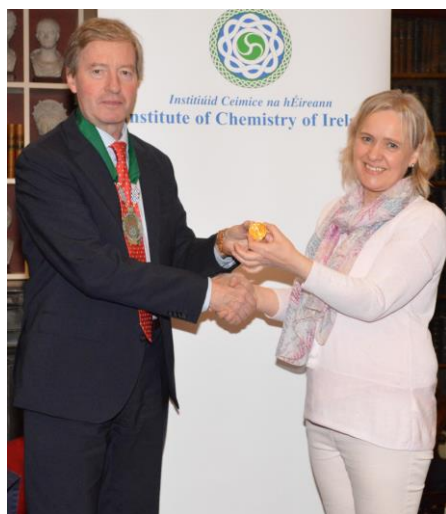


Irish Chemical News

A Journal of the Institute of Chemistry of Ireland

**Centenary Congress Celebrations Science Week November 17th
held at the Royal Irish Academy, Dawson Street Dublin**



Prof Pat Guiry, President of ICI presents the Boyle Higgins Gold Medal 2022 to Prof Grace Morgan UCD, The ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series) 2022 is presented to Prof Carmel Breslin MU and the Boyle Higgins Gold Medal Award 2021 is presented to Prof Tadhg Begley Texas A&M University.



Institiúid Ceimice na hÉireann **The Institute of Chemistry of Ireland**

ICI Centenary 1922-2022

Patron: Michael D. Higgins, President of Ireland

The Professional Body Representing Chemists in Ireland

Ravensdale Road, Dublin D03 CY66. Web: www.instituteofchemistry.org

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Sponsors:-





New President Prof Pat Guiry Address



University College Dublin
National University of Ireland

A Message from the President

Dear Fellows, Members, Graduates and Associates,

In this issue, you will find a summary (with some great photographs of speakers, chairs and participants) of an excellent ICI Centenary Congress held in the Royal Irish Academy on Thursday 17th November, in the middle of Science Week. It was my pleasure to present the Boyle-Higgins Medal 2021 to Professor Tadhg Begley, Texas A&M University and the 2022 Medal to Associate Professor Grace Morgan, University College Dublin and the Eva Philbin Public Lecture Award to Professor Carmel Breslin of Maynooth University. It was noteworthy that both of our 2022 medallists were female, demonstrating the significant contribution and strength of female chemistry researchers. In addition to these three plenary lectures we had short talks from Professor Mike Zaworotko (UL), Professor Paul Murphy (University of Galway), Associate Professor Susan Quinn (UCD), Professor Steven Bell (QUB), Professor John Wenger (UCC) and myself. It was a great day to celebrate chemistry on the island of Ireland and I thank our sponsors of the Congress – Labplan, SSPC, BiOrbic, The Centre for Synthesis and Chemical Biology (CSCB) and Agilent. The feedback throughout the Congress, attended by many young (and older) chemists, was very positive and we certainly marked our centenary well. It was also nice to have this event in person, and there was a great feeling of the community of chemists in Ireland coming together for a scientific and social event.

We have finalised the 8 themes for ECC9, taking on board the more than 50 responses from societies across Europe and from informal discussions at the General Assembly in Lisbon. We now have final feedback from EuChemS Divisions and Working Parties and are setting up the Scientific Committee which will be chaired by Professor David Leigh from the University of Manchester. Theme convenors are being chosen and invitations will be sent soon to Plenary Lecturers. Our Local Organising Committee, co-chaired by Professor Thorri Gunnlaugsson and Professor Celine Marmion, are commence their work in earnest.

Many thanks to the ICI Young Chemists' Network (YCN) who continue to work hard to provide support to the younger members of our community. Colm McKeever, Maynooth University, is the ICI YCN chair and do get in contact with him if there are issues you wish to highlight or events you wish to organise.

I wish to again thank our Editor, Patrick 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. This issue covers a broad range of topics from the ICI Centenary Congress, our 2022 (2021) Award Winners, to green hydrogen, COP27 in Egypt and sustainable chemistry and the importance of CRISPR technology and beyond! 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.

Can I take this opportunity to wish you and your families a very happy and peaceful Christmas and good health and happiness for 2023!

With best regards,

Professor Pat Guiry PhD FRSC FICI MRIA

President, Institute of Chemistry of Ireland

13th December, 2022



Editorial

This autumn the Institute had the privilege of celebrating our Centenary Congress which was held in the Royal Irish Academy. This event was well attended. With stimulating and thought provoking lectures, an opportunity was had for networking and meeting old friends and colleagues. In the evening we retired with the speakers to Davy Byrne's Pub for refreshments and were entertained by "Mr James Joyce" with a reading from his book Ulysses on the centenary of its publication. Photos of the Congress are included with this Issue.

With the end of the year approaching this is the final Issue of ICN for 2022. It has been a difficult year with the Russian war of aggression in Ukraine and the deliberate targeting of civilians, their homes and civic infrastructure. This has led to millions of refugees exiting Ukraine in great need of shelter in Europe and beyond. It has precipitated an energy crisis and a huge increase in the cost of living on top of the urgency of the Climate Change Crisis. On the optimistic side these crises have stimulated increased efforts to find alternatives to fossil fuels.

Technologies based on chemistry such as improved and alternative chemistries to lithium ion batteries is progressing at a pace. Solar cell technologies are improving and the rate of installations is accelerating.

The debate over green hydrogen continues unabated. The terrible event of the recent gas explosion in Donegal has clearly demonstrated the hazards that can arise with a gas leak and explosion. The widespread use of hydrogen which explodes more easily than gas and with more intensity is a major concern. Now Toyota who previously focused on EV cars are hedging their bets on hydrogen cars with a new hydrogen model announced.

Japan is a country of rule abiders but many countries do not have this concept of rule compliance, so distribution of hydrogen might work better in Japan but wide hydrogen distribution in many other countries could lead to more carelessness and severe consequences. Some of the articles on hydrogen indicate hydrogen is for industry and heavy transport. Hydrogen cars may not be a safe bet. I have been expressing concerns about use of hydrogen for domestic cars and small delivery vans, and in support of this stance I have compiled a short article with data explaining the hazardous nature of hydrogen at the start of the Green hydrogen section.

The port of Galway is to get a "Hydrogen Valley" and will be a "game changer for the West". The hydrogen hub, known as 'GH2', will be used for research, with the production and supply of clean, green hydrogen fuel. GH2 is a consortium consisting of seven members – the University of Galway, the Port of Galway, CIÉ Group and Bus Éireann, Aran Islands Ferries, Lasta Mara Teo, Aer Arann Islands and SSE Renewables.

COP27 was hosted in Egypt in November and there is considerable debate around its achievements. One item finally agreed on was to provide financial assistance and technologies to less developed and most affected countries to assist them adopt more climate friendly energy systems as they evolve more sustainable economies. I have added an extra section on COP 27 Egypt in this Issue and thereafter climate issues and advances will continue in the Climate Change section. The efforts documented in this section are wide ranging and cover many technologies including wind mill design and carbon capture to underground CO₂ storage and sustainable cement.

I have finally introduced a new topic which I had intended adding to ICN in late 2020 when the Nobel Prize for Chemistry went to two brilliant chemists, one French and the other American. They are Emmanuelle Charpentier and Jennifer A. Doudna "for the development of a method for genome editing" called CRISPR. This technology is revolutionary with many applications in medicine, health care, food crops and animal husbandry. It appears to have cured one African man with Sickle Cell Disease after a one dose treatment. This introductory section is large with informative videos and explanations along with links to numerous interesting papers and articles. This topic will be much shorter in future Issues of ICN. I had delayed introduction because of the size of the SARS CoV-19 section.

Covid 19 is still with us and many variants are appearing and displacing older variants Even Omicron 5 has now been displaced by Omicron BQ1 and BQ1.1 in New York and this is likely to happen here also. In last count two weeks ago some 300 variants have been identified. Vaccines are still effective at preventing death and severe disease for most people but vaccines are struggling to keep up with the rapid evolution and bivalent vaccines are at Omicron BA.5 but in Ireland still at BA.1 stage. The Publications, papers and reports are still coming into my inbox daily.

The topic on Universities and Higher Education Section has been dropped at least temporally due to lack of interest by colleges supplying relevant updates. It's disappointing that this opportunity to communicate more widely has been missed. It has been a gripe of mine for some time that chemists are not great at communicating more about their work to the general public. Physics and biology seem to be much better at finding authors for popular science books which explain sometimes difficult subjects to the non-specialist laypeople.

With that I will end the last editorial of 2022 and wish members, colleagues and readers a very Happy and Peaceful Christmas. Do remember Ukrainian colleague chemists, the Ukraine people struggling to survive the brutal Russian war in Ukraine during this harsh cold winter.

Last but not least is a big thankyou to Dr John Keegan our Treasurer who diligently proof reads each issue of ICN over the last number of years.

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

editor@instituteofchemistry.org

[Institute of Chemistry of Ireland \(chemistryireland.org\)](http://Institute of Chemistry of Ireland (chemistryireland.org))

Patrick Hobbs MSc, FICI, CChem, CSci, MRSC.

Editor

Irish Chemical News

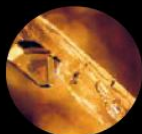
13th December 2022

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



9th EuChemS

CHEMISTRY CONGRESS
Dublin, Ireland 7–11 July 2024



Save the Date!

For regular e-updates
about the 9th EuChemS
2024 please sign-up at
www.EUCHEMS2024.org



 **EuChemS**
European Chemical Society





9th EuChemS

CHEMISTRY CONGRESS

Dublin, Ireland 7–11 July 2024

The EuChemS Chemistry Congresses (ECCs) are the most prominent events for the European chemistry community. They constitute a joint endeavour of the national chemical societies and the EuChemS Professional Networks.

Chemists from all parts of Europe and the wider world come together to present and discuss the latest achievements in cutting edge chemical sciences. There is no other occasion where chemists from different countries, different areas of chemistry and different professional backgrounds can converge in one place.

The ECCs are a unique forum to foster transnational collaboration, to encourage the dialogue between the different branches of chemistry, to bring academia, industry and decision-makers together and to emphasize the impact of chemistry and chemical research on our society. Special attention is given to all activities which help promote the careers of young scientists. A high level Scientific Committee ensures the highest possible quality of the scientific contributions with a regionally and thematically balanced programme of exciting cutting edge chemistry.

We look forward to seeing you in Dublin for the 9th ECC!

Conference Secretariat: Keynote PCO

Tel: +353 1 400 3626

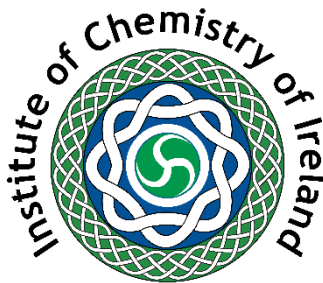
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Fáilte Ireland
National Tourism Development Authority



EuChemS
European Chemical Society



The Institute of Chemistry of Ireland Awards

The ICI Boyle Higgins Gold Medal and Lecture Award The ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series) The ICI Postgraduate Award

The Boyle Higgins Gold Medal and Lecture Award

The Boyle Higgins Gold Medal and Lecture Award, instituted in 1985, is an award for research work carried out in chemistry under the headings: (a) Pure Chemistry, (b) Applied and Industrial Chemistry or (c) Chemical Education. The award recognizes a chemist **of any nationality working in Ireland or a chemist who is an Irish citizen working overseas** who has made **an outstanding and internationally recognised research contribution to the advancement of chemistry**. A person nominated for this award must be a member of the Institute at the time of nomination or upon receipt of the award.

Nomination process: The nominator shall indicate in writing to the President of the Institute the category which applies to their nominee and they shall submit by email one electronic copy which will include a brief statement outlining the reasons for the nomination, together with a CV (maximum 3 pages) of the nominee. Nominations will be externally reviewed by two independent referees, who are recognised experts in the category and who are not nominators.

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

This award is for a practising chemist, who has made a significant contribution to the advancement of chemistry and has considerably raised the profile of chemistry through both the excellence of their work and their ability to communicate in an effective and lucid manner. **The recipient, who may be an Irish or international chemist of repute**, will present lectures in three locations in Ireland (including Dublin), which will be open to the public. A person nominated for this award must be a member of the Institute at the time of nomination or upon receipt of the award.

Nomination process: The nominator shall send one electronic copy of their nomination by email to the President of the Institute, which will include a cover letter providing a brief statement outlining the reasons for the nomination, together with a CV (maximum 3 pages) of the nominee. Nominations for this award will be externally reviewed.

