Dublin. The company employs more than 500 people in Ireland and has a trajectory of growth and investment that spans its 13 years in Ireland.

"This investment in our Cork facility reflects our ongoing commitment to enhancing our industry-leading global manufacturing capabilities and supporting the growth of our innovative medicines for our people living with rare conditions around the world," **said Evelyn Marchany Garcia, Senior Vice President, Chief Quality Officer, BioMarin Pharmaceutical.** "The Shanbally facility plays a crucial role in our global network, and this expansion emphasises our confidence in Ireland's skilled workforce and the strategic importance of this site to BioMarin's long-term success."

The facility in Shanbally, Co. Cork is BioMarin's only manufacturing site outside of the United States. It has end-to-end manufacturing capabilities, producing medicines from bulk drug substance to drug product to final packaging. This is the second major significant expansion of the site. BioMarin opened an aseptic production facility last year, a four-year build that enabled increased production of

commercial and clinical products.

Michael Lohan, CEO, IDA Ireland said, "As a global leader in the biopharmaceutical sector, BioMarin's ongoing investment in Ireland is a welcome endorsement of the country's position globally as a location of choice for biopharmaceuticals and a trailblazer in advancing healthcare solutions. By opening this new quality control and process development laboratory, BioMarin will create new opportunities for collaboration, talent development and growth, ensuring that the life sciences sector in Ireland continues to make an impact on patients' lives worldwide."

Conor Delaney, Site Lead and Vice President of Shanbally Manufacturing Operations, BioMarin Pharmaceutical said, "Expanding our laboratories allows us to deliver our medicines more efficiently and at greater scale for people living with genetic conditions. This latest investment reinforces our commitment to advancing treatment options and supporting patients across the world."

Record R&D, strong capital investment, and high number of new investors, drive continued strong performance of FDI against intense global competition

17/12/2024

Performance

- Ireland secured 234 investment wins in 2024, delivering record level of R&D investment as IDA clients commit €1.9bn across 64 investments.
- 2024 investments projected to create 13,500 jobs over coming years.
- Ireland's transformative FDI base demonstrates continued resilience, stability and maturity employing 302,566 people c. 11% of national employment.
- Strong balanced regional development throughout 2024 with 59% of FDI investments in locations outside of Dublin.
- 69 green field or first-time investments, highlighting Ireland's continued attractiveness for new enterprises and activities.

Outlook:

- Ireland continues to demonstrate its attractiveness for international investors seeking high-value skills and an innovative ecosystem.
- Continued opportunity for high growth and future investments of scale and complexity buoyed by sustained levels of capital investment and a solid employment base.

- Investors seeking certainty and stability look to Ireland to grow their business.
- Key focus for IDA Ireland will be on talent and skills development, sustainability, and innovation to deliver growth.
- Continued FDI success reliant on competitiveness policies, infrastructure and skills needed to support these goals.

IDA Ireland today announced its annual performance for 2024 showing continued strong levels of investment and employment across the FDI sector. The agency, working on behalf of the Irish government, has successfully delivered regional investment and substantial transformative projects in the areas of research and development, innovation, sustainability, and talent development.

IDA Ireland, which has responsibility for attracting and retaining foreign direct investment into Ireland, continued to secure significant investments of scale and employment opportunities, reporting a total number of 234 investments which will lead to the creation of 13,500 jobs over the next few years.

Of these investments, 59% were in regional locations outside of Dublin in keeping with IDA Ireland's strategic aim of balanced regional development. This is an increase in regional investments from 53% last year. 69 investments were from new name or first-time investors, strongly indicating Ireland's ongoing attractiveness as an FDI location. These included cutting edge companies such as Calypso AI, Evernorth, Sirius XM, and UKG.

Almost half of all investments in 2024 were underpinned by innovation, digitalisation, and sustainability focused on decarbonisation, developing advanced cutting-edge technologies, and driving talent and skills development.

A record level of R&D investment valued at €1.9bn across 64 projects was approved by IDA Ireland during the year, affirming Ireland's reputation as a location for the development of innovative technologies, global business services, and products.

IDA Ireland actively partners with FDI client companies to help them deliver on their sustainability and skills agendas. This has enabled our clients to commit capital investment of €117m towards sustainability investments and a further €118m in the training and upskilling of their workforce.

Investments by IDA Ireland client companies consistently generate highly skilled jobs nationwide, evidenced by the 302,566 people directly employed this year by over 1,800 companies. This number sees employment levels within the FDI sector remain above 300,000 for the third consecutive year, demonstrating a solidified employment base that strategically positions the economy for future growth. This represents a slight increase (0.2%) in client employment and accounts for 10.8% of overall national employment. Job growth was recorded in Modern Manufacturing and Traditional Manufacturing, up 0.8% and 0.4% respectively. Business, Financial and Other Services also reported an increase (1.7%) whilst ICT saw numbers decline (1.2%). This reinforces the critical importance of continued diversification across new and emerging sectors to drive sustained future growth.

In the face of ongoing global competition and a changing trade and investment landscape, Ireland has a strong platform for growth as reflected in the latest ABSEI results. Expenditure within the economy by FDI companies increased by 6.5% to €38.6Bn during 2023 showcasing the resilience and adaptability of our economic framework. Payroll rose by 7.6% to €23.9bn; spending on Irish services and materials grew by 4.7% to €14.6bn and total exports of €421bn marked a 7.3% increase year-on-year. In addition, capital expenditure of €13.2bn, represented the second highest level on record reflecting strong levels of investment activity. In tandem, in-house R&D investment by IDA Ireland clients during 2023 reached €9bn, marking an increase of more than 26% on the previous year. These figures speak to the significant contributions of FDI companies to the Irish economy and to the conducive environment for further growth and investment. Ireland cannot afford to be complacent

about FDI. It is essential that we ensure an environment that not only attracts but retains and grows investment, especially in an intensely competitive global landscape.

As IDA Ireland prepares to launch its new five year strategy in 2025, the agency has delivered exceptional performance against targets set out in its last strategy, "Driving Recovery & Sustainable Growth". IDA's new strategy will continue to prioritise growth and transformation through innovation, digitalisation, talent development, and sustainability across our existing key strategic sectors to build on Ireland's FDI success to date. Fundamental to driving this continued growth and success is a focus on competitiveness, agile policies, and delivery of national infrastructure.

Peter Burke Minister for Enterprise, Trade and Employment said, "Despite many challenging global issues such as the impacts of Brexit, the Covid-19 pandemic and the war in Ukraine, Ireland continues to be seen as a location of choice for new investors as well as long-established companies who choose to further invest in substantial expansions of their operations here. Ireland offers a competitive, consistent, and transparent corporate tax regime, good access and connectivity and an excellent return on investment, as well as being an attractive environment where people want to live and work.

Competition for FDI remains intense. Every job created in Ireland by an FDI company has been hard won, against competition from a growing number of sophisticated locations and economies.

Yet in 2024, Ireland ranked fourth place among 67 economies measured for their global competitiveness in the 2024 IMD World Competitiveness Ranking. This is the second consecutive year Ireland has been placed in the top five economies globally.

For decades, Ireland's talent base has made the country a prime destination for many of the world's top companies. Today, around 55% of people aged 25 to 34 in Ireland hold a third-level degree compared to a 40% EU average. In addition to our highly educated and skilled workforce, Ireland offers access to a 250 million strong EU workforce. This is reflected in the strong job creation results reported to me by our enterprise agencies, including from highly mobile FDI.

There are, nonetheless, domestic challenges that we must address as highlighted during the September Competitiveness Summit chaired by Taoiseach Simon Harris in which I participated along with the Minister for Finance.

In recognition of the increasing competition internationally for FDI, IDA Ireland will receive an additional €15.5 million in capital funding next year. IDA Ireland will target significant FDI investment in 2025, with a focus on RD&I, Sustainability and Digitalisation. The additional funding will also help IDA to strengthen its team and deliver enterprise-focused property solutions across the country reflecting the Government's commitment to Regional Development."

Michael Lohan, CEO, IDA Ireland said: "The stability in employment levels by FDI clients highlights the sector's resilience and consistent growth, ensuring job security and economic impact. It is testament to our strategic focus and dedication that have enabled us to maintain steady progress and to positively impact the broader economy. An unwavering commitment to excellence and adaptability within our sector has fortified our position, allowing us to navigate and continue to thrive amidst global uncertainties and increased international competition for investment.

Furthermore, the significant level of capital investments into Ireland in the past twelve months from FDI crucially inject substantial capital into the country, stimulating growth and leading to the creation of highly skilled employment opportunities across the country. Such investments signal strong confidence in Ireland's economic environment, underpinning a positive business climate and emphasising the nation's attractiveness as a prime location for global investment. Not only do these investments catalyse immediate economic benefits, but they also pave the way for sustained long-term

growth and development. I want to acknowledge the contribution and commitment of our many stakeholders and partners in working with IDA Ireland to position Ireland as the premier location for FDI.

Deepening our engagement with existing and new clients remains to the fore of our priorities. By strengthening our relationships and understanding clients' evolving needs, we are better equipped to deliver tailored solutions that drive mutual success across transformative areas of RD&I, sustainability, digitalisation, and talent development. This client-centric approach enhances IDA's ability to support FDI companies in Ireland as they innovate, adapt, and grow here, against an increasingly competitive global market. It allows us to reinforce our commitment to excellence and long-term partnership and positions us for sustained growth into the future."

Feargal O'Rourke, Chairperson, IDA Ireland said, "On behalf of the Board, I'd like to thank and pay tribute to CEO Michael Lohan and the entire organisation for their role in delivering these excellent results for 2024 in a turbulent and fast moving landscape. The Board and the executive have worked well together over the last 12 months in formulating a new five year strategy for the organisation set to be launched early next year, which will focus on building opportunities for growth for Ireland in a highly competitive environment for FDI."

MSD Ireland announces acquisition of WuXi Vaccines' Dundalk site

06/01/2025

- MSD's acquisition of the WuXi Vaccines Dundalk site strengthens the company's long-standing commitment to Ireland, bringing its footprint to eight locations nationwide with over 3,000 currently employed across the country.
- Together with the acquisition, the company is looking ahead to significant growth across its Irish network, planning to add approximately 1,000 jobs over the coming year, including 150 additional jobs at the newly acquired Dundalk facility.
- The acquisition of the Dundalk facility marks an investment of over €500 million, building on other investments totaling €3 billion in Ireland in the last three years.

As part of its long-term plans in Ireland, MSD has agreed to acquire the WuXi Vaccines manufacturing facility located in Dundalk, Co Louth. The acquisition signifies an investment of over €500 million, which comes on the back of the company's recent announcement of a €1 billion investment across its sites in Carlow and Dunboyne, Co Meath, just last year.

MSD and WuXi Vaccines will now begin an official handover process which aims to be completed in the first half of 2025.

MSD Ireland is looking ahead to significant growth across its network, and, including this acquisition, is planning to add approximately 1,000 jobs over coming years across its eight locations in counties Carlow, Cork, Dublin, Louth, Meath and Tipperary.

The newly acquired Dundalk site is a 15,520-square-meter, three-story vaccine manufacturing facility featuring drug substance manufacturing, drug product manufacturing, and quality control labs for the supply of vaccine products for the global market, currently employing approximately 200 professionals on site.

This new acquisition by MSD is a testament to a successful collaboration and long-standing partnership between both companies over recent years, which saw MSD and WuXi Vaccines collaborating on site in Dundalk since 2019.

Speaking about the announcement, **An Taoiseach Simon Harris, TD, said:** "Today's announcement is highly welcome news and is a tremendous vote of confidence in the people of Dundalk and Co. Louth. MSD is a long-standing partner to Ireland and has shown an unwavering commitment both to the country and to its drive to innovate. The acquisition of the Dundalk facility, along with the company's plans to add 150 additional jobs to it, as part of an overall increase of 1,000 positions across its Irish operations in the coming years will play an important role in its development and delivery of innovative products that will improve the lives of millions of people around the world."

Minister for Enterprise, Trade and Employment, Peter Burke, TD said: "Government and the IDA have prioritised the life-sciences sector over many years and this latest development is a testament to the strength of the sector in Ireland. While the IDA's mandate from Government is to attract and retain global blue-chip manufacturing companies to Ireland, I am acutely conscious of the potential that investments such as this by MSD in Co. Louth have to also support strong spinoff opportunities for Ireland. I look forward to working with MSD and the IDA on securing further such signal investments for Ireland."

Michael Lohan, CEO of IDA Ireland, said: "This acquisition and accompanying 150 new roles announcement by MSD Ireland is a huge testament to Ireland's position as a global leader in the pharmaceutical value chain, continuously attracting strategically innovative investments to our shores. Our partnership with MSD Ireland spans nearly 50 years, and it's exciting to see the company continue to both deepen and broaden its roots all across the country, expanding to its new location in Dundalk."

Sanat Chattopadhyay, Executive Vice President and President of MSD's Manufacturing Division, said: "MSD's manufacturing footprint in Ireland is unparalleled, and I am proud to oversee its continuous expansion, always looking to advance the future of health through innovation and acceleration in the service of people and patients around the world. The acquisition of this WuXi Vaccines site in Dundalk will give us the opportunity to do just that: deliver for people and patients faster, looking at the health challenges of today and tomorrow."

Samantha Humphreys, Managing Director of MSD Ireland Human Health, said: "Our company's continued ambition to expand MSD's Irish footprint is a testament to the unique ecosystem around us, and in particular speaks to the passion, commitment and talent of our existing 3,000-strong workforce and what they have been able to accomplish for our global network – from MSD Ireland to the world. I am very proud to be part of this exciting new chapter as we continue to expand, adding new capabilities and challenging ourselves to look at the health requirements of the future."

MSD Ireland is one of the country's leading healthcare companies, having first established in Ireland in 1976. At present, the company has a dynamic and diverse team of over 3,000 employees currently working across seven locations in counties Carlow, Cork, Dublin, Meath and Tipperary. Working across all stages of pharmaceutical development, the company's Irish network is focused on leveraging innovation to respond to the health threats of today and tomorrow, working at the forefront of science

and technology to advance manufacturing excellence and future focused R&D.

The Dundalk site will become part of the company's existing network of five cutting-edge, large-scale pharma manufacturing, research, and development sites across the country – MSD Ballydine, MSD Brinny, MSD Carlow, MSD Dunboyne and MSD Biotech, Dublin – and substantial animal health and human health operations across two locations in Dublin.

GE HealthCare invests €132 ($138) million in Cork, Ireland manufacturing facility to address increasing contrast media demand

30/01/2025

- Taoiseach Micheál Martin turns the sod at GE HealthCare in Carrigtohill site ahead of new facility construction
- New $138 million facility at GE HealthCare's Cork manufacturing site will enable 25 million more patient doses of contrast media per year by the end of 2027
- Demand for CT and X-Ray contrast media, used to enhance medical imaging procedures globally, is estimated to double in the next ten years
- Investment will create additional capacity to cater for growing demand, while offering increased flexibility and resiliency for security of supply

GE HealthCare (Nasdaq: GEHC) today announced a €132 million investment to expand its Carrigtohill contrast media fill and finish manufacturing site in Cork, Ireland. A new state-of-the-art facility on the grounds of the existing site will enable 25 million more patient doses per year of contrast media by the end of 2027, helping address growing global demand. Taoiseach Micheál Martin T.D. turned the sod to formally initiate construction works on the site of the new facility.

Contrast media are injectable diagnostic imaging agents used to enhance visualization of organs, blood vessels and tissues during medical imaging. Global demand for iodine-based contrast media, used in X-Ray, Computed Tomography (CT) and Interventional procedures is expected to double in the next decade, driven by ageing populations and the increasing global prevalence of chronic disorders. In 2024, the Carrigtohill facility, along with GE HealthCare's other fill and finish production sites in Shanghai, China, and Oslo, Norway, supplied over 100 million patient doses of contrast media around the world.

The new 3,000m2 facility - which will support both established and pipeline products – will include solution preparation vessels, multi-functional powder handling systems, a new filling line and

autoclaves, with advanced automation systems underpinning production. Once established, the additional capacity will cater for the growing global demand, while offering increased flexibility and resiliency across GE HealthCare's contrast media production network for security of supply.