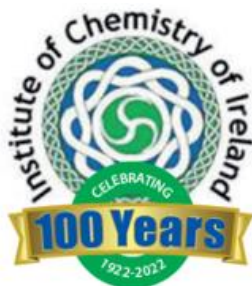
The ICI Postgraduate Award

The nominee must be a **registered PhD student in any Chemistry discipline working in an Irish Higher Education Institution**. They must have demonstrated excellence in research through publications. They must also have demonstrated a commitment to supporting and promoting Chemistry within their Institution (e.g. through active participation in public engagement initiatives). A person nominated for this award must be a member of the Institute at the time of nomination or upon receipt of the award.

Nomination Process: The nominator, who must be the student's PhD supervisor, shall send one electronic copy of their nomination by email to the President of the Institute, which will include a cover letter providing a brief resume of the reasons for the nomination, together with a CV (maximum 2 pages) of the nominee.

For these awards and others see ICI website <https://www.chemistryireland.org/awards-events>
Nominations to be sent to the ICI President at: president@instituteofchemistry.org

ICI Centenary 1922-2022



"ICI Centenary Congress 2022"

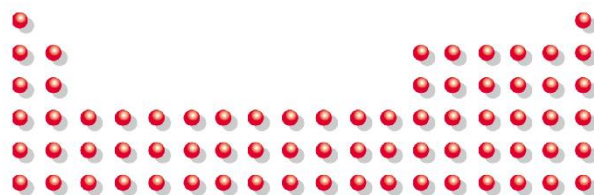
Thursday, 17th November 2022

Royal Irish Academy, Dawson Street, Dublin 2.

PROGRAMME

| | |
|-----------------|--|
| 9.30 am -10 am | Tea and Coffee / Registration |
| 10 am – 11 am | Chair: Professor James Sullivan Boyle-Higgins Medal Award 2022 Lecture – Professor Grace Morgan, University College Dublin <i>"Shaping the Future with Molecular Magnets"</i> |
| 11am – 11.30 am | Chair: Professor Donal O'Shea Professor Mike Zaworokto, University of Limerick <i>"Why crystals will save the world"</i> |
| 11.30 pm – noon | Professor Paul Murphy, University of Galway <i>"Chemistry at the anomeric centre as a basis for mechanistic study and bioactive molecule synthesis"</i> |
| Noon - 12.30 pm | Professor Susan Quinn, University College Dublin <i>"Development of DNA targeting light-activated complexes as diagnostics and therapeutic agents"</i> |
| 12.30 pm – 1 pm | Lunch |
| 1 pm – 2 pm | Chair: Professor John Cassidy ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series) 2022– Professor Carmel Breslin, Maynooth University <i>"Electrocatalytic Materials and their Potential in Addressing the Challenges in Pollution of the Aquatic Environment and Energy Storage"</i> |
| 2 pm – 2.30 pm | Chair: Professor Celine Marmion Professor Steven Bell, Queen's University Belfast <i>"Taking Control of Nanoparticle SERS- Understanding the Factors that Matter"</i> |
| 3 pm – 3.30 pm | Professor John Wenger, University College Cork <i>"Atmospheric Chemistry: Out of the Lab and into the Field"</i> |
| 3.30 pm – 4 pm | Professor Pat Guiry, University College Dublin <i>"Recent Highlights in Medicinal Chemistry and Asymmetric Catalysis"</i> |
| 4 – 4.30 pm | Coffee – Tea Break |
| 4.30 -5.30 pm | Chair: Professor Pat Guiry Boyle-Higgins Medal Award 2021 Lecture – Professor Tadhg Begley, Texas A&M University <i>"Riboflavin Catabolism – the destruction of an icon"</i> |
| 5.30 pm | Closing Remarks: Professor Pat Guiry, President, Institute of Chemistry of Ireland |

We wish to thank the following sponsors/exhibitors.



CSCB
Centre for Synthesis
& Chemical Biology



The Institute of Chemistry of Ireland Centenary 2022

On the 17th of November the Institute held its Centenary Congress in the Royal Irish Academy venue in Dawson Street, Dublin. This is a splendid Georgian building with a great library and impressive meeting room with its iconic lighting. The Royal Irish Academy, is an academic body that promotes study in the sciences, humanities and social sciences. It is Ireland's premier learned society and one of its leading cultural institutions.

We were presented with some nine great, informative and entertaining lectures on a range of interesting topics in chemistry. Three award winners for 2022 and 2021(delayed) gave lectures. In a first for the Institute two women were recipients of two of the prestigious awards in 2022.



The Institute of Chemistry of Ireland originated from a meeting held on 15 May 1922 and subsequently resulted in the formation of the Chemical Association of Ireland on 15 June 1923. The Association remained very active until 1930. In all, about 40 chemists became associated with this first Association.

Several inactive years followed, but on 14 March 1936 its successor, the Irish Chemical Association, was founded after several preliminary meetings in 1935 and 1936. This Association was even more active than its predecessor and in the period of 14 years from 1936 to 1950, up to 300 chemists were enrolled as members.

Towards the end of the forties, it became clear that the Association had to change once again as a step towards achieving government recognition. A series of meetings eventually resulted in the formation of

the present Institute of Chemistry of Ireland which was founded on 18 January 1950. Currently, the Institute has over 800 members in all categories. We have a young chemists group; The ICI Young Chemists' Network is the young division of the Institute of Chemistry of Ireland and represents the interests of all young chemists in Ireland and has been running for a number of years. This centenary year a new division was formed called Medicinal Chemistry & Chemical Biology Division. In addition the Irish Biological Inorganic Chemistry Society has been associated with and sponsored by the Institute for some years.

The Institute has a high standing in Europe and we hosted the European Chemical Society General Assembly in 2012 in the same venue at RIA Dawson Street as our Centenary Congress on November 17th. A further indication of our standing in Europe is our winning the bid to host the European Chemical Congress 9, ECC9 in 2024 against five other strong contenders.

The institute presents a number of awards to prestigious chemists annually. Some of these are:

The Boyle Higgins Medal and lecture Award, The ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series), The David Brown Award and the Postgraduate Award. Two of these were celebrated at the Centenary Congress on November 17th.

We were delighted to have institutional sponsors and sponsorship from a long term sponsor from the commercial lab supply industry LABPLAN:

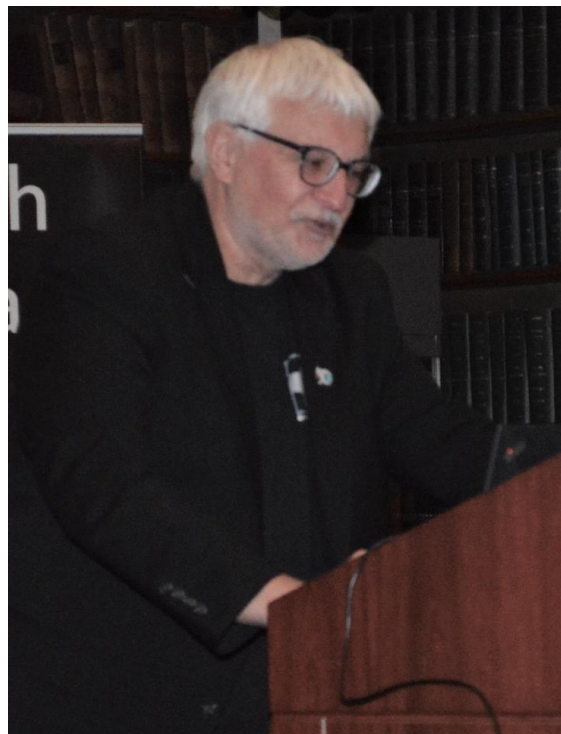


Ken Byrne Sales Director LabPlan, long term supporter & sponsor of the Institute

Professor Pat Guiry as President opened the proceedings and Prof James Sullivan UCD chaired the first session and introduced Prof Grace Morgan, UCD, the 2022 Boyle Higgins Medal Award winner. Grace's lecture was titled *"Shaping the Future with Molecular Magnets"*



The next lecture was chaired by Prof Donal O'Shea RCSI who introduced Prof Mike Zaworokto UL and Bernal Institute who gave a great lecture titled *"Why crystals will save the world"*.



The third lecture was by Prof Paul Murphy UG who gave his lecture *on “Chemistry at the anomeric centre as a basis for mechanistic study and bioactive molecule synthesis”*



The final lecture before breaking for lunch was a lecture by Prof Susan Quinn UCD *“Development of DNA targeting light-activated complexes as diagnostics and therapeutic agents”*



After lunch and time for networking, proceedings recommenced and the first session was chaired by Prof John Casidy TU Dublin (former President). He introduced Prof Carmel Breslin MU winner of the 2022 ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series). Prof Breslin's lecture was titled ***“Electrocatalytic Materials and their Potential in Addressing the Challenges in Pollution of the Aquatic Environment and Energy Storage”***



The second afternoon lecture by Prof Celine Marmion RCSI (Immediate Past President) who introduced Prof Steven Bell, Queen's University Belfast (Vice President) and his lecture was titled ***“Taking Control of Nanoparticle SERS- Understanding the Factors that Matter”***



Next lecture was Prof John Wenger UCC, and who represents the Institute on the EPA Advisory Committee and was introduced by Prof Marmion. He gave an interesting lecture on ***“Atmospheric Chemistry: Out of the Lab and into the Field”***



Next was Prof Pat Guiry President of the Institute and Chair of the EuChemS, Division of Organic Chemistry and himself a Boyle Higgins Gold Medal winner in 2014. His presentation was titled ***“Recent Highlights in Medicinal Chemistry and Asymmetric Catalysis”***



The final lecture after the afternoon coffee was again chaired by Prof Pat Guiry. He introduced the 2021 Boyle-Higgins Medal Award Lecture winner – Professor Tadhg Begley, Texas A&M University whose lecture was titled *“Riboflavin Catabolism – the destruction of an icon”*

Prof Guiry ended the proceedings with his closing remarks and this was followed by a wine reception and canapes and an opportunity for networking, social mixing and meeting old acquaintances again.

During the lunch break the opportunity arose to photograph the speakers on the steps of the Royal Irish Academy.



Back row: Prof Mike Zaworotko, Prof Paul Murphy, Prof Pat Guiry, Prof John Wenger and Prof Susan Quinn.

Front row: Prof Stephen Bell, Prof Carmel Breslin, Prof Tadhg Begley and Prof Grace Morgan.

We had on this Centenary Congress 2022 in addition to our current President four former Presidents present.



Back Row: Prof John Cassidy (2017-2019), Patrick T Hobbs, Editor ICN (2013-2015).

Front row: Prof Celine, Marmion Immediate Past President (2019-2022), Prof Dervilla M.X. Donnelly (1994-1996), previous Boyle Higgins Gold Medal Winner and Prof Pat Guiry Current President and previous Boyle Higgins Gold Medal Winner.

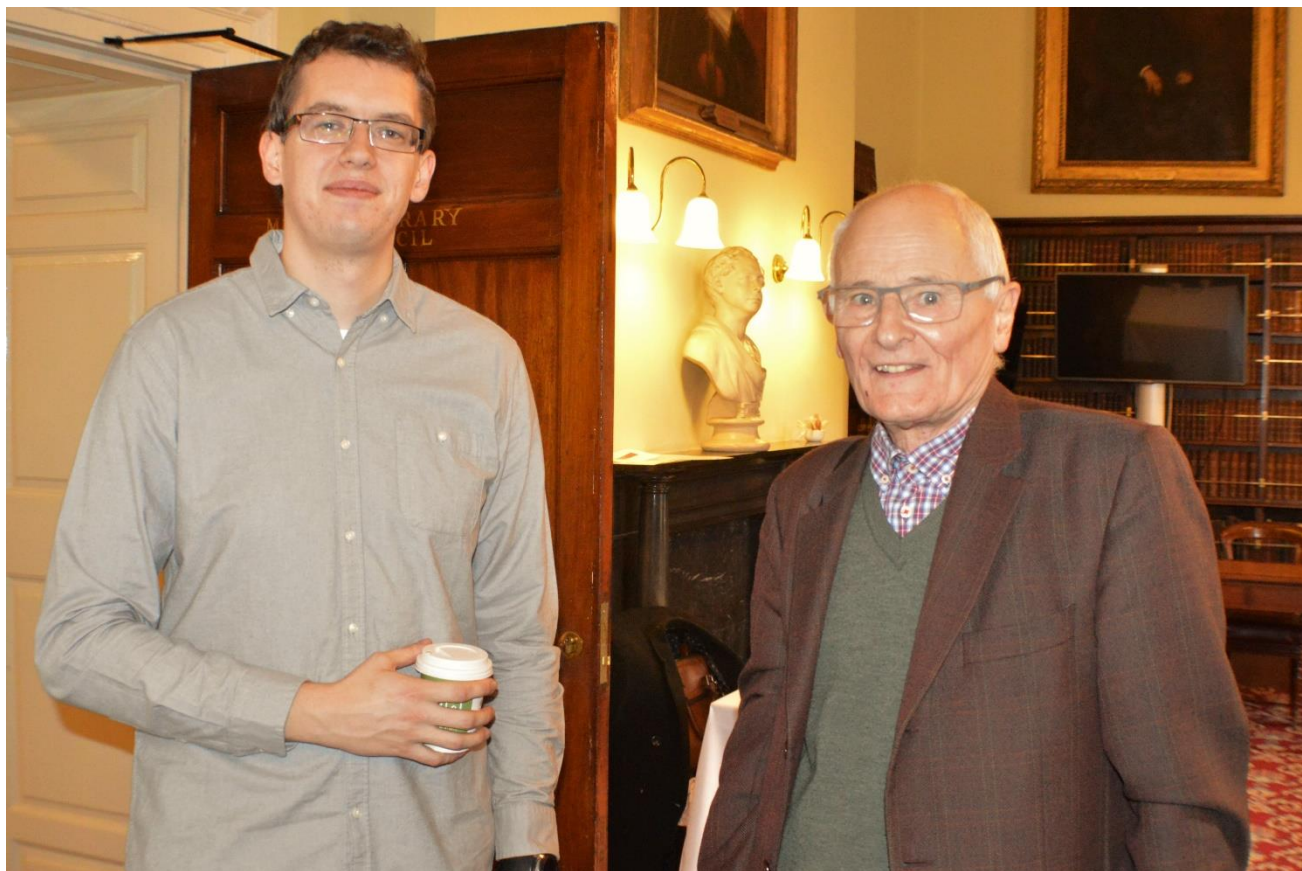
During the breaks photos were taken of people networking and catching up with colleagues in this person to person event probably the third live event since Covid 19 pandemic and are on the following pages.

















Finally a small group of us went to Dave Byrnes for some food with the speakers. It was the centenary of the Institute but also the centenary of something else important namely the publication of James Joyce's "Ulysses". So no better than to have the great Irish writer drop in on us and read a passage from his famous book – a passage of Mr Bloom buying a bar of soap in Sweeny's Chemists (pharmacy now a days).



The James Joyce impersonator is John Shevlin, based in North Great George's Street, a well-established milliner makes exquisite hats by day and transforms into the character of James Joyce on Blooms Day each year and on some other occasions and can also be found in the James Joyce Centre in North Great George's Street.



Royal Irish Academy

The Kathleen Lonsdale RIA Chemistry Prize 2023



Call for entries: Kathleen Lonsdale Chemistry Prize

28 November 2022

The Kathleen Lonsdale RIA Chemistry Prize 2023 is now open for applications from researchers who completed a chemistry PhD in Ireland in 2022

Applications for the Kathleen Lonsdale RIA Chemistry Prize 2023 are now invited. The closing date for submissions will be **17.00 on Friday, 6 January 2023**.

The prize will be given for the most outstanding Irish PhD thesis in the general area of the chemical sciences as described in a 1000 word essay. The prize, kindly sponsored by Henkel, includes an award of €2,000.

The winner will also be nominated by the Physical, Chemical and Mathematical Sciences Committee to go forward for the IUPAC-SOLVAY International Award for Young Chemists.

Eligibility:

- One must have received their PhD degree or completed all PhD requirements from a University or Technological University in the Republic of Ireland or Northern Ireland, including a successful defence of the doctoral thesis during the calendar year 2022.

- The research described in the entrant's thesis must be in the field of the chemical sciences, defined as "chemistry and those disciplines and technologies that make significant use of chemistry."

How to apply:

- Submit a 1,000 word essay (maximum, but figures are permitted) describing the thesis work and placing it in perspective relative to current research in the chemical sciences
- Supply a listing of all published material arising from the PhD research performed
- Provide two supporting letters, one from the thesis adviser and one additional faculty member who is familiar with the applicant's thesis work. These letters should comment on the qualifications, contribution to publications and accomplishments of the applicant and the significance of the thesis work.

All documentation (in PDF format) should be emailed to chemistryprize@ria.ie (link sends e-mail) with the subject line: *Kathleen Lonsdale Chemistry Prize by 17.00 on Friday, 6 January 2023.*

Watch last year's prize ceremony

In 2022, the Kathleen Lonsdale Prize was awarded to Dr Priyanka Ganguly who completed her PhD in Institute of Technology Sligo (now Atlantic Technological University) for her work developing new nanomaterials:-

[Kathleen Lonsdale RIA Chemistry Prize 2022 - YouTube](https://youtu.be/d0d6hUCDlik) (https://youtu.be/d0d6hUCDlik)

Data Protection:

Before submitting your application please read the [Kathleen Lonsdale Prize Transparency Statement](#). All personal data collected will be used solely for the purpose of assessing applications in line with RIA [General Data Protection Regulations](#).



23rd February 2023 | The Leopardstown Pavilion, Leopardstown Racecourse

Registration Free at: [Register | National Sustainability Summit](#)

The **National Sustainability Summit**, being held on the **23rd February** in **The Leopardstown Pavilion, Leopardstown Racecourse**, will focus on the new opportunities for businesses and enterprising individuals arising from the Government's recently published Climate Action Plan, which aims to achieve a cleaner, safer and more sustainable future for Ireland.

Embracing every relevant sector – electricity, enterprise, housing, heating, transport, agriculture, waste, and the public sector – the Climate Action Plan identifies how Ireland will achieve its 2030 targets for carbon emissions, and puts the country on a trajectory to achieve net zero carbon emissions by 2050. Adopting the same model as the Government's Action Plan for Jobs, it sets out over 180 actions, together with hundreds of sub-actions that need to be taken.

For example, the Climate Action Plan aims to: move to 70% renewable electricity by 2030 – currently only 30% of our electricity comes from renewable sources; introduce 950,000 electric vehicles onto our roads and deliver a nationwide charging network; ban the sale of petrol/diesel cars from 2030; deliver reductions in greenhouse gas emissions in agriculture; and eliminate non-recyclable plastic while imposing higher fees on the production of materials which are difficult to recycle.

Other actions include: the delivery of an intensive programme of retrofitting to install 400,000 heat pumps in homes and businesses, replacing existing carbon-intensive heating systems; the establishment of a new Microgeneration Scheme, allowing homeowners to generate their own electricity and sell any excess back to the National Grid; a new Retrofit Plan to retrofit 500,000 homes, with large groups of houses being retrofitted by the same contractor to reduce costs, smart finance, and easy pay back methods; and the expansion of the network of cycling paths and 'Park and Ride' facilities to ease congestion.

Irish companies across all industrial and commercial sectors are looking to reduce their ecological footprints and are already pursuing sustainability strategies. Of course, the adoption of sustainability practices can also lead to improving operational efficiency by reducing costs, such as water and energy, and waste.

The Key Areas Focused on Include

- Energy Efficiency
- Renewable Energy
- Sustainable Packaging
- Waste & Recycling
- Water

- Circular Economy
- ESG
- Sustainable Buildings
- Sustainable Transport
- Environmental Protection
- Biodiversity

Sectors Attending

- Manufacturing
- Retail
- Food & Agriculture
- Transport & Logistics
- Public Sector
- Construction & Built Environment

[National Sustainability Summit](#)

[Contact | National Sustainability Summit](#)



€34 million EU funding boost for early-career researchers in Ireland

5 October

[€34 million EU funding boost for early-career researchers in Ireland | News | Irish Research Council](#)

Irish Research Council to invest €24 million in ground-breaking, ‘curiosity-driven’ research

10 October

[Irish Research Council to invest €24 million in ground-breaking, ‘curiosity-driven’ research | News | Irish Research Council](#)

Taoiseach Micheál Martin T.D. and Minister Simon Harris T.D. announce funding for new research projects to contribute to the Government’s Shared Island initiative

1 December

[Taoiseach Micheál Martin T.D. and Minister Simon Harris T.D. announce funding for new research projects to contribute to the Government’s Shared Island initiative | News | Irish Research Council](#)



The Institute of Chemistry of Ireland **Irish Young Chemists' Network (IYCN)**

After the ICI Postgraduate Chemistry Research Symposium held online in September 2020 was a success, an idea was put forward to establish an Irish Young Chemists' Network (IYCN) as part of the Institute of Chemistry of Ireland (ICI). This initiative was highly welcomed and encouraged by both the postgraduates in attendance of the online symposium and approved by the ICI Council Members during their Council meeting on the 1st October 2020.

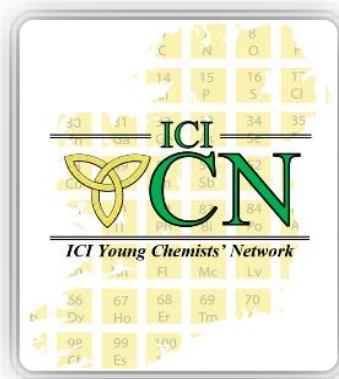
The committee of the online research symposium was made up of postgraduate students from various institutions in Ireland. As this committee worked in great harmony together, and had already established connections while organising the symposium, it was suggested to keep this committee for the IYCN. The members were all happy and motivated to be part of the IYCN committee. Together, we have summarised some of the benefits of establishing the Irish Young Chemists' Network to include:

- 1) Community, network and connection of young chemists
- 2) More opportunities for collaboration between early stage researchers
- 3) Organisation of conferences and events for young chemists
- 4) Opportunity for postgraduate students to present and discuss their work
- 5) A platform to promote upcoming positions suited for young chemists

The committee feel strongly about the first benefit especially during these times. We feel that the mental health of young chemists, including postgraduate students, is critical and essential. A sense of community and closeness, particularly during moments like these, would surely be beneficial to their mental health. As the chair of the committee, I will work together with the wonderful team of postgraduate students to establish the IYCN, while liaising and updating the ICI Council periodically as well as continue to avail of their expertise and support.

Mark Kelada, B.Sc. MICI Ph.D.

ICI Young Chemist Representative and Chair of Irish Young Chemists' Network



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.

New Committee 2022:

| Name | Position | Representation |
|-------------------------------|----------------------|----------------|
| Colm McKeever | Chairperson | MU |
| Jessica O'Neill | Secretary/Vice Chair | DCU |
| Joseph Byrne | Advisor (Non-Voting) | NUIG |
| Liam Fitzgerald | Treasurer | NUIG |
| Siobhán O'Flaherty | PRO | RCSI |
| Ciara Davis | PRO | TUS |
| Nicolás Rojas Sanabria | Committee Member | UL |
| Cathal Kelly | Committee Member | QUB |
| Hong Ann Gan | Committee member | TUS |
| Sean Byrne | Committee member | UCD |



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Irish University & 3rd Level Chemistry News

Note:

The source material for the following section is intended to be provided by the relevant educational institutions. I have endeavoured to improve this section of ICN by seeking timely updated feeds from the institutions.

I have reached out to heads of chemical sciences departments but the response has been poor. This is likely due to the pressure on everyone in chemistry departments. I can be reached at:

editor@chemistryireland.org

Lot of goals and good achievements are being attained but we need to hear about them.

Due to lack of interest I am suspending this section for now but it can be brought back if there is interest.



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



Physical Chemistry Chemical Physics

21 October 2022, Issue 39,

Page 23939 to 24596

Support our Institute by publishing your new research results in this prestigious peer reviewed journal.

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 (rsc.org)

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.