Speaking at the sod turning, **Taoiseach Micheál Martin T.D. said,** "GE HealthCare has been manufacturing in Ireland for more than 30 years, and has invested extensively in the Carrigtohill site and the people working here. I am delighted to welcome this significant new investment here in Cork, which is testament to the commitment of GE HealthCare in Ireland, and also to our highly skilled workforce."

President & CEO of GE HealthCare's Pharmaceutical Diagnostics (PDx) segment, Kevin O'Neill, said, "As an industry leader we have a responsibility to help meet the growing global demand for contrast media from healthcare providers and their patients. This new facility demonstrates our broader commitment not just to address future demand, but also to increase resiliency and security of industry supply for customers."

Eugene Barrett, Site Leader and Managing Director, GE HealthCare Ireland, said: "This expansion strengthens our longstanding presence in Cork, where we have a highly skilled team, access to leading talent in the pharmaceutical industry, strong distribution links around the world and a great partnership with IDA Ireland. First doses from our new facility are expected by the end of 2027 and we are proud of the impact our site will continue to make for patients around the world."

IDA Ireland CEO Michael Lohan said, IDA Ireland CEO Michael Lohan said: "Today's announcement by GE Healthcare to expand their manufacturing facility and related expertise for producing vital pharmaceuticals and creating employment opportunities is very welcome. It's an endorsement from GE HealthCare senior leadership team of the confidence in the capability and competency of the team at the Carrigtohill campus developed over three decades. I wish GE HealthCare every success with this investment and assure them of IDA Ireland's continued partnership and support."

All stages of GE HealthCare's contrast media manufacturing, from development of Active Pharmaceutical Ingredient (API) to finished product, adhere to Good Manufacturing Practices. With over 4000 employees globally, the PDx business also develops and supplies radiopharmaceuticals used to support diagnosis, monitoring and treatment selection across Neurology, Cardiology and Oncology clinical pathways. Across its portfolio, PDx enables four patient procedures every second globally.

Engineering firm, IPS-Integrated Project Services, will lead the project with enabling construction works starting at the Carrigtohill facility in February 2025, and over 250 construction roles expected to be created.

AbbVie Success in Ireland
8 diverse sites across Ireland employing 2,500+ people

Success Story undated

- Company presence in Ireland dates back five decades
- Close to 2,600 people employed at AbbVie in Ireland

Azita Saleki-Gerhardt, AbbVie EVP, Chief Operations Officer says:

"Ireland plays a critical role in supporting AbbVie's international operations. Our new AbbVie North Dublin (AND) facility will be a key node in AbbVie's global Operations network, serving as a European hub bringing together our Dublin-based supply chain, engineering, quality assurance and manufacturing teams for the first time ".

AbbVie

AbbVie was founded in 2013 when it became a separate company from Abbott Laboratories. Headquartered in Chicago, AbbVie are one of the largest biopharmaceutucal companies in the world. Its products treat more than 62 million people every year, affected by over 60 conditions. The company is present in over 70 countries and its total headcount is close to 50,000 people.

AbbVie in Ireland

AbbVie's presence in Ireland dates back to 1974, combining the company's own investment with facilities acquired through buyouts. It has eight sites in Ireland that, together, employ more than 2,600 people. Its site at Carrigtwohill near Cork celebrated its 20th anniversary in 2022, and the company has plants and office hubs in Dublin, as well as manufacturing medicines for global supply at locations on the west coast of Ireland, at Westport in County Mayo and in Sligo.

Ongoing investment

Recent expansion at its site on the outskirts of Cork involves a new €63 million facility using new technologies to support AbbVie's aesthetics business. The site will employ 70 people in roles including sterile manufacturing, quality control and engineering. The site is due to be operational from 2025.

In 2020, when AbbVie completed its buyout of Allergan, the companies opened a second facility in Westport for producing Botox, in a $176 million investment. The 750,000 sq ft site employs 1,400 people.

In 2018, AbbVie spent $139 million on expanding one of its two plants in Sligo, to increase capacity to produce cancer drugs. That followed a $115 million investment four years previously to produce oral hepatitis C drugs in Sligo.

How Ireland Helps AbbVie

- Company presence in Ireland dates back five decades
- Close to 2,600 people employed at AbbVie in Ireland
- Activities in Ireland span commercial and manufacturing
- AbbVie continues to invest in its eight Irish sites spanning the country

Takeda Success in Ireland
Varied functions in Ireland for Asia's largest pharma company

Success Story undated

- Takeda's Irish operations continue to grow; a new cell therapy facility opened in 2022
- More than 60 international markets served from Ireland

Paul Keogh, Grange Castle Site Head, Takeda says:

"The Grange Castle site is growing from strength to strength thanks to a great team and strong investment in our people and technology. The treatment produced here will be delivered to patients within 72 hours of being released from Grange Castle which means we are closer to the patient than we have ever been and this brings a great sense of pride to our team".

Takeda

Tokyo-headquartered Takeda is the largest pharmaceutical company in Asia and one of the top 20 largest pharmaceutical companies in the world by revenue. The company traces its origins back to 1781.

Today, Takeda focuses on four therapeutic areas: oncology, rare genetics and haematology,

neuroscience, and gastroenterology. It also makes targeted R&D investments in plasma-derived therapies and vaccines.

Over 25 years on Irish soil
Takeda celebrated 25 years of business in Ireland in 2022. Since first establishing its manufacturing facility at Bray, County Wicklow in 1997, the company has set up three other locations in Ireland at Baggot Street, Citywest and Grange Castle in Dublin, providing medicines to patients in more than 60 international markets.

Together, Takeda's sites in Ireland employ more than 900 people in a variety of roles including commercial operations, manufacturing, supply chain, quality, and corporate services

A first in Ireland
The company has continued to expand its Irish operations. In 2022, it opened a cell therapy production facility at its Grange Castle site, said to be the first of its kind in Ireland. The company said the site will play an important role in supplying European, US and Canadian markets with a cell therapy treatment option for patients. There are over 100 people currently working at the cell therapy facility with another 100 new jobs expected to be filled.

How Ireland Helps Takeda

- Takeda set up its first Irish operation in 1997
- More than 900 people are now employed across three sites in Ireland
- Takeda's Irish operations continue to grow; a new cell therapy facility opened in 2022
- More than 60 international markets served from Ireland

Why Ireland: The Southeast

Promotion not dated

Talent in the South East

Talent is a key driver for inward investment, and recent developments have had a transformative impact in providing a base for talent in the Southeast of Ireland, firmly putting the region on the map for multinationals.

Comprising counties Carlow, Kilkenny, Wexford and Waterford, the region has made great strides in recent years. IDA Ireland currently has 86 client companies employing 15,301 people directly, with a 43% increase in jobs from foreign direct investment (FDI) over the past 10 years. The region has won investments across several key sectors including life sciences: biopharmaceuticals, food and medical technologies; international financial services; technology; and engineering.

State investments in infrastructure have played an important role in facilitating this growth, including the M9 and M11 motorways, along with the Waterford ring road and suspension bridge, and the Rose Kennedy bridge connecting Wexford and Waterford.

Combined, this investment has enabled talent mobility within the region; Kilkenny city is now just 30 minutes' drive from Waterford city and Carlow town. The region as a whole now benefits from enhanced onward connectivity to other parts of Ireland, with journey times to Dublin, Cork and Shannon airports shortened significantly: a key point of attraction for busy overseas executives.

As this major infrastructural investment has been delivered, we've correspondingly seen a lot of inward migration into the region. The Southeast's population grew by 8% in the inter-census period between 2016 and 2022, to 456,000 people. Within this, the population of Waterford city and suburbs grew by 12.3%, making it the fastest growing of Ireland's five large urban centres.

Continued investment in infrastructure

And the growth trend looks set to continue. The Irish Government's national planning framework (NPF) has designated Waterford as a 'regional city of scale', which means it will benefit from continued major investment.

The flagship Waterford North Quays regeneration project, currently well underway, is one of the top ten projects included in the NPF, which will see more than €400 million invested in road and infrastructure works, affordable housing, hotels, office and retail space.

A new bridge, to be installed in early 2025, will significantly change the shape of the city, opening it up to further development and growth.

The Southeast's attractiveness to talent is also helped by a range of amenities that appeal to people who enjoy a mix of the cultural, the urban and the outdoors. These include the region's superb 147km coastline, which is longer than the Netherlands and Belgium combined, with numerous beaches, river valleys and villages.

Education meeting industry needs

A major milestone in the region's development was the formation in 2022 of South East Technological University (SETU), through the merger of Carlow and Waterford Institutes of Technology. SETU has 18,000 students across three campuses, making it a major hub for talent development and it plays a pivotal role in enabling the growth of many multinationals across key sectors.

SETU degree courses include nine-month internships built into the curriculum, creating an attractive talent pipeline for companies. The University has also collaborated with numerous IDA Ireland clients in designing and developing courses, to ensure its graduates are fully skilled and ready for the modern workplace. The feedback we hear from existing and new clients about this is that they see this as genuinely unique.

In an ambitious move, SETU, supported by the Department of Further Higher Education and Skills, acquired the 37-acre site of the former Waterford Crystal factory in 2024. It plans to transform this into a new university and enterprise quarter, aimed at bringing companies and researchers closer together.

Fostering close collaboration between research and industry

The first building on this site, a new 10,000 sq m Grade-A office building, is almost complete. SETU is also constructing a new engineering and ICT academic building, and is planning a health sciences building to accommodate its recently won pharmacy and veterinary degree programmes.

SETU's record of working with companies is really impressive, and I've seen this first hand in meetings with multinationals that are evaluating the region as a base of operations. The extent to which the university has built out the talent pool to support companies in multiple sectors is impressive, with a collaborative approach that has led to developing training programmes and curricula that directly meet the needs of industry partners not just in the region but further afield.

The Southeast has many large-scale life sciences and medical technology manufacturing operations. Among the leading names are Abbott, which recently opened a new 30,000 sq m facility in Kilkenny. When fully operational, this site will employ 800 people. Others include MSD, Bausch & Lomb, West Pharmaceuticals, Amgen, Teva, Jabil Healthcare, and the French pharma giant Sanofi.

A track record in life sciences and medtech

Sanofi is one of the largest companies in the Southeast with more than 1,000 employees on site. It's been in Waterford for over 20 years and continues to grow its workforce and activities, leaning hard into innovation and advanced manufacturing technologies.

Education options in the region aren't limited to University graduate roles: Waterford City's enterprise training board is serving a broad employment base by investing in purpose-built clean room sites for

training people in a range of roles in biopharma manufacturing, such as operations and packaging. This allows people who are working in other sectors to reskill in months.

Moves like this ensure the talent pipeline continues to increase even as foreign direct investment is rising across the Southeast. As well as sectors like biopharma, pharmaceuticals and medical technologies, other companies are active in financial services, technology, and international business services.

Financial services, powered by technology

There is a strong financial services cluster in the Southeast, anchored by firms like Unum, SunLife and State Street. Fund management and insurance are at the core of these operations, and much of the sector's recent growth in the region has come on the back of expertise in technology and cybersecurity. Some of the companies in the region date back two decades. They also enjoy high levels of staff loyalty, with many people staying at the same company for a long time. State Street is an excellent example of an IDA Ireland client that has continued to grow over a 20-year period.
In March 2024, the company officially opened its 65,000 sq ft state-of-the-art office building in Kilkenny. This is now home to State Street's global cybersecurity centre; a real vote of confidence in the technology sector in the Southeast.

There are two things worth remarking on here: State Street is one of a growing pool of companies that have chosen to locate strategically important cybersecurity sites in Ireland to protect their operations from cyber risks. Other companies in sectors like pharmaceuticals have also chosen this approach, and are using Ireland as a base for these vital business functions.

Secondly, State Street is so confident of sourcing the talent it needs that it chose Kilkenny, outside potential locations where many leading pure-play cybersecurity brands have traditionally set up. State Street made a point of referring to the region's "exceptional talent pool" at the company's investment announcement. Not long after that significant win, UKG, the largest privately held software company in the US, revealed it would create 200 jobs in the Southeast. It's yet another endorsement of what the region has to offer.

The Walton Institute has been another key factor in technology investment in the Southeast. Formerly known as TSSG, Walton is an internationally recognised centre of excellence for technology research and innovation. Named for Ernest Walton, who won the 1959 Nobel Prize for splitting the atom, the centre's expertise spans communications networks and mobile, IoT, machine learning and AI, augmented and virtual reality, and molecular communications. It has completed hundreds of projects with industry partners and has spun out multiple startups.

Engineering the future

The region as a whole can also call on a strong heritage in engineering, with a tradition in agricultural engineering activity across Carlow, Wexford and Waterford. That's reflected today in sites like Sulzer in Wexford which is a centre of engineering excellence and includes research and development (R&D) as well as manufacturing and testing facilities. The site marked its 50th anniversary in Ireland in 2023.

> In the Southeast, there's been a strong growth in engineering companies like STS, Weltec, Suir Engineering and others, which now provide services to many of the multinationals in IDA Ireland's client base, providing the expertise needed to build data centre facilities or pharma manufacturing plants.

IDA Ireland also supports manufacturing investments through its Advanced Building Solutions. There is now a third such site in Waterford; construction is complete on another in Carlow, and we are currently working with Wexford County Council on the advance planning permission for an Advanced

Technology Building in the town of Enniscorthy. These investments greatly shorten the timeframe for investors to scale rapidly.

With the Government's announcement of Designated Marine Area Plans, we anticipate further opportunities for engineering around sites like Tonn Nua, the 900MW offshore wind farm that will be anchored to the sea floor off the coast of Tramore.

Working together to drive investment

It's an exciting time for transformative projects like this, not just on a regional level but a national one. They will involve multinationals and local partners which is why we at IDA Ireland are actively engaging with all our stakeholders in the region: local authorities, education providers, chambers of commerce and industry groups. Foreign direct investment is a team sport. We have to work together to inform, enable and motivate everyone to address the needs of current and future investors.

With a strong and stable base of multinationals, local supplier support, enhanced infrastructure and high-quality talent, it all adds up to a warm welcome for companies expanding their operations in Ireland, or those seeking a base here for the first time.

IDA Ireland launches new five-year strategy Adapt Intelligently: A Strategy for Sustainable Growth and Innovation, 2025-29

19/02/2025

New strategy will:

- Focus on winning, strengthening and maintaining long term investment with existing and new client base
- Secure 1,000 new investments will deliver €250bn to the Irish economy and further embed FDI clients in Ireland.
- Scale RD&I investment to €7bn to position Ireland at the centre of cutting-edge global technological innovation in next 5 years
- Enable upskilling of 40,000 people within IDA Ireland client base
- Support the creation of 75,000 new jobs across priority sectors of growth and opportunity
- Enhance balanced regional development through securing 550 investments into regional locations
- Support 35% reduction of carbon emissions by IDA Ireland clients and attract new green and digitally enabled investments

IDA Ireland today unveiled its new five-year strategy, Adapt Intelligently: A Strategy for Sustainable Growth and Innovation, 2025-29, building on its previous success in helping to transform the Irish economy. The strategy has been developed from a position of strength evidenced by the significant economic impact delivered to Ireland and the global economy through the investments from IDA Ireland's client base.

The FDI sector, established and embedded in Ireland, is a national asset which has been transformative for the economy and the people of Ireland, accounting for 11% of total national employment and expenditure of over €38bn in the Irish economy annually. Ireland is viewed internationally as a centre for value and knowledge creation, exporting over €420bn in goods and services globally on an annual basis.

The new strategy, which is aligned with the Programme for Government and the White Paper on Enterprise, sets out IDA Ireland's ambition for continued growth through four key strategic objectives:

- Strengthen long term investment
- Scale cutting-edge innovation

- Drive sustainable change
- Maximise regional opportunities

While recognising the challenges ahead for FDI investment including increased competition, geopolitical uncertainty, and rapid technological change, IDA Ireland has identified four key growth drivers – **digitalisation and AI; semiconductors; health; and sustainability** - which will lead to a range of intersecting and connected opportunities across IDA Ireland's core sectors of focus – Life Sciences, International Financial Services (IFS), High Value Manufacturing, Engineering, and Technology and Content & Consumer Services.