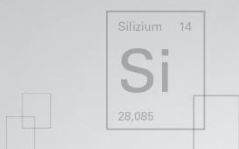
The journal has a broad scope which includes spectroscopy, dynamics, kinetics, statistical mechanics, thermodynamics, electrochemistry, catalysis, surface science, quantum mechanics and theoretical developments play an important part in the journal. Interdisciplinary research areas such as polymers and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

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Impact factor: 4.493*

Publishing frequency: 48 per year

Indexed in MEDLINE and Web of Science



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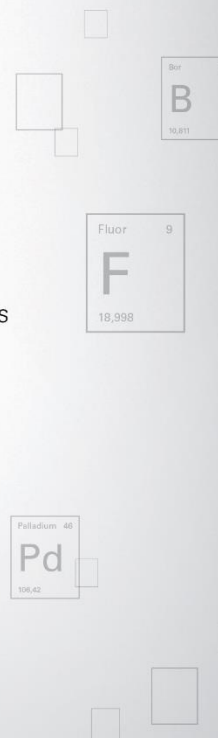


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Chemistry and related Science around the World

Chemistry and Related Technology October - November 2022

New Method Converts Greenhouse Gas Into Fuel

1 October

[New Method Converts Greenhouse Gas Into Fuel \(scitechdaily.com\)](https://www.scitechdaily.com/new-method-converts-greenhouse-gas-into-fuel/)

[DOI: 10.1039/D2CC01757A](https://doi.org/10.1039/D2CC01757A)

[DOI: 10.1126/science.aan6515](https://doi.org/10.1126/science.aan6515)

1,000,000 Times Thinner Than a Single Strand of Hair – Scientists Develop Leak-Free Nano-Pipes

1 October

[1,000,000 Times Thinner Than a Single Strand of Hair – Scientists Develop Leak-Free Nano-Pipes \(scitechdaily.com\)](https://www.scitechdaily.com/1000000-times-thinner-than-a-single-strand-of-hair-scientists-develop-leak-free-nano-pipes/)

[DOI: 10.1126/sciadv.abq4834](https://doi.org/10.1126/sciadv.abq4834)

Can you explain what these 1,500 papers are doing in this journal? – Retraction Watch

29 September

[Can you explain what these 1,500 papers are doing in this journal? – Retraction Watch](https://www.retractionwatch.com/2022/09/29/can-you-explain-what-these-1500-papers-are-doing-in-this-journal/)

Key changes on pesticides in proposed Sustainable Use Regulation

2 October

<https://www.agriland.ie/farming-news/key-changes-on-pesticides-in-proposed-sustainable-use-regulation>

EC Begins Public Consultation on Draft CLP Amendment Concerning New Hazard Classes for Endocrine Disruptors, PBTs, vPvBs, PMTs, and vPvMs

29 September

[EC Begins Public Consultation on Draft CLP Amendment Concerning New Hazard Classes for Endocrine Disruptors, PBTs, vPvBs, PMTs, and vPvMs | REACHblog™](https://reachblog.eu/2022/09/29/ec-begins-public-consultation-on-draft-clp-amendment-concerning-new-hazard-classes-for-endocrine-disruptors-pbts-vpvbs-pmts-and-vpvms/)

EC Calls for Comment on Adding New Hazard Classes to CLP

29 September

[Recent Regulatory Developments | Bergeson & Campbell \(lawbc.com\)](https://www.lawbc.com/blog/2022/09/29/ec-calls-for-comment-on-adding-new-hazard-classes-to-clp/)

Environmental, social and governance | Regulatory Outlook September 2022 – Lexology

28 September

[Environmental, social and governance | Regulatory Outlook September 2022 - Lexology](https://www.lexology.com/library/detail.aspx?l=7188888)

BGU Scientist Resolves One of the Holy Grails of Physical Chemistry After 17 Years of Research

29 September

[Ben-Gurion University of the Negev - BGU Scientist resolves one of the Holy Grails of Physical Chemistry after 17 Years of Research](#)

Pioneering Quantum Physicists Win Nobel Prize in Physics

4 October

[Pioneering Quantum Physicists Win Nobel Prize in Physics | Quanta Magazine](#)

Quantum Fisher Information: Spilling the Secrets of Quantum Entanglement

4 October

[Quantum Fisher Information: Spilling the Secrets of Quantum Entanglement \(scitechdaily.com\)](#)

Electrochemistry for API Synthesis

3 October

[Electrochemistry for API Synthesis \(pharmtech.com\)](#)

An ultra-small nine-color spectrometer with a two-layer biparted ten-dichroic-mirror array and an image sensor

3 October

[An ultra-small nine-color spectrometer with a two-layer biparted ten-dichroic-mirror array and an image sensor | Scientific Reports \(nature.com\)](#)

DOI <https://doi.org/10.1038/s41598-022-20814-3>

How stiff is the proton?

3 October

[How stiff is the proton? \(phys.org\)](#)

DOI: [10.1103/PhysRevLett.128.132502](https://doi.org/10.1103/PhysRevLett.128.132502)

Trinity academics call on Ireland to join CERN

3 October

[Trinity academics call on Ireland to join CERN \(siliconrepublic.com\)](#)

Chemical characterisation of the vapour emitted by an e-cigarette using a ceramic wick-based technology | Scientific Reports

3 October

<https://www.nature.com/articles/s41598-022-19761-w>

DOI <https://doi.org/10.1038/s41598-022-19761-w>

Using bifunctional ionomers as electrolytes to synthesize ethylene from carbon dioxide

3 October

[Using bifunctional ionomers as electrolytes to synthesize ethylene from carbon dioxide \(phys.org\)](#)

DOI: [10.1038/s41560-022-01092-9](https://doi.org/10.1038/s41560-022-01092-9)

The fountain of life: Water droplets hold the secret ingredient for building life

3 October

[The fountain of life: Water droplets hold the secret ingredient for building life \(phys.org\)](#)

DOI: [10.1073/pnas.2212642119](https://doi.org/10.1073/pnas.2212642119). doi.org/10.1073/pnas.2212642119 and

The Fountain of Life: Scientists Uncover the “Chemistry Behind the Origin of Life”

3 October

<https://scitechdaily.com/the-fountain-of-life-scientists-uncover-the-chemistry-behind-the-origin-of-life>

DOI: [10.1073/pnas.2212642119](https://doi.org/10.1073/pnas.2212642119)

Lipid Expansion Microscopy | Journal of the American Chemical Society

3 October

<https://pubs.acs.org/doi/10.1021/jacs.2c03743>

<https://doi.org/10.1021/jacs.2c03743>

Nanopore-based technologies beyond DNA sequencing | Nature Nanotechnology

26 September

<https://www.nature.com/articles/s41565-022-01193-2>

DOI <https://doi.org/10.1038/s41565-022-01193-2>

Facile Amide Bond Formation with TCFH–NMI in an Organic Laboratory Course | Journal of Chemical Education

3 October

[Facile Amide Bond Formation with TCFH–NMI in an Organic Laboratory Course | Journal of Chemical Education \(acs.org\)](https://pubs.acs.org/doi/10.1021/acs.jchemed.2c00760)

<https://doi.org/10.1021/acs.jchemed.2c00760>

Scientists Successfully Create Diamonds Out of Bottle Plastic

3 October

[Scientists Successfully Create Diamonds Out of Bottle Plastic \(scitechdaily.com\)](https://scitechdaily.com/scientists-successfully-create-diamonds-out-of-bottle-plastic/)

DOI: [10.1126/sciadv.abo0617](https://doi.org/10.1126/sciadv.abo0617)

First Theorized 70 Years Ago – “Rippled Beta Sheet” Created for the First Time

3 October

[First Theorized 70 Years Ago – “Rippled Beta Sheet” Created for the First Time \(scitechdaily.com\)](https://scitechdaily.com/first-theorized-70-years-ago-rippled-beta-sheet-created-for-the-first-time/)

DOI: [10.1039/d2sc02531k](https://doi.org/10.1039/d2sc02531k)

First strategic plan unveiled for Munster Technological University

3 March

[First strategic plan unveiled for Munster Technological University \(irishtimes.com\)](https://www.irishtimes.com/business/first-strategic-plan-unveiled-for-munster-technological-university-1.4611111)

From an antiferromagnetic insulator to a strongly correlated metal in square-lattice $\text{MCl}_2(\text{pyrazine})_2$ coordination solids | Nature Communications

30 September

[From an antiferromagnetic insulator to a strongly correlated metal in square-lattice \$\text{MCl}_2\(\text{pyrazine}\)_2\$ coordination solids | Nature Communications](https://www.nature.com/articles/s41467-022-33342-5)

DOI <https://doi.org/10.1038/s41467-022-33342-5>

Chemistry Nobel Prize 2022

The Nobel Prize in Chemistry 2022

6 October

[The Nobel Prize in Chemistry 2022 - NobelPrize.org](https://www.nobelprize.org/prizes/chemistry/2022/)

Nobel for click and bioorthogonal chemistry:

Chemists who invented revolutionary 'click' reactions win Nobel

5 October

[Chemists who invented revolutionary 'click' reactions win Nobel \(nature.com\)](https://doi.org/10.1038/d41586-022-03087-8)

doi: <https://doi.org/10.1038/d41586-022-03087-8>

Key Insights on Click Chemistry and Bioorthogonal Chemistry

5 October

[Key Insights on Click Chemistry and Bioorthogonal Chemistry | CAS](#)

The 2022 chemistry Nobel prize goes to bioorthogonal and click chemistry – as it happened

5 October

[The 2022 chemistry Nobel prize goes to bioorthogonal and click chemistry | News | Chemistry World](#)

Spotlight on synthetic tissues and mRNA for chemistry Nobel

5 October

[Spotlight on synthetic tissues and mRNA for chemistry Nobel \(phys.org\)](#)

A way to snap molecules together like Lego wins 2022 chemistry Nobel

5 October

[A way to snap molecules together like Lego wins 2022 chemistry Nobel | Science News](#)

Nobel Prize in Chemistry: Carolyn R Bertozzi, Morten Meldal and K Barry Sharpless awarded Nobel prize in chemistry for development of 'click chemistry' | World News - Times of India (with data tables)

6 October

<https://timesofindia.indiatimes.com/world/rest-of-world/carolyn-r-bertozzi-morten-meldal-and-k-barry-sharpless-awarded-nobel-prize-in-chemistry-for-development-of-click-chemistry/articleshow/94659817.cms>

Molecule-Building Innovators Win Nobel Prize in Chemistry

5 October

[Molecule-Building Innovators Win 2022 Chemistry Nobel Prize | Quanta Magazine](#)

'Click' chemistry pioneers who engineered tiny chemical buckles awarded 2022 Nobel Prize

5 October

['Click' chemistry pioneers who engineered tiny chemical buckles awarded 2022 Nobel Prize | Live Science](#)

Nobel prize for three chemists who made molecules 'click'

5 October

[Nobel prize for three chemists who made molecules 'click' \(phys.org\)](#)

Click chemistry, Nobel-winning science that may 'change the world'

6 October

[Click chemistry, Nobel-winning science that may 'change the world' \(phys.org\)](#)

The Nobel Prize in Chemistry 2022: It just says click – and the molecules are coupled together - Kungl. Vetenskapsakademien

5 October

[The Nobel Prize in Chemistry 2022: It just says click – and the molecules are coupled together - Kungl. Vetenskapsakademien \(kva.se\)](#)

Nobel Prize for Chemistry Goes to Carolyn Bertozzi, Rockstar Chemist and Mentor – Bloomberg

6 October

[Nobel Prize for Chemistry Goes to Carolyn Bertozzi, Rockstar Chemist and Mentor - Bloomberg](#)

Study: Nobel Prize often Goes to Creative Thinkers, Not Specialists

8 October

[Study: Nobel Prize often Goes to Creative Thinkers, Not Specialists \(voanews.com\)](#)

Nobel Prize: How click chemistry and bioorthogonal chemistry are transforming the pharmaceutical and material industries

7 October

[Nobel Prize: How click chemistry and bioorthogonal chemistry are transforming the pharmaceutical and material industries \(theconversation.com\)](#)

Click Chemistry (Nobel Prize 2022) - Periodic Table of Videos

14? October

[Click Chemistry \(Nobel Prize 2022\) - Periodic Table of Videos - YouTube](#)

What is Click Chemistry? | DW News

6 October

[What is Click Chemistry? | DW News - YouTube](#)

Explained. Nobel prize in Chemistry 2022 || What is Click chemistry and Bioorthogonal chemistry?

16 October

[Explained. Nobel prize in Chemistry 2022 || What is Click chemistry and Bioorthogonal chemistry? - YouTube](#)

[Shared Post] Chemistry Nobel Prize awarded for “Click Chemistry”

14 October

[Chemistry Nobel Prize awarded for “Click Chemistry” - EuChemS Newsletters](#)

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The 2022 Nobel Prize for physics shows the promise of quantum computers – Vox

4 October

<https://www.vox.com/23132776/quantum-computers-ibm-google-cybersecurity-artificial-intelligence-white-house>

Achieving greater entanglement: Milestones on the path to useful quantum technologies

6 October

[Achieving greater entanglement: Milestones on the path to useful quantum technologies \(phys.org\)](#)

[DOI: 10.1103/PhysRevLett.129.150501](#)

Quantum physics forces us to make really weird choices - Big Think

6 October

[Quantum physics forces us to make really weird choices - Big Think](#)

All Nobel Prize Winners Name List in 2022 PDF

12 October

<https://www.adda247.com/teaching-jobs-exam/nobel-prize-winners-name>

Electrochemical characterization of leached steel-making sludge | Scientific Reports

6 October

[Electrochemical characterization of leached steel-making sludge | Scientific Reports \(nature.com\)](#)

DOI <https://doi.org/10.1038/s41598-022-20980-4>

DCU team awarded for eco-friendly plastic research

5 October

[DCU team awarded for eco-friendly plastic research \(rte.ie\)](#)

Organic Chemistry's Place in the World | Science | AAAS

4 October

[Organic Chemistry's Place in the World | Science | AAAS](#)

MIT Chemical Engineers Are Cracking the Carbon Removal Challenge

5 October

[MIT Chemical Engineers Are Cracking the Carbon Removal Challenge \(scitechdaily.com\)](#)

Scientists Uncover Remarkable Atomic Behavior in Thermoelectric Materials

5 October

[Scientists Uncover Remarkable Atomic Behavior in Thermoelectric Materials \(scitechdaily.com\)](#)

DOI: [10.1038/s41467-020-18121-4](https://doi.org/10.1038/s41467-020-18121-4)

Novel Approach Improves Ammonia Process Efficiency

14 June 2022

[Novel Approach Improves Ammonia Process Efficiency | Chemical Processing](#)

Learning how water freezes

30 September

Proc. Natl. Acad. Sci. U.S.A. **119**, e2207294119 (2022).