STRATEGIC OBJECTIVES

Strengthen long term investment

IDA Ireland will prioritise retaining and renewing the 1,800 client companies based in Ireland, acknowledging their vital role in the Irish economy. We will partner with them as they aim to enhance their competitiveness and productivity through transformative talent development initiatives and assist them in navigating challenges and seizing opportunities in a changing global economy.

Scale cutting-edge innovation

Ireland's FDI base has helped position the country as a central hub for global technological innovation. The new strategy aims to build on the existing innovation ecosystem, enhance pan-European and global innovation linkages, and increase the scale and impact of innovation by supporting next-generation and collaborative research, development, and innovation (RD&I).

Drive sustainable change

IDA Ireland client companies are instrumental in shaping a green and digital global economy. Ireland has the potential to be a prime location for green-powered and digitally enabled enterprises. IDA Ireland will collaborate with clients to enhance their digital maturity and sustainability, while attracting a new wave of green and digitally enabled investments.

Maximise regional opportunities

Maintaining the strength of Dublin as a key global hub remains a strategic priority. The significance of our capital city enables the attractiveness of Ireland and supports our ambition for balanced regional development. IDA Ireland client companies employ over 165,000 people in regional locations across Ireland, benefiting from the local ecosystem, infrastructure, and talent to drive investments. The regional strategy has proven to be successful, and IDA Ireland is committed to further enhancing regional opportunities for clients by providing next-generation sites and building solutions.

TARGETS

In pursuit of these objectives, IDA Ireland will win **1,000** investments to:

- Secure €7bn in new RD&I investment
- Deliver 550 regional investments
- Reduce IDA Ireland client carbon emissions by 35%
- Create 75,000 jobs
- Upskill 40,000 people

In turn, this will support IDA Ireland client spending in Ireland of €250bn over the lifetime of the strategy on wages, Irish goods and services, and capital investment, providing further opportunity and economic impact across local supply chains. By 2030, the strategy aims for a more competitive, innovative and sustainable FDI environment in Ireland. The ambitious plan underscores Ireland's commitment to fostering a resilient economy, adapting intelligently, and seizing new growth opportunities in an era of change and evolvement.

Minister Peter Burke, Minister for Enterprise Tourism & Employment said: "I very much welcome the publication of IDA Ireland's new strategy today and recognise the importance of ensuring

we work together to protect FDI's position as a cornerstone of Irish economic success. Ireland remains committed to foreign direct investment (FDI) as one of the key components of the Irish economy. We have proven adept in the past at anticipating and responding to shifts in the global landscape, realising growth opportunities as sectors evolved and new technologies emerged. In a period of marked global change and uncertainty, this strategy will direct the focus of IDA Ireland as it partners with client companies to enhance the resilience, productivity, and innovation of Ireland's FDI base.

In a world of uncertainty, companies can be certain that Ireland remains determined to remain a leading location in which to grow, innovate and succeed. Through decades-long partnership across the public and private sector, Ireland has won investment and built up an FDI base in high value, cutting edge services and manufacturing sectors. Protecting this existing base, positioning it for further success and securing the next generation of investment is of critical importance. This strategy will ensure IDA adapts to a changed global landscape to achieve these ambitious objectives."

Feargal O'Rourke, Chairman IDA Ireland said: "Our new strategy is designed to keep the FDI pipeline strong but also to recognise the importance of holding on to what we have. FDI companies in Ireland tell us of their need to constantly show relevance back at corporate HQ whether it is upskilling their employees with digital and AI skills, having a sustainable operation, or maximising their effectiveness and efficiency. Our role is to help our client companies in these areas and our strategy will underpin this. If we can lead, and play our part in delivering on our strategy, it will have a positive societal and economic impact for Ireland. While today marks the launch of our strategy, it also represents an opportunity for Ireland to recommit to a strong FDI strategy and to, in a sense, "renew our vows" to make Ireland the best, most sustainable and most welcoming country in the world for FDI."

Michael Lohan, CEO IDA Ireland said, "Innovation, competitiveness, resilience and ambition are at the core of our new strategy that is designed to further propel FDI in Ireland. I am extremely proud of the performance by the IDA team who, in partnership with our 1,800 clients and stakeholders, have achieved exceptional results against the objectives set out in our previous strategy. The impact of FDI is reflected in every facet of the Irish economy from our employment numbers to our enterprise base, integrated supply chains and the development of critical infrastructure.

We are now ready to rise to the challenges of today. Our new strategy recognises the scope and scale of our clients' activities, their transformational journeys, as well as the complexities of the global landscape in which IDA Ireland and our clients now operate. It identifies Ireland's areas of strength and the opportunities for continued FDI growth. It is now absolutely crucial that we build on the solid foundation we have laid and focus on continued partnerships with the strong FDI base in every region in Ireland, to drive sustainable growth through capital investment, innovation and talent development that will strengthen, maintain and deepen our position as a location of choice for continued foreign direct investment.

Download Adapt Intelligently: A Strategy for Sustainable Growth and Innovation here

Enterprise Ireland Become more innovative

Irish organisations secure €836 million in Horizon Europe Research and Innovation Funding since 2021

5th December 2024

Pictured (from left to right) Micol Martinelli, National Director for Horizon Europe at Enterprise Ireland, Colm O'Reardon, Secretary General at the Department of Further and Higher Education, Research, Innovation and Science, Mairead McGuinness, Former EU Commissioner.

- ***1,295 projects involving 487 individual Irish organisations have secured funding since 2021***
- ***Ireland ranks ahead of its 1.6% target having already secured €836m from the €39 billion awarded to date***
- ***Marking the halfway point, Enterprise Ireland hosts Horizon Europe Impact Conference***

Irish organisations have been awarded more than €836 million in funding from the EU's **Horizon Europe 2021 -2027** research and innovation programme. The current seven-year programme aims to support organisations to tackle global challenges, conduct groundbreaking multidisciplinary research and boost the EU's industrial competitiveness and growth.

Ireland's overall national drawdown target is €1.5bn or 1.6% of Horizon Europe's €93.5bn budget from 2021-2027. To date, Irish organisations have been granted €836.4m which equates to 2.14% of the €39 billion awarded so far, showing that Ireland is tracking ahead of its target at just past the halfway point of the programme.

The €836 million secured by Irish organisations is distributed across 1,295 projects involving 487 individual Irish organisations and businesses. Almost half of those 487 organisations (47%) have been awarded more than a quarter of a million euro, while one in five have secured greater than €1 million.

Successful applicants from Ireland are drawn from a range of sectors and include higher education institutions, research performing organisations, public organisations and SMEs. 217 Irish SMEs have been awarded €233m under Horizon Europe and Ireland ranks at number four amongst the 27 EU member states for SME participation in projects.

The top three biggest funding successes for Ireland under the Horizon Europe framework programme areas are:

1) the European Research Council's grants for academic researchers - €131m
2) the Digital, Industry & Space programme area - €122m
3) the Food, Bioeconomy, Natural Resources, Agriculture and Environment programme area - €121m

The figures were announced today as more than 600 delegates including EU member state representatives, policy makers and industry leaders from the research and business community attend the Horizon Europe Impact Conference at the Convention Centre in Dublin. This in-person conference will highlight Ireland's success in Horizon 2020 and Horizon Europe by showcasing the benefits that participation from small and large enterprises, academic researchers and other stakeholders has produced.

Speaking at the conference, **Colm O'Reardon, Secretary General** at the Department of Further and Higher Education, Research, Innovation and Science said, *"This is a welcome opportunity to take stock at the halfway point of Horizon Europe, to reflect on our successes so far and look forward to Ireland leading and participating in impactful research and innovation projects with our international partners."*

Enterprise Ireland leads the Horizon Europe **National Support Network** which aims to promote and secure funding for Irish research projects. Opening the conference Micol Martinelli, National Director for Horizon Europe in Ireland, welcomed the European delegation to Dublin and commended the talent and calibre of innovation coming out of Ireland in recent years.

"*Ireland's overall success in the Horizon Europe programme, supported by Enterprise Ireland and nine other government agencies and departments, shines a spotlight on the innovation capability of Irish organisations which are competing and winning on a pan-European level. This EU funding is instrumental in providing critical support to enable researchers to further develop their innovations which will influence and strengthen EU policy for the good of future generations.*

"However, funding awards are not the only success story – the collaboration and building of partnerships and relationships with organisations in other countries is a key driver of impact for research and innovation overall. To unleash Ireland's full potential, we want to encourage and facilitate newcomers and to build on Irish participation for the remainder of the Horizon Europe programme and beyond."