Electrochemical CO₂ removal: efficient, cheaper, first industrial client

5 October

[Electrochemical CO₂ removal: efficient, cheaper, first industrial client - Energy Post](#)

China: decades of support for innovation is now delivering results

4 October

[China: decades of support for innovation is now delivering results - Energy Post](#)

New process could enable more efficient plastics recycling | MIT News | Massachusetts Institute of Technology

6 October

<https://news.mit.edu/2022/plastics-recycling-cobalt-catalyst-1006>

Generating New Materials by Mimicking Fundamental Rules Hidden in Nature's Growth Patterns

7 October

[Generating New Materials by Mimicking Fundamental Rules Hidden in Nature's Growth Patterns \(scitechdaily.com\)](https://scitechdaily.com/Generating-New-Materials-by-Mimicking-Fundamental-Rules-Hidden-in-Nature's-Growth-Patterns)

DOI: [10.1126/science.abn1459](https://doi.org/10.1126/science.abn1459)

Boronic Ester Enabled [2 + 2]-Cycloadditions by Temporary Coordination: Synthesis of Artochamin J and Piperarborenine B | Journal of the American Chemical Society

6 October

[Boronic Ester Enabled \[2 + 2\]-Cycloadditions by Temporary Coordination: Synthesis of Artochamin J and Piperarborenine B | Journal of the American Chemical Society \(acs.org\)](https://doi.org/10.1021/jacs.2c08777)

<https://doi.org/10.1021/jacs.2c08777>

1,000,000 Times Thinner Than a Single Strand of Hair – Scientists Develop Leak-Free Nano-Pipes

1 October

[1,000,000 Times Thinner Than a Single Strand of Hair – Scientists Develop Leak-Free Nano-Pipes \(scitechdaily.com\)](https://scitechdaily.com/1,000,000-Times-Thinner-Than-a-Single-Strand-of-Hair-Scientists-Develop-Leak-Free-Nano-Pipes)

DOI: [10.1126/sciadv.abq4834](https://doi.org/10.1126/sciadv.abq4834)

New study shows wax worm saliva could be the key to breaking down plastics

5 October

[New study shows wax worm saliva could be the key to breaking down plastics \(interestingengineering.com\)](https://interestingengineering.com/new-study-shows-wax-worm-saliva-could-be-the-key-to-breaking-down-plastics)

Engineers develop a new kind of shape-memory material

5 October

[Engineers develop a new kind of shape-memory material \(phys.org\)](https://phys.org/engineers-develop-a-new-kind-of-shape-memory-material)

DOI: [10.1038/s41586-022-05210-1](https://doi.org/10.1038/s41586-022-05210-1)

Pics: Inside the €78m Carbery dairy plant expansion - Agriland.ie (Employment for chemists)

8 October

[Pics: Inside the €78m Carbery dairy plant expansion - Agriland.ie](https://www.agriland.ie/pics-inside-the-78m-carbery-dairy-plant-expansion)

Photoredox-catalyzed C–C bond cleavage of cyclopropanes for the formation of C(sp³)–heteroatom bonds | Nature Communications

8 October

[Photoredox-catalyzed C–C bond cleavage of cyclopropanes for the formation of C\(sp³\)–heteroatom bonds | Nature Communications](https://doi.org/10.1038/s41467-022-33602-4)

DOI <https://doi.org/10.1038/s41467-022-33602-4>

After 200 Years, a Key Physical Chemistry Mystery May Have Been Solved

10 October

[After 200 Years, a Key Physical Chemistry Mystery May Have Been Solved : ScienceAlert](https://www.sciencealert.com/after-200-years-a-key-physical-chemistry-mystery-may-have-been-solved) and

RESEARCH ARTICLE1From Local Covalent Bonding to Extended Electric Field Interactions in Proton Hydration

14 September

[From Local Covalent Bonding to Extended Electric Field Interactions in Proton Hydration \(wiley.com\)](https://doi.org/10.1002/anie.202211066)

Angew. Chem. Int. Ed.2022, e202211066

<https://doi.org/10.1002/anie.202211066>

A Planar Five-Membered Aromatic Ring Stabilized by Only Two π -Electrons

20 May

[A Planar Five-Membered Aromatic Ring Stabilized by Only Two \$\pi\$ -Electrons - Kysliak - 2022 - Angewandte Chemie International Edition - Wiley Online Library](#)

<https://doi.org/10.1002/anie.202206963>

Researchers develop thermoformable ceramics, 'a new frontier in materials'

7 October

[Researchers develop thermoformable ceramics, 'a new frontier in materials' \(phys.org\)](#)

DOI: [10.1002/adma.202203939](https://doi.org/10.1002/adma.202203939)

Protein family shows how life adapted to oxygen

4 October

[Protein family shows how life adapted to oxygen \(phys.org\)](#)

DOI: [10.7554/eLife.79790](https://doi.org/10.7554/eLife.79790)

Physicists Successfully Create a New Type of Quasiparticle

8 October

[Physicists Successfully Create a New Type of Quasiparticle \(scitechdaily.com\)](#)

DOI: [10.1038/s41565-022-01204-2](https://doi.org/10.1038/s41565-022-01204-2)

Soil Bordering Streams an Important Source of Nitrate Pollution

6 October

[Soil Bordering Streams an Important Source of Nitrate Pollution | Technology Networks](#)

Amination of Nitro-Substituted Heteroarenes by Nucleophilic Substitution of Hydrogen | Organic Letters

10 October

[Amination of Nitro-Substituted Heteroarenes by Nucleophilic Substitution of Hydrogen | Organic Letters \(acs.org\)](#)

<https://doi.org/10.1021/acs.orglett.2c03133>

New Antifungal Compound Developed From Pathogenic Bacteria in Potatoes

11 October

[New Antifungal Compound Developed From Pathogenic Bacteria in Potatoes | Technology Networks](#)

doi: [10.1128/mbio.02472-22](https://doi.org/10.1128/mbio.02472-22)

Reassigning the shapes of the 0+ states in the ^{186}Pb nucleus

18 August

[Reassigning the shapes of the 0+ states in the \$^{186}\text{Pb}\$ nucleus | Communications Physics \(nature.com\)](#)

DOI <https://doi.org/10.1038/s42005-022-00990-4>

Continuous Flow Reactors Yield Multiple Benefits

9 October

[Continuous Flow Reactors Yield Multiple Benefits | Chemical Processing](#)

Realization of Stacked-Ring Aromaticity in a Water-Soluble Micellar Capsule | Journal of the American Chemical Society

9 October

<https://pubs.acs.org/doi/10.1021/jacs.2c08795>

<https://doi.org/10.1021/jacs.2c08795>

Metal-organic frameworks behave like enzymes in catalysis

10 October

[Metal-organic frameworks behave like enzymes in catalysis \(phys.org\)](#)

DOI: [10.1126/sciadv.add5678](https://doi.org/10.1126/sciadv.add5678)

Exchange controlled triplet fusion in metal–organic frameworks | Nature Materials

6 October

[Exchange controlled triplet fusion in metal–organic frameworks | Nature Materials](#)

DOI <https://doi.org/10.1038/s41563-022-01368-1>

MOF Technologies raises £4.4m in funding round for nanomaterials – The Irish Times

12 October

[MOF Technologies raises £4.4m in funding round for nanomaterials – The Irish Times](#)

Room-Temperature Quantitative Quantum Sensing of Lithium Ions with a Radical-Embedded Metal–Organic Framework | Journal of the American Chemical Society

6 October

[Room-Temperature Quantitative Quantum Sensing of Lithium Ions with a Radical-Embedded Metal–Organic Framework | Journal of the American Chemical Society \(acs.org\)](#)

<https://doi.org/10.1021/jacs.2c07692>

Enantioselective C2–H Alkylation of Pyridines with 1,3-Dienes via Ni–Al Bimetallic Catalysis | Journal of the American Chemical Society

7 October

[Enantioselective C2–H Alkylation of Pyridines with 1,3-Dienes via Ni–Al Bimetallic Catalysis | Journal of the American Chemical Society \(acs.org\)](#)

<https://doi.org/10.1021/jacs.2c09306>

Enantioselective C2–H Alkylation of Pyridines with 1,3-Dienes via Ni–Al Bimetallic Catalysis | Journal of the American Chemical Society

7 October

<https://pubs.acs.org/doi/10.1021/jacs.2c09306>

<https://doi.org/10.1021/jacs.2c09306>

Rapid Desalination Achieved With Ultrathin Carbon Membranes

7 October

[Rapid Desalination Achieved With Ultrathin Carbon Membranes | Technology Networks](#)

doi: [10.1038/s41563-022-01325-y](https://doi.org/10.1038/s41563-022-01325-y)

The Unified Patent Court: What Pharma Companies Need to Know

10 October

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17 October

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24 October

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25 October

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October – November 2022

Yeast Protein Could Help Develop New Antifungals for Humans

29 September

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Biomedical scientists peak early

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For local mRNA delivery, nanoparticles stick to the bone

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7 November

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Surface functionalization of graphene nanosheet with poly (l-histidine) and its application in drug delivery: covalent vs non-covalent approaches | Scientific Reports

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7 November

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New Non-Addictive Compound Alleviates Pain Without Sedation

8 November

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7 November

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A new database helps predict effective drug combinations

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Scientists Discover New Biomarker To Aid in Early Diagnosis of Alzheimer’s Disease

9 November

[Scientists Discover New Biomarker To Aid in Early Diagnosis of Alzheimer’s Disease \(scitechdaily.com\)](#)

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New Drug Reverses Neural and Cognitive Effects of a Concussion

9 November

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A User’s Guide to Golden Gate Cloning Methods and Standards

2 November

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8 November

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10 November

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Common Sedative Increases Heart Damage Risk When Used at Night

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13 November

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14 November

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14 November

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16 November

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15 November

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Anti-Müllerian hormone may be the next big thing in women's health

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Addressing sex differences in autoimmune diseases

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13 November

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Pain Relievers Like Ibuprofen and Naproxen May Worsen Arthritis Inflammation

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21 November

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Why guava is a powerhouse fruit to lower cholesterol, control diabetes and ease constipation

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21 September

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22 November

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17 November

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23 November

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22 November

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23 November

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Honey improves key measures of health, including blood sugar and cholesterol levels

20 November

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MicroRNAs Can Help Predict Disease Recurrence in Breast Cancer Patients

24 November

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24 November

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22 November

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Molecular Motion Reveals Possible Binding Sites for “Undruggable” Proteins

22 November

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Novel AI Blood Test Detects Liver Cancer

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Looming Crisis: Alarming Study Shows Significant Decline in Sperm Counts Globally

26 November

[Looming Crisis: Alarming Study Shows Significant Decline in Sperm Counts Globally \(scitechdaily.com\)](#)

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26 November

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28 November

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Pain Relievers Like Ibuprofen and Naproxen May Worsen Arthritis Inflammation

21 November

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Memory B and T cells responses differ when induced by SARS-CoV-2 infections or booster vaccinations

27 November

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26 November

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The production, metabolism, and inhibition of heterocyclic aromatic amines produced from cooking meat

25 November

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Cannabis is no better than a placebo for treating pain – new research

28 November

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29 November

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Study sheds new light on the role of IgA in food allergies

27 November

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Scientists report new target to combat coronary artery disease

29 November

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28 November

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24 November

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Team creates nano-magnets that could restore damaged nerve cells

29 November

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On With Kara Swisher: Carolyn Bertozzi (Nobel Prize Winner) on Cancer-Cell Sugars

29 November

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AI is changing how Pfizer creates new medications. Hope Changes Lives (Pfizer)

(Institute not sponsored for including this material. Other pharma companies would likely make similar claims)

[Pfizer: One of the world's premier biopharmaceutical companies](#)

Exploring synthetic engineering of bacteriophages

24 November

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29 November

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30 November

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A Simple Urine Test for Alzheimer's Disease?

30 November

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BioNTech adds STING to oncology portfolio in €40M small molecule licensing deal with Ryvu

30 November

[BioNTech adds STING to oncology portfolio in €40M Ryvu deal \(fiercebiotech.com\)](#)

Scientists Just Caught Bacteria Using a Never-Before-Seen Trick to Avoid Antibiotics

4 December

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30 November

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EuChemS welcomes Lithuanian Chemical Society amongst its members

Sep 26, 2022

We would like to express our warm welcome to the Lithuanian Chemical Society (LChS)!

We are glad to announce that during the 2022 General Assembly in Lisbon, the membership application of the Lithuanian Chemical Society was unequivocally approved.

Re-established in 2017, the LChS is a non-governmental organization that acts as an association. LChS unites chemists, teachers of chemistry, engineers, students, and juridical representatives. As of July 2022 it consists of 45 members.

From 1 January 2023, the Lithuanian Chemical Society will be our 50th member organisation. With Lithuania joining, EuChemS will represent chemists from 34 countries.

Ema Bojnec and Daša Žuman receive EUCYS EuChemS prize

Oct 14, 2022



Slovenian students Ema Bojnec and Daša Žuman received EuChemS' specially donated prize at the 2022 EU Contest for Young Scientists (EUCYS) in Leiden. This prize aims to recognise the best chemistry entry to the contest, in which young European Students between the ages 14-20 can participate.

Ema Bojnec and Daša Žuman's prize winning project is a linear structure notation for compounds for visually impaired in chemistry. The focus of this project is on increasing accessibility to chemistry.

You can learn more about the 2022 EUCYS here and read about the past winners of the EuChemS prize [here](#).

EuChemS at 3rd Zero Pollution Stakeholder Platform meeting

Oct 14, 2022



Secretary General Nineta Hrastelj and Executive Board Member Ioannis Katsoyiannis represented the European Chemical Society at the 3rd meeting of the [Zero Pollution Stakeholder Platform](#), held at the European Commission in Brussels on 11 October.

Ioannis Katsoyiannis made an intervention on the topic of regulation of pharmaceuticals in waters and wastewaters of Europe and emphasized the importance of the metabolites of the organic pollutants existing in waters. In addition, he highlighted the pan-European network of chemists EuChemS represents, and their potential for wide range contributions to many areas the platform is concerned with.

You can learn more about EuChemS' role in the Zero Pollution stakeholder Platform [here](#).



EuChemS supports COARA

Oct 17, 2022

In support of the [Coalition for Advancing Research Assessment \(COARA\)](#), the European Chemical Society (EuChemS) signed the online agreement for reforming research assessment in October 2022.

COARA aims to improve the quality and impact of research by reforming the framework for research assessment on the foundation of qualitative metrics, peer review, transparency, and responsibility when relying on quantitative metrics. Signatories commit to [core commitments](#) according to which they will handle research assessment. The full text of the agreement can be read [here](#).

By signing COARA, EuChemS joins [a growing number of organisations](#) and agencies from the fields of research, education and academia.

EuChemS contributes to “Nachrichten aus der Chemie”

Sep 27, 2022



EuChemS Secretary General Nineta Hrastelj alongside President Floris Rutjes was invited to write a joint contribution to the German Chemical Society's (GDCh) Journal “Nachrichten aus der Chemie”, by writing the editorial titled “Chemistry in an ever-changing Europe”.

This contribution introduces the European Chemical Society, its activities, and its reach to the readers of the journal in the context of the recent societal challenges Europe is facing. It highlights the importance of pan-European cooperation in science.

The editorial is an open access article, which you can read [here](#). You can access the entire journal [here](#).



EuChemS Award nominations open up

Sep 19, 2022

Nominations for the EuChemS Gold Medal, the EuChemS Lecture Award, the EuChemS Awards for Service and the EuChemS Historical Landmark Awards are open.

All the nominations below are open until **19 December, 18:00 CET**.

Learn more, and find the nomination forms below

- [EuChemS Gold Medal](#)
- [EuChemS Lecture Award](#)
- [EuChemS Awards for Service](#)
- [EuChemS Historical Landmark Awards](#)

Open Calls: See home page: [Home - EuChemS](#)

13th International Conference on the History of Chemistry (13ICHC)



23/05/2023 - 27/05/2023

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Universiteto 3, Vilnius

Event information

Location
[EuChemS](#)

[13th International Conference on the History of Chemistry \(13ICHC\) -](#)

Registration

You can register, and find up-to-date information about the event, speakers, deadlines and the venue below:-

[Register here](#)

EDITORIAL

EuChemS Magazine [Chemistry in Europe • 2022-4 - EuChemS Newsletters](#) for more content.



Over the years, the name of our society has evolved from Federation of European Chemical Societies (FECS), to European Association for Chemical and Molecular Sciences (EuCheMS) to European Chemical Society (EuChemS). The name changes reflect the continuously changing political and chemical landscapes, but I am confident that we will keep our current name for quite some time.

To increase our visibility, we have started to consistently use EuChemS as a brand and to label many of our activities accordingly. As an example, in the past year we have renamed all our awards such that the name includes 'EuChemS': for instance, the European Chemistry Gold Medal has become the EuChemS Gold Medal. Along the same line, we decided to change the name and format of our newsletters such that they will be automatically associated with EuChemS. Up until now, we have two newsletters: the monthly Brussels News Updates (BNU), and the quarterly Chemistry in Europe (CiE). We felt that producing two newsletters that are seemingly not directly associated with the European Chemical Society is a suboptimal situation. Hence, we choose to change to a single newsletter that is visually more attractive and is directly associated with our society. Thus, I am pleased to announce that this is the last Chemistry in Europe issue, BNU will also cease to exist, and that both will be continued under a new name starting in 2023.

The restyled newsletter will be called '*EuChemS Magazine*' and it will appear 12 times per year. Most of the issues will reflect the contents of BNU, while three of them will be somewhat more extensive, containing the types of contributions that are typically published in Chemistry in Europe newsletter. To readily distinguish between both types of issues, the latter ones will be named '*EuChemS Magazine⁺*' as they will contain more content. Not unimportantly, we will start using state-of-the-art publishing software to make *EuChemS Magazine* look more professional and more accessible than the current newsletters. It requires quite some work to change to a new newsletter. Designing and implementing a new format, working with new software, double checking that everything works well, merging address lists, and probably many other things, takes a lot of work and dedication and I am very grateful to the staff of the EuChemS Secretariat – for Claudia who provides administrative assistance, for Marton who is responsible for the technical foundations and content, and for Nineta, who oversees and steers the operation of the Secretariat – for making this possible. I am looking forward to seeing the new *EuChemS Magazine* and I hope you are as well!

Floris Rutjes
President, European Chemical Society

CHEMISTRY TALKS

President's Column

New directions for EuChemS



One of the topics at the EuChemS General Assembly in Lisbon was to discuss strategic directions for EuChemS for years to come. I would like to share the outcome of some of the often vivid discussions with you as the outcome implies that there will be changes in EuChemS policy in the near future.

An important discussion point was engagement with industrial partners. Chemistry obviously is not solely an academic field, but a discipline with many interfaces with society, including companies, ranging from small to very large, with an enormous variety of products and applications. Nevertheless, EuChemS as a whole – Member Societies, Executive Board, Divisions, Working Parties – fully consist of academic representatives, there is no involvement from industrial partners apart from some sponsored lectures organised by the divisions. In contrast, many of the Member Societies do have strong ties to industry, as demonstrated for example by industrial representatives in the board, memberships for companies, and scientific meetings jointly organised with chemical companies. The outcome of the discussion was rather clear in favour of more engagement with industrial partners, meaning that the Executive Board will start to involve industry in its various activities. A Task Group will be set up to propose a plan to the Executive Board to shape this new policy. An important condition is that this must be organised in such a way that EuChemS will maintain its independent position as a learned society.

There was also strong support to further increase EuChemS' educational activities. The course 'Good Chemistry – Methodological, Ethical, and Social Implications' is a great success and there was a clear wish from the Member Societies to increase the number of courses – not by duplicating courses that already exist at universities, but by setting-up courses on topics where the European dimension is relevant. Sustainability was mentioned as one of the topics of choice.

Finally, there was an extensive discussion on a proposal that originated from the Association of Greek Chemists to organise a European Chemistry Day. Many of the Member Societies were enthusiastic about this idea, albeit it was also recognised that such an event may come on top of many activities that are already organised by chemical societies such as, for example, a chemistry week or science week. Nevertheless, the enthusiasm for such a new event prevailed and we will also set-up a Task Group to further explore the feasibility of a European Chemistry Day.

Floris Rutjes
EuChemS President

More content: [Chemistry Talks - EuChemS Newsletters](#)



BRUSSELS NEWS UPDATE - NOVEMBER 2022

Dear readers,

Welcome to the November 2022 issue of the Brussels News Updates (BNU)! This EuChemS monthly newsletter is intended for chemists, policy makers, entrepreneurs and citizens in Europe and beyond who are interested in what's happening in the world of chemistry. We aim to keep our readers up to date on the latest chemistry and science-policy related news, such as awards, consultations, and various events.

You are invited to share this newsletter with your network as you see fit! Is there anything that you would like to read about in the next issue of the BNU? Let us know!

EUROPEAN HIGHLIGHTS

WHAT'S NEW AT EUCHEMS

Go to [EuChemS Brussels News Updates • November 2022 - EuChemS Newsletters](#) for the full content.



Welcome Message

From President Abdel Fattah El-Sisi

The hosting of COP27 in the green city of Sharm El-Sheikh this year marks the 30th anniversary of the adoption of the United Nations Framework Convention on Climate Change. In the thirty years since, the world has come a long way in the fight against climate change and its negative impacts on our planet; we are now able to better understand the science behind climate change, better assess its impacts, and better develop tools to address its causes and consequences.

Vision

Egypt has laid out its vision for successful and consensual negotiated outcomes at COP27 as follows:

- Achieving as much progress as we can across the board on every item under negotiations in a balanced and equitable manner, and based on the rules and principles that govern our collective action to tackle climate change and its impacts. This means delivering a comprehensive, ambitious Mitigation Work Program, achieving and capturing meaningful progress on the Global Goal on Adaptation, addressing the Loss and Damage deficit including through finding a balanced solution to the funding issue, and effectively addressing the climate finance challenge in a manner which creates trust in the process and allays concerns that developing countries will be called upon to contribute to the global effort without commensurate support.
- Basing all of our work on the most reliable, credible science available in the form of the IPCC and other relevant reports which have consistently established the need for urgent action to address the existing gaps particularly on mitigation, adaptation and climate finance.
- Ensuring that no country or group is left behind through building mutual trust and understanding and stressing the global nature of the climate challenge and hence the need for collective, complementary and collaborative action
- Commitment to the rules and principles that govern our collective action to tackle climate change and its impacts and
- Emphasizing the need to move from negotiations to implementation through specific, measurable, impactful initiatives to be delivered and implemented on the ground.

Targets

- Shifting from pledging to implementation at scale and on time, based on the agreed work streams in Paris and the ambition reflected until and during Glasgow, it is time to accelerate, scale up, replicate success stories and deliver through the right mechanisms.

- Delivering on adaptation, a transformative adaptation agenda is needed now. One based on science and is responsive to the actual needs of countries and communities in climate vulnerable situations, and which protects the basic needs and sustainable development needs and objectives for all.
- Action to clarify support for loss and damage, with the increasing impacts of more frequent extreme weather events and speeding slow onset events, it is time to respond to the calls and needs for effective mechanism that delivers on the needs for action and support in particular for those who are most vulnerable to the climate change impacts.
- Making finance flows a reality. Providing, mobilizing and delivering climate finance for developing countries is an urgent priority and needs a new mindset, updated strategies and policies especially on the backdrop of current financial crises, debt challenges and increasing interest rates. It is imperative to make appropriate financial flows that are based on needs identified through NDCs and other vehicles, with a focus on concessional finance instruments, and grants as appropriate, while providing a clear revision of definition of bankable projects that takes into consideration climate benefits and not only risks, and achieving cross cutting impacts.
- Ensuring a managed and just transition, based on the agreed principles in the Convention and its Paris Agreement, to deliver the agreed transition to an economic model based on low emission and climate resilient development as envisaged in Paris Agreement and the enhanced action identified in Glasgow. It is important that we agree on managing the transition in a manner which ensures the needed shift and the quick phasing-in of low emission technologies and phasing-down of high emission ones, while keeping in mind the impacts of implementation of response measures and ensuring that the Just transition meets the needs of all those who are impacted, including regarding food and water security
Avoid backsliding on commitments and pledges despite the multiple challenges and crises in particular energy crisis. We must all show leadership, where pledges and commitments are confirmed and even enhanced while ensuring there is no backsliding or backtracking in any form., challenging times create opportunities for a speedy transition, and deliver on commitments, it is time to show political leadership and We must send a clear message that multilateral collective approach to tackling the challenge of climate change is resilient, committed, effective and delivering.