The Horizon Europe Impact Conference will cover the three pillars of Horizon Europe's focus including research excellence, researcher mobility and talent; global challenges and European industry competitiveness; and innovative Europe, which will focus on starting, scaling and financing companies, particularly deeptech companies.

Conference delegates will hear from industry and academic leaders and senior figures from the European Commission including Mairead McGuiness former European Commissioner, Henriette Van Eijl, Deputy Director for Health and Societal Transitions, European Commission and Luke O'Neill, Professor of Biochemistry in the School of Biochemistry and Immunology, Trinity College Dublin.

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Centre for Applied Bioscience Research Partners with the Irish Cosmetics Sector, Securing €1 Million to Boost Innovation

11th December

Dedicated to supporting Irish enterprise, innovation and development, the Centre for Applied Bioscience Research, a leading Research Centre and Technology Gateway based in MTU, Tralee and TUS, Limerick is thrilled to announce that it has successfully secured nearly €1 million in research funding from Enterprise Ireland and industry.

Partnering with Pestle & Mortar in Kildare, Wicklow based Inis and VOYA established in Sligo, the Centre takes an all-island approach to collaboration. This significant investment will enable the Centre to support Irish industries to advance their sustainable initiatives aimed at enhancing product efficacy.

Allocated across three independent cutting-edge projects, research will focus on developing innovative natural ingredients, building green processing practices and generating new product results within the cosmetics industry.

Dr Tim Yeomans, Centre Manager said *"We are excited to embark on this journey with our partners Pestle & Mortar, Inis and VOYA. This funding not only underscores the importance of research and development in the cosmetics sector but also highlights the commitment of Irish companies to innovate and lead in sustainability."*

Marina Donohoe, Head of Research and Innovation, Enterprise Ireland said, *"The Irish health and beauty sector is going from strength-to-strength and Ireland is increasingly recognised internationally as an incubator of innovative health and beauty companies offering sustainable products. Moving the dial even further through research and supporting companies to have a science backed approach gives these companies a competitive edge in a growing and competitive global market. Enterprise Ireland is delighted to support the Centre for Applied Bioscience Research and the innovative companies that are growing and developing their product lines for global consumption through collaboration with the Centre."*

The collaborations, led by Dr Emma Murphy in TUS and Dr Joanna Tierney and Patrick Quille in MTU, are expected to yield significant advancements in product development and provide Irish cosmetics companies with the tools and knowledge necessary to meet the evolving demands of consumers. The Centre for Applied Bioscience Research (CABR) is dedicated to supporting the growth of the industry and enhancing Ireland's reputation as a hub for cosmetic innovation.

The CABR Technology Gateway is co-funded by the Government of Ireland and the European Union through the European Regional Development Fund (ERDF) under the Southern, Eastern & Midland Regional Programme 2021-27.

Enterprise Ireland launches Sustain-FIT programme to advance sustainability research

31 January

Enterprise Ireland has today announced the launch of the Sustain-FIT Programme (2025-2029), a transformative initiative designed to strengthen Ireland’s sustainability and digitalisation research capabilities while addressing the urgent need for climate action.

Co-funded by Enterprise Ireland and the European Union under Horizon Europe, the approximately €15 million programme will recruit 50 postdoctoral researchers from across the world to collaborate with Irish companies on innovative sustainability-focused research projects.

The first call for applications opens in February 2025, offering 25 Marie Skłodowska-Curie Fellowships, with a second call in Autumn 2025 for the remaining fellowships.

Minister for Enterprise, Tourism and Employment Peter Burke, said:

"Sustain-FIT represents an important step forward for Ireland's climate ambitions, offering businesses an unprecedented opportunity to lead the way in sustainability and digital transformation through research and innovation. This programme will position Ireland as a hub for industrially focused sustainability research while contributing to global climate solutions.

Sustain-FIT will build on the excellent research and innovation programmes delivered by Enterprise Ireland that ensure the adaptability of Irish companies. Government is committed to supporting research and innovation across all sectors and recognises the important part it plays in Ireland's ability to successfully address the digitalisation and climate transitions."

Kevin Sherry, Executive Director at Enterprise Ireland, said:
"Sustain-FIT is a unique initiative that demonstrates Ireland's commitment to advancing sustainability research while fostering strong academic-industry partnerships. By attracting exceptional global talent, we are equipping Irish enterprises with the expertise needed to tackle climate challenges and drive sustainable innovation."

Empowering Irish Businesses Through Sustainability Research
Sustain-FIT will enable participating researchers to work closely with an Irish Higher Education Institution (HEI) or Research Performing Organisation (RPO) and a partner company to deliver impactful three-year projects. Researchers will also complete a 6–12-month secondment within the partner company, gaining valuable first-hand exposure to industry processes while driving meaningful sustainability initiatives.
Enterprise Ireland has created a dedicated portal where Irish companies can advertise their interest in hosting researchers, giving businesses of all sizes a chance to attract world-class talent and benefit from fresh, innovative ideas.

Driving the European Green Deal in Ireland
The Sustain-FIT programme aligns with the European Green Deal, which sets out ambitious sustainability objectives across key areas such as clean energy, sustainable mobility, biodiversity, and climate neutrality. Researchers are encouraged to focus their projects on these pillars, as well as digitalisation initiatives that support Green Deal goals.

Opportunities for Researchers and Companies
Researchers: Applicants must have resided outside Ireland or have been in the country for no longer than 12 months prior to the call deadline. They will benefit from comprehensive training, academic supervision, and industry mentorship to build enterprise-focused sustainability skills.
Companies: Eligible Irish enterprises of all sizes can host researchers to inject new talent, drive innovation, and gain competitive advantage in sustainability and digitalisation.

Programme Timeline
- February 2025: First call for applications opens.
- Summer 2025: 25 fellowships announced.
- Autumn 2025: Second call opens for remaining fellowships.

Throughout the three-year programme, researchers will showcase their projects' outcomes at regular events, fostering collaboration within the Sustain-FIT cohort and helping to build a new cadre of sustainability research experts in Ireland.

For More Information
Visit Sustain-FIT | Horizon Europe
Or contact the Sustain-FIT help desk: sustain-fit@enterprise-ireland.com

Minister Burke announces over €12 million capital investment in equipment for industry research and innovation

10th February

Pictured (from l-r): Franklin Silva, Software Engineer Robot Operator TUS; Muhammad Babar Imtiaz, COMAND Technology Gateway; Minister for Enterprise, Tourism and Employment, Peter Burke with Mark Whelan Technology Gateway Programme Manager, Enterprise Ireland.

10 projects to receive €12.1 million in funding to access cutting-edge equipment to increase R&D collaboration and competitiveness for companies through the Technology Gateways and Technology Centres based in the Third Level Sector nationwide.

Minister for Enterprise, Tourism and Employment, Peter Burke T.D. has announced the successful applicants to the latest round of the Capital Equipment Call, administered by Enterprise Ireland (EI) through the Technology Gateway and EI/IDA Technology Centre Programmes.

Ten successful projects from across the third-level sector have secured €12.1m in funding to improve the capabilities of the existing Technology Gateways and EI/IDA Technology Centres by investing at a scale that allows them to bridge the gap between their existing capabilities and the state of the art.

With individual awards of up to €2million available the equipment funded through this Call will become an engine of economic development for local companies, in particular Small and Medium Enterprises who could not afford to invest at this scale. The new equipment will particularly help companies develop new products and services in areas focusing on Sustainability and Manufacturing Productivity.

Since 2019, the Capital Equipment Fund administered by Enterprise Ireland has funded over 200 equipment purchases with a total value of €55 million.

Minister for Enterprise, Tourism and Employment, Peter Burke TD said:
"I am delighted to announce that my Department, through Enterprise Ireland, is providing over €12.1 million to fund state of the art equipment for our Technology Gateways and Technology Centres. Innovation is essential for all companies to adapt and deliver novel products and services, making them more competitive in their respective markets. This funding will further add to our system of supports to our enterprise sector, with the new equipment being an important tool for companies on their growth and innovation journey.