Official Web Site for more details: - [COP27 - Home](#)

COP27: Press Conference | UN Climate Change



[COP27: Press Conference | UN Climate Change - YouTube](#)

COP27 kicks off with deal to discuss climate compensation

[COP27 kicks off with deal to discuss climate compensation | Reuters](#)

Summary

- Move to formally discuss issue followed late-night talks
- No reference to richer nations' liability
- Poorer countries "rightly expect" solidarity - German govt

Global climate conference Cop27 started on Sunday in Egypt's Sharm El Sheikh city.

Opening Ceremony: - [Cop27 opening ceremony: watch live here \(thenationalnews.com\)](#)

'The Clock is Ticking' as COP 27 Gets Under Way in Egypt

7 November

<https://www.theenergymix.com/2022/11/07/the-clock-is-ticking-as-cop-27-gets-under-way-in-egypt/>

COP27: UN chief warns world is on path to 'climate hell'

7 November

[COP27: How countries compare on carbon emissions and pledges \(energymonitor.ai\)](#)

UN Climate Change Conference (UNFCCC COP 27)

6 - 18 November 2022

Sharm el-Sheikh, Egypt

In November 2022, the Government of the Arab Republic of Egypt hosted the 27th session of the **Conference of the Parties** of the UNFCCC (**COP 27**), with a view to building on previous successes and paving the way for future ambition to effectively tackle the global challenge of climate change.

Your guide to COP27

6 November

[Your guide to COP27 | McKinsey & Company](#)

COP27: 'Climate chaos' warning as UN summit begins - BBC News

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'How many more wake-up calls do leaders need?': COP27 officially opens in Egypt

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COP27: a year on from the Glasgow climate pact, the world is burning more fossil fuels than ever

4 November

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4 November

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7 November

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9 November

[How likely is progress on climate at Cop27? | Cop27 | The Guardian](#)

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8 November

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6 November

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9 November

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9 November

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COP 27: Daily report for 9 November 2022

8 November

[Daily report for 9 November 2022 \(iisd.org\)](#)

COP 27: COP27: Biden says the climate crisis is about 'very life of the planet'

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10 November

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CO2 Is on Track to Hit a Record High in 2022 And Shows No Signs of Going Down

12 November

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The 1.5C climate target is dead – to prevent total catastrophe, Cop27 must admit it | Bill McGuire | The Guardian

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Cop27: Who are the real climate leaders? – podcast | Science | The Guardian

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14 November

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14 November

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14 November

[A new website backed by Al Gore tracks big polluters by name : NPR](https://www.npr.org/2022/11/14/1134444444)

‘Actions, not just words’

14 November

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15 November

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20 November

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[China and US renew commitment to tackling climate crisis but differences remain | Cop27 | The Guardian](#)

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19 November

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20 November

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China crashed a US-EU methane event at Cop27, to join support

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20 November

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20 November

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Opinion: COP27 concludes with loss and damage fund but no increased mitigation ambition

21 November

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COP27 will be remembered as a failure – here's what went wrong

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COP27 flinched on phasing out 'all fossil fuels'. What's next for the fight to keep them in the ground?

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21 November

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COP27: one big breakthrough but ultimately an inadequate response to the climate crisis

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COP27's 'loss and damage' fund for developing countries could be a breakthrough – or another empty climate promise

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After COP27, all signs point to world blowing past the 1.5 degrees global warming limit – here's what we can still do about it

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21 November

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29 November

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28 September

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Conditional approval granted to develop wind farm in North Kerry | RadioKerry.ie

3 October

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Giant supertanker uses 9.8% less fuel thanks to 130-foot sails

2 October

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Belgium Aims to Build World's First Artificial Energy Island - Video | Offshore Wind

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Almost 200 nations are set to tackle climate change at COP27 in Egypt. Is this just a talkfest, or does the meeting actually matter?

4 October

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Good news – there's a clean energy gold rush under way. We'll need it to tackle energy price turbulence and coal's exodus

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Scientists crack upcycling plastics to reduce greenhouse gas emissions, advancing a recent Science study

10 March 2022

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6 October

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‘Reckless’ coal firms plan climate-busting expansion, study finds | Coal | The Guardian

6 October

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6 October

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As Himalayan Glaciers Melt, a Water Crisis Looms in South Asia

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10 October

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10 October

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World's first carbon-eating concrete blocks are weeks away for commercial use

9 October

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Geotechnical Survey to Begin at North Irish Sea Array Site | Offshore Wind

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The World's Longest Offshore Gas Pipeline Could Get The Green Light Next Year | OilPrice.com

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Europe's Race To Ensure Gas Supply Comes At A Cost | OilPrice.com

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Moving of giant wind turbine blades responsible for traffic gridlock this morning - Galway Bay FM

13 October

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Ireland's planning body approves 200MW battery storage project

13 October

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Strategic Power Projects receives planning approval for £122 million battery storage facility

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Hydrogen imports: strict rules can deliver a win-win for Europe and developing nations

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CRISPR 2022. Nobel Prize Winning Chemistry 2020

The Nobel Prize in Chemistry 2020 was awarded jointly to Emmanuelle Charpentier and Jennifer A. Doudna "for the development of a method for genome editing"

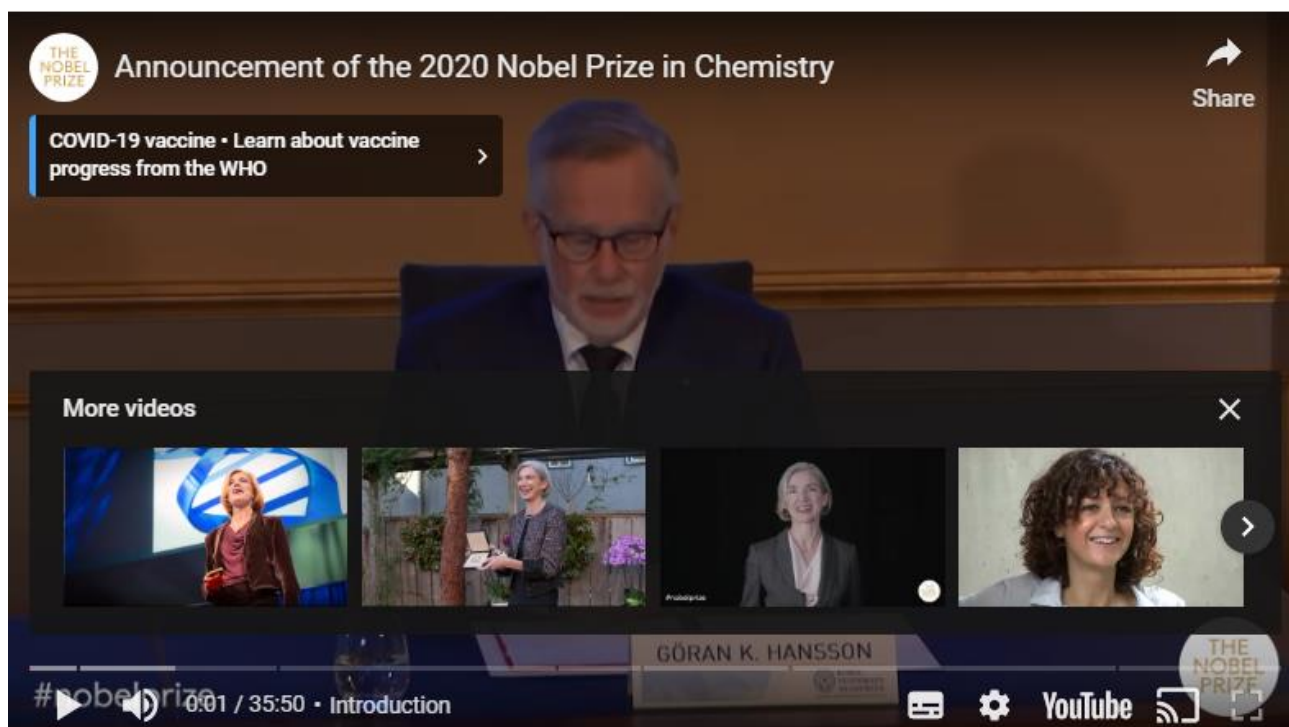


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Charpentier
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Announcement of the 2020 Nobel Prize in Chemistry by Professor Göran K. Hansson, Secretary General of the Royal Swedish Academy of Sciences, on 7 October 2020.



Watch the video announcement here:

[Announcement of the 2020 Nobel Prize in Chemistry - YouTube](#)

“This has revolutionised the molecular life sciences.”

Immediately after the announcement, Professor Claes Gustafsson, Chairman of the Nobel Committee, was interviewed by freelance journalist Joanna Rose regarding the 2020 Nobel Prize in Chemistry, awarded for the discovery of one of gene technology's sharpest tools: the CRISPR/Cas9 genetic scissors.



[“This has revolutionised the molecular life sciences.” Interview: 2020 Nobel Prize in Chemistry - YouTube](#)

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How CRISPR lets us edit our DNA | Jennifer Doudna

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[2020 Nobel Lectures in Chemistry - YouTube](#) **Emmanuelle Charpentier**

Introduction to the CRISPR/Cas9 system

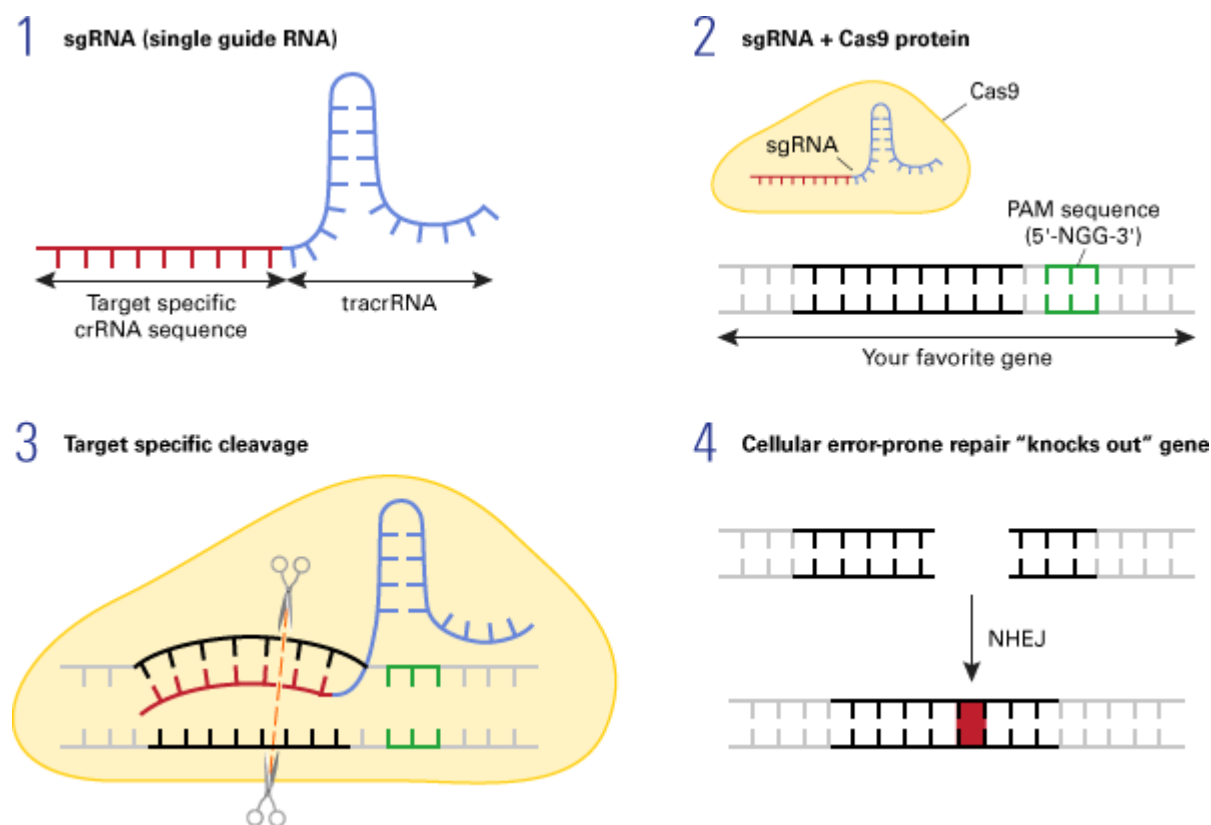
A powerful method for engineering your gene of interest

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Although recently developed programmable editing tools, such as zinc finger nucleases and transcription activator-like effector nucleases, have significantly improved the capacity for precise genome modification, these techniques have limitations. CRISPR (clustered regularly interspaced short palindromic repeats)/Cas9 technology represents a significant improvement over these other next-generation genome editing tools, reaching a new level of targeting, efficiency, and ease of use. The CRISPR/Cas9 system allows for site-specific genomic targeting in virtually any organism.