This announcement builds on my Department's ongoing investment in equipping our research and innovation system, bringing our total funding to €55 million. It will allow our research network to continue to provide cutting edge support to Irish enterprise across all sectors and all regions in Ireland, providing more quality jobs along the way."

Marina Donohoe, Divisional Manager, Research & Innovation at Enterprise Ireland said:

“The scale of this investment will have an extremely positive impact on companies in Ireland, in particular the Small and Medium Enterprises (SMEs). The cost of the equipment funded here is prohibitive to most SMEs so the provision of it in the Technology Gateways and Technology Centres means companies will have access to leading edge facilities that will in turn help to improve their technical capabilities and deliver world leading products and services. With an emphasis on sustainability, the new equipment will provide Irish companies with the means to dramatically improve their competitiveness whilst also positively contributing to Ireland’s action on Climate Change.”

SEAM Research Centre celebrates 15th year milestone with landmark launch

21 February

SEAM Research Centre:

• SEAM Research Centre is the Leading Technology Gateway Centre in Ireland providing Materials Engineering solutions for wide ranging industrial sectors (Medical, Pharma, Precision Engineering, Electronics, Construction, Food, etc).

• SEAM has executed over 50 long duration projects arising from Innovation Partnership/DTIF/EU programmes.

• SEAM represents SETU as partner member of I-Form (Research Ireland's Advanced Manufacturing Research Centre).

• As part of academic research, SEAM supervises master and PhD students in the field of Additive Manufacturing (3D printing) of medical device components, development of sustainable Cement and Concrete materials, engineering simulations for optimisation of product components and process improvements.

1: The South Eastern Applied Materials (SEAM) Research Centre has marked its 15th anniversary with the launch of Ireland’s largest Industrial CT and X-ray Imaging Solutions Centre and the opening of the Materials Sustainability Laboratory at South East Technological University (SETU). Pictured at the launch event on Friday, 21 February were (front row L-R): Minister Mary Butler TD, Government Chief Whip and Minister of State at the Department of Health with responsibility for Mental Health, Professor Veronica Campbell, President, SETU, Minister James Lawless TD, Minister for Further and Higher Education, Research, Innovation and Science, and Dr Ramesh Raghavendra, SEAM Research Centre Director. (Back row l-r), Agnieszka Furman, SEAM, Professor Patrick Prendergast, Chairperson of the SETU Governing Body and Chancellor of the University, Marina Donohoe, Divisional Manager-Research & Innovation, Enterprise Ireland, Dr Ciarán Seoighe, Deputy CEO, Research Ireland, Minister John Cummins TD, Minister of State at the Department of Housing, Local Government and Heritage and Dr Ken Thomas, Head (Waterford) Faculty of Engineering & Built Environment at SETU. Picture: Patrick Browne, Browne’s Photography.

2: South Eastern Applied Materials (SEAM) Research Centre has marked its 15th anniversary with the launch of Ireland's largest Industrial CT and X-ray Imaging Solutions Centre and the opening of the Materials Sustainability Laboratory at South East Technological University (SETU) Pictured at the launch event on Friday, 21 February were Marina Donohoe, Divisional Manager-Research & Innovation, Enterprise Ireland Professor Veronica Campbell, President, SETU, Minister James Lawless TD, Minister for Further and Higher Education, Research, Innovation and Science, Dr Ciarán Seoighe, Deputy CEO, Research Ireland and Dr Ramesh Raghavendra, SEAM Research Centre Director.

- **The launch of the €2.2 million high-power (450kV) CT scanner cements SEAM Research Centre as the centre of excellence in Industrial CT applications in Ireland and beyond.**
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- **SEAM's €1.6m Materials Sustainable will help companies on their green transition leading to reduced waste, reduced pollution and lowered CO_2 emissions.**

The South Eastern Applied Materials (SEAM) Research Centre has marked its 15th anniversary with the launch of Ireland's largest Industrial CT and X-ray Imaging Solutions Centre and the opening of the Materials Sustainability Laboratory at South East Technological University (SETU).

The milestone celebrations took place on Friday, 21 February during SEAM's Industry Day, which welcomed industry and academic delegates from across the country to SETU's Cork Road Campus in Waterford.

SEAM, Ireland's leading Technology Gateway Centre, based at SETU's Applied Technology Campus, plays a pivotal role in providing materials engineering solutions to a wide range of industrial sectors.

The newly unveiled €2.2 million, high-power (450kV) CT scanner, funded under a Research Ireland Infrastructural Call Programme, strengthens SEAM's analytical capabilities, particularly for large and dense samples such as EV batteries. This advancement enables SEAM to rebrand its CT division as the 'Industrial CT & X-ray Imaging Centre of Ireland'.

In tandem, the €1.6 million Materials Sustainability Laboratory, funded through Enterprise Ireland's Capital Infrastructural and Innovation Partnership Programme, will support companies to adopt sustainable manufacturing practices. The facility aims to help companies reduce waste, pollution, and CO2 emissions, aligning with Ireland's sustainability and green transition goals as outlined in the Government's 'Project Ireland 2040' strategy.

Minister James Lawless, TD, Minister for Further and Higher Education, Research, Innovation and Science, officially unveiled the new facilities, stating, *"Today is the culmination of several years of planning and execution and, also, the start of a new phase in SEAM's journey, as its services and capabilities increase.*

"Today, in many respects, is a call to action to industry and other partners to consider the impact that SEAM can have on your operations and the help that it can provide through these great new facilities.

"SEAM has been blazing a trail for this region over the past 15 years, providing assistance to industries in the South and South-East region and beyond – supporting over 325 Irish based companies, including both multinationals and SMEs and executing over 4,000 directly-funded projects over that time.

"What we see here today is an excellent example of work that is progressing across Government, with different Departments and agencies progressing the initiatives for which they are ultimately responsible and accountable for but working to a common agenda to further our national interest."

Minister Mary Butler TD, Government Chief Whip and Minister of State at the Department of Health with responsibility for Mental Health, and Minister John Cummins TD, Minister of State at the Department of Housing, Local Government and Heritage, were among the invited guests.

Professor Veronica Campbell, President of SETU, in delivering the welcome address, remarked, *"Today's launch marks a key milestone for SETU and the SEAM Research Centre. The state-of-the-art Industrial CT and X-ray Imaging Centre and the Materials Sustainability Laboratory advances both cutting-edge imaging capabilities and sustainable innovation.*

"For the past 15 years, SEAM has been at the forefront of applied research and industry collaboration. As Ireland's top Technology Gateway Centre, SEAM provides advanced materials engineering solutions across multiple sectors."

"Aligned with SETU's Connecting for Impact strategy, SEAM Research Centre serves as a bridge between academia and industry, fostering partnerships, and delivering solutions that drive economic and societal progress. Today's launch celebrates SEAM and reflects the invaluable support of Enterprise Ireland, Research Ireland, the European Union and our industry partners," Prof. Campbell continued.

Dr Ramesh Raghavendra, SEAM Research Centre Director, expressed pride in SEAM's growth and continued impact, stating, *"Our ongoing commitment to create materials characterisation infrastructure of excellence at SETU has been further strengthened by today's launch. The Industrial CT X-ray imaging centre's comprehensive capabilities is expected to play a pivotal role in fostering innovation across industries ranging from manufacturing to material science.*

"Meanwhile, the opening of materials sustainability laboratory will support companies in their green transition initiatives. This infrastructure will not only benefit industries across diverse sectors but also provide a significant boost for postgraduate and post-doctoral researchers in advanced manufacturing and materials sustainability."

Dr Ciarán Seoighe, Deputy CEO, Research Ireland, added: *"Today is a major milestone in terms of industrial research and development in this country. The launch of these large-scale facilities is testament to the potential impact of research for economic progress and societal well-being. Some of our greatest successes come from collaborations – universities, industry partners, and government – working together to solve real-world challenges. I want to commend SEAM, SETU, and all industrial and other partners involved in bringing these facilities to life."*

Marina Donohoe, Head of Research, Innovation and Infrastructure, Enterprise Ireland, also commended SEAM's contributions, stating, *"Enterprise Ireland is delighted to support the Materials Sustainability Laboratory at the SEAM. Enterprise Ireland is committed to supporting businesses in the transition towards a low-carbon economy and it is encouraging to see more and more businesses coming onboard to address sustainability challenges by working with SEAM to develop low carbon materials solutions.*

"Over the past 15 years the SEAM has made a huge contribution to innovation in sustainable and durable manufacturing practices. That work will become even more important over the coming years, and I am delighted that SEAM will be leading research in this vital area."

SEAM Research Centre is co-financed by the Government of Ireland and the European Union through the ERDF Southern, Eastern, and Midland Regional Programme 2021-27.

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RDI Hub celebrates its five-year anniversary as €250 million in capital flows to its members

28th February 2025

The RDI Hub is a not-for-profit Public Private Partnership with Fexco, Kerry County Council and Munster Technological University. Situated in Killorglin, Co Kerry, it is a €21 million investment led by Fexco that has transformed Kerry into a globally connected technology innovation, enterprise, and skills hotspot.
It is one of the regional partners of the NDRC, (National Digital Research Centre) the national startup accelerator programme for globally ambitious tech entrepreneurs in Ireland, led by Dogpatch Labs in Dublin, Portershed in Galway and Republic of Work in Cork. The RDI hub is supported by the Department of Business, Enterprise & Innovation's Regional Enterprise Development Fund administered by Enterprise Ireland, which has played a significant role in the hub's development.

The RDI Hub

The RDI Hub has a keen focus on training and upskilling, enabling a multitude of startups, corporates and SMEs in the Southwest to grow & scale through dedicated workshops and programmes such as Sales strategy, Creative Problem Solving for teams, Leadership, Marketing & more. In 2024 the RDI hub partnered with Microsoft to provide a series of Masterclasses in Artificial Intelligence.

The core proposition at the RDI hub is about creating new products, services and jobs in the region. In order to achieve this, they provide a range of services & supports to encourage people to join the ecosystem, become part of the RDI hub community, and come together to create a co-innovation space where startups, corporates and SMEs can work together and thrive.

The Smart Regions AI Navigator programme is co-funded by the Government of Ireland and the European Union through the Southern, Eastern & Midland Regional Programme 2021-2027.

- **€250 million in capital flowed through the RDI Hub for startups and scaling companies in the southwest region.**
- **€1M Smart Regions AI Navigator Programme: Partnering with Enterprise Ireland, RDI Hub launched a €1 million programme to help SMEs adopt AI solutions.**
- **Fexco Group to continue to support the RDI Hub to provide mentorship programs, funding for STEM education, specialised skills support, and to create employee-led startups.**

RDI Hub, the renowned innovation centre driving business growth and technological advancement, has marked its fifth anniversary with the publication of its first Impact Report.

Impact over 5 years

In the five years since its inception, the RDI Hub has become a pivotal player in the evolving innovation landscape across Ireland. The RDI Hub has seen over €250m in capital flow through to be invested in its members to establish and grow their business. In addition, other key findings from the RDI Hub Impact Report include:

- 97 member companies have been supported through the RDI Hub since it opened in 2020
- These companies have created and supported over 430 jobs
- 70 new products and services have been launched by RDI Hub companies
- Over 10,000 people have attended RDI Hub training programmes, including the AI Summer School, NDRC, and Skillnet Innovation Exchange
- Providing STEM education to over 500 female secondary school students in Munster in 2024.

Key Announcement

EI and RDI Hub announce a €1m Smart Regions AI Navigator Programme

Partnering with Enterprise Ireland, RDI Hub announced the €1 million **Smart Regions AI Navigator programme**, which will enable SMEs to adopt and implement artificial intelligence solutions. The Smart Regions AI Navigator programme is co-funded by the Government of Ireland and the European Union through the Southern, Eastern & Midland Regional Programme 2021-2027. Over the next three years, the programme will deliver AI masterclasses, strategic workshops, training days, and wraparound consultancy services to equip Irish businesses with the tools to thrive and engage in peer-learning in an AI-driven landscape. The programme is live and RDI hub, Portershed and Greentech HQ are delighted to announce that leading companies within the manufacturing and engineering sectors are currently taking part in the programme.

Growing our network in a virtual world

The RDI Hub Digital Community, launched in March 2024, offers global virtual mentorship and resources for tech startups. It connects mentors, entrepreneurs, and innovators with coaching and upskilling opportunities. This virtual community will expand across international markets, deepening

relationships and opportunities across the global innovation ecosystem.

The evolving Fexco and RDI Hub Partnership
This impact report marks the fifth anniversary of the Hub's partnership with Fexco, highlighting ongoing investment and support.

To date, Fexco has provided the 17,000 sq. ft. facility, mentorship programs, and financial backing for STEM education initiatives. The latest of which is the STEM Passport for Inclusion, run in association with the RDI Hub, Maynooth University, Microsoft and Munster Technological University, which provided 500 female post-primary students with access to STEM education in Munster in 2024.

Marking the 5th Anniversary
The RDI Hub's fifth anniversary is being celebrated today at an event at their offices in Killorglin, Co Kerry with stakeholders from the innovation ecosystem in attendance, including RDI Hub partners Fexco, Munster Technological University, and Kerry County Council. Minister Norma Foley will deliver the keynote address, highlighting the importance of AI in shaping Ireland's future. The event will also feature panel discussions with industry leaders, including Kevin Marshall (Microsoft), Bronagh Riordan (EY), Joseph Walsh (Munster Technological University), John Kelleher (ADAPT Research Centre), and Andreea Wade (Delta Partners), as well as examples of AI use cases from Irish businesses such as TLI, Energywise, O'Carroll Engineering, Right Group, and Tricel. Sean Kelly, MEP (Member of the European Parliament) will also be in attendance.

Liam Cronin, CEO of RDI Hub, said:
"The RDI Hub has become a catalyst for innovation, empowering startups, SMEs, and corporates to embrace digital transformation, drive innovation, and scale for the demands of tomorrow's economy. Over the past five years, we've played a central role in reshaping the South West's innovation landscape, fostering collaboration and growth across diverse sectors. Today, as we celebrate this significant milestone, we are delighted to unveil new investments that will enable us to amplify our impact, supporting businesses of all sizes in reaching their full potential."

Neil Hosty, CEO of Fexco, said:
"In the past five years, the RDI Hub has evolved into a world-class innovation centre that delivers results. True to the vision of our founder, Brian McCarthy, it has become a keystone for new companies in the Southwest of Ireland, leading advancements from fintech, AI to construction and tourism," said Neil Hosty, CEO of Fexco. "The RDI Hub is a key part of Fexco's innovation strategy, where collaboration sparks transformative ideas. The hub has the formula for launching new businesses and fostering an environment for entrepreneurs and corporates to develop future solutions. Looking ahead, Fexco is committed to supporting the hub's growth and expanding its impact across Europe and beyond."

Norma Foley TD, Minister for Children, Disability and Equality, said:
"I am delighted to be here to mark five years of innovation in the RDI Hub in the South West. The RDI Hub has been a significant catalyst in helping all types of businesses to create, digitalise and innovate. Hubs like this are harnessing the unique talent and creativity of Irish people.

I am delighted to mark the latest milestone in the evolution of the RDI Hub and announce further investment which will enable it to develop and scale even more companies. I wish all involved well for the years ahead."

Carol Gibbons, Head of Entrepreneurship, Regions & Local Enterprise, Enterprise Ireland said:
"A key focus for Enterprise Ireland is fostering regional entrepreneurship and job creation and we are proud to have supported the RDI Hub project to achieve its vision through the Regional Enterprise Development Fund (REDF)). Over the last five years, the hub has shone a spotlight on the talent and innovation growing and emerging from within the south-west region and has provided an incubator

platform to connect research centres, universities, industry associations, regional development agencies, experts, innovators and funders under one roof. Furthermore, the RDI Hub enables the flow of knowledge, technologies and expertise between these organisations, stimulating, business scaling and internationalisation both regionally and nationally. I'd like to congratulate all the stakeholders involved on today's significant milestone and Enterprise Ireland looks forward to supporting the hub in its next phase of delivery through the Smart Regions programme.

The RDI Hub's first Impact Report is available here: **RDI Hub Impact Report**

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