The type II CRISPR/Cas system is a prokaryotic adaptive immune response system that uses noncoding RNAs to guide the Cas9 nuclease to induce site-specific DNA cleavage. This DNA damage is repaired by cellular DNA repair mechanisms, either via the non-homologous end joining DNA repair pathway (NHEJ) or the homology-directed repair (HDR) pathway.

The CRISPR/Cas9 system has been harnessed to create a simple, RNA-programmable method to mediate genome editing in mammalian cells, and can be used to generate gene knockouts (via insertion/deletion) or knockins (via HDR). To create gene disruptions (Figure 1), a single guide RNA (sgRNA) is generated to direct the Cas9 nuclease to a specific genomic location. Cas9-induced double strand breaks are repaired via the NHEJ DNA repair pathway. The repair is error-prone, and thus insertions and deletions (INDELs) may be introduced that can disrupt gene function.



The principle of CRISPR/Cas9-mediated gene disruption. A single guide RNA (sgRNA), consisting of a crRNA sequence that is specific to the DNA target, and a tracrRNA sequence that interacts with the Cas9 protein (1), binds to a recombinant form of Cas9 protein that has DNA endonuclease activity (2). The resulting complex will cause target-specific double-stranded DNA cleavage (3). The cleavage site will be repaired by the nonhomologous end joining (NHEJ) DNA repair pathway, an error-prone process that may result in insertions/deletions (INDELs) that may disrupt gene function (4).

CRISPR/Cas9 technology has revolutionized genome editing, allowing a previously unattainable level of genomic targeting, efficiency, and simplicity. Guide-it products further improve the usability of the CRISPR/Cas9 system by providing a streamlined method for:

- Producing sgRNAs *in vitro*
 - Testing the cleavage efficiency of sgRNAs
 - Monitoring the efficiency of genome editing in cultured cells
-

What Is CRISPR?

By [Aparna Vidyasagar - Live Science Contributor](#) Updated May 13 2022

<https://cdn.jwplayer.com/previews/xoYo7662>

[How Does CRISPR-Cas9 Gene Editing Work? \(jwplayer.com\)](#)

CRISPR technology is a simple yet powerful tool for editing genomes. It allows researchers to easily alter DNA sequences and modify gene function. Its many potential applications include correcting genetic defects, treating and preventing the spread of diseases and improving crops. However, its promise also raises ethical concerns.

In popular usage, "CRISPR" (pronounced "crisper") is shorthand for "CRISPR-Cas9." CRISPRs are specialized stretches of DNA. The protein Cas9 (or "CRISPR-associated") is an enzyme that acts like a pair of molecular scissors, capable of cutting strands of DNA.

CRISPR technology was adapted from the natural defence mechanisms of bacteria and archaea (the domain of single-celled microorganisms). These organisms use CRISPR-derived RNA and various Cas proteins, including Cas9, to foil attacks by viruses and other foreign bodies. They do so primarily by chopping up and destroying the DNA of a foreign invader. When these components are transferred into other, more complex, organisms, it allows for the manipulation of genes, or "editing."

Until 2017, no one really knew what this process looked like. In a paper published Nov. 10, 2017, in the journal *Nature Communications*, a team of researchers led by Mikihiro Shibata of Kanazawa University and Hiroshi Nishimasu of the University of Tokyo showed what it looks like when a CRISPR is in action for the very first time. [[A Breathtaking New GIF Shows CRISPR Chewing Up DNA](#)]

CRISPR-Cas 9: The key players

CRISPRs: "CRISPR" stands for "clusters of regularly interspaced short palindromic repeats." It is a specialized region of DNA with two distinct characteristics: the presence of nucleotide repeats and spacers. Repeated sequences of nucleotides — the building blocks of DNA — are distributed throughout a CRISPR region. Spacers are bits of DNA that are interspersed among these repeated sequences.

In the case of bacteria, the spacers are taken from viruses that previously attacked the organism. They serve as a bank of memories, which enables bacteria to recognize the viruses and fight off future attacks.

This was first demonstrated experimentally by Rodolphe Barrangou and a team of researchers at Danisco, a food ingredients company. In a [2007 paper](#) published in the journal *Science*, the researchers used *Streptococcus thermophilus* bacteria, which are commonly found in yogurt and other dairy cultures, as their model. They observed that after a virus attack, new spacers were incorporated into the CRISPR region. Moreover, the DNA sequence of these spacers was identical to parts of the virus [genome](#). They also manipulated the spacers by taking them out or putting in new viral DNA sequences. In this way, they

were able to alter the bacteria's resistance to an attack by a specific virus. Thus, the researchers confirmed that CRISPRs play a role in regulating bacterial immunity.

CRISPR RNA (crRNA): Once a spacer is incorporated and the virus attacks again, a portion of the CRISPR is [transcribed](#) and processed into CRISPR RNA, or "crRNA." The nucleotide sequence of the CRISPR acts as a template to produce a complementary sequence of single-stranded RNA. [Each crRNA consists of a nucleotide repeat](#) and a spacer portion, according to a 2014 review by **Jennifer Doudna and Emmanuelle Charpentier**, published in the journal *Science*.

Cas9: The Cas9 protein is an enzyme that cuts foreign DNA.

The protein typically binds to two RNA molecules: crRNA and another called tracrRNA (or "trans-activating crRNA"). The two then guide Cas9 to the target site where it will make its cut. This expanse of DNA is complementary to a 20-nucleotide stretch of the crRNA.

Using two separate regions, or "domains" on its structure, Cas9 cuts both strands of the DNA double helix, making what is known as a "double-stranded break," according to the 2014 *Science* article.

There is a built-in safety mechanism, which ensures that Cas9 doesn't just cut anywhere in a genome. Short DNA sequences known as PAMs ("protospacer adjacent motifs") serve as tags and sit adjacent to the target DNA sequence. If the Cas9 complex doesn't see a PAM next to its target DNA sequence, it won't cut. This is one possible reason that [Cas9 doesn't ever attack the CRISPR](#) region in bacteria, according to a 2014 review published in *Nature Biotechnology*.

CRISPR-Cas9 as a genome-editing tool

The genomes of various organisms encode a series of messages and instructions within their DNA sequences. Genome editing involves changing those sequences, thereby changing the messages. This can be done by inserting a cut or break in the DNA and tricking a cell's natural DNA repair mechanisms into introducing the changes one wants. CRISPR-Cas9 provides a means to do so.

In 2012, two pivotal research papers were published in the journals [Science](#) and [PNAS](#), which helped transform bacterial CRISPR-Cas9 into a simple, programmable genome-editing tool.

The studies, conducted by separate groups, concluded that Cas9 could be directed to cut any region of DNA. This could be done by simply changing the nucleotide sequence of crRNA, which binds to a complementary DNA target. In the 2012 *Science* article, Martin Jinek and colleagues further simplified the system by fusing crRNA and tracrRNA to create a single "guide RNA." Thus, genome editing requires only two components: a guide RNA and the Cas9 protein.

"Operationally, you design a stretch of 20 [nucleotide] base pairs that match a gene that you want to edit," said [George Church](#), a professor of genetics at Harvard Medical School. An RNA molecule complementary to those 20 base pairs is constructed. Church emphasized the importance of making sure that the nucleotide sequence is found only in the target gene and nowhere else in the genome. "Then the RNA plus the protein [Cas9] will cut — like a pair of scissors — the DNA at that site, and ideally nowhere else," he explained.

Once the DNA is cut, the cell's natural repair mechanisms kick in and work to introduce mutations or other changes to the genome. There are two ways this can happen. According to the [Huntington's Outreach Project at Stanford \(University\)](#), one repair method involves gluing the two cuts back together. This method, known as "non-homologous end joining," tends to introduce errors. Nucleotides are accidentally inserted or deleted, resulting in [mutations](#), which could disrupt a gene. In the second method, the break is fixed by filling in the gap with a sequence of nucleotides. In order to do so, the cell uses a

short strand of DNA as a template. Scientists can supply the DNA template of their choosing, thereby writing-in any gene they want, or correcting a mutation.

Utility and limitations

CRISPR-Cas9 has become popular in recent years. Church notes that the technology is easy to use and is about four times more efficient than the previous best genome-editing tool (called [TALENs](#)).

In 2013, the first reports of using CRISPR-Cas9 to edit human cells in an experimental setting were published by researchers from the laboratories of [Church](#) and [Feng Zhang](#) of the Broad Institute of the Massachusetts Institute of Technology and Harvard. Studies using in vitro (laboratory) and animal models of human disease have demonstrated that the technology can be effective in correcting genetic defects. Examples of such diseases include [cystic fibrosis, cataracts and Fanconi anemia](#), according to a 2016 review article published in the journal *Nature Biotechnology*. These studies pave the way for therapeutic applications in humans.

"I think the public perception of CRISPR is very focused on the idea of using gene editing clinically to cure disease," said Neville Sanjana of the New York Genome Center and an assistant professor of biology, neuroscience and physiology at New York University. "This is no doubt an exciting possibility, but this is only one small piece."

CRISPR technology has also been applied in the food and agricultural industries to engineer probiotic cultures and to vaccinate industrial cultures (for yogurt, for example) against viruses. It is also being used in crops to improve yield, drought tolerance and nutritional properties.

One other potential application is to create gene drives. These are genetic systems, which increase the chances of a particular trait passing on from parent to offspring. Eventually, over the course of generations, the trait spreads through entire populations, according to the [Wyss Institute](#). Gene drives can aid in controlling the spread of diseases such as malaria by enhancing sterility among the disease vector — female *Anopheles gambiae* mosquitoes — according to the 2016 *Nature Biotechnology* article. In addition, gene drives could also be used [to eradicate invasive species and reverse pesticide and herbicide resistance](#), according to a 2014 article by Kenneth Oye and colleagues, published in the journal *Science*. However, CRISPR-Cas9 is not without its drawbacks.

"I think the biggest limitation of CRISPR is it is not a hundred percent efficient," Church told *Live Science*. Moreover, the genome-editing efficiencies can vary. According to the 2014 *Science* article by Doudna and Charpentier, in a study conducted in rice, gene editing occurred in nearly 50 percent of the cells that received the Cas9-RNA complex. Whereas other analyses have shown that depending on the target, editing efficiencies can reach as high as 80 percent or more.

There is also the phenomenon of "off-target effects," where DNA is cut at sites other than the intended target. This can lead to the introduction of unintended mutations. Furthermore, Church noted that even when the system cuts on target, there is a chance of not getting a precise edit. He called this "genome vandalism."

Setting limits

The many potential applications of CRISPR technology raise questions about the ethical merits and consequences of tampering with genomes.

In the 2014 Science article, Oye and colleagues point to the potential ecological impact of using gene drives. An introduced trait could spread beyond the target population to other organisms through crossbreeding. Gene drives could also reduce the genetic diversity of the target population.

Making genetic modifications to human embryos and reproductive cells such as sperm and eggs is known as germline editing. Since changes to these cells can be passed on to subsequent generations, using CRISPR technology to make germline edits has raised a number of ethical concerns.

Variable efficacy, off-target effects and imprecise edits all pose safety risks. In addition, there is much that is still unknown to the scientific community. In a 2015 article published in Science, David Baltimore and a group of scientists, ethicists and legal experts note that [germline editing raises the possibility of unintended consequences for future generations](#) "because there are limits to our knowledge of human genetics, gene-environment interactions, and the pathways of disease (including the interplay between one disease and other conditions or diseases in the same patient)."

Other ethical concerns are more nuanced. Should we make changes that could fundamentally affect future generations without having their consent? What if the use of germline editing veers from being a therapeutic tool to an enhancement tool for various human characteristics?

To address these concerns, the National Academies of Sciences, Engineering and Medicine put together a [comprehensive report with guidelines and recommendations](#) for genome editing.

Although the National Academies urge caution in pursuing germline editing, they emphasize "caution does not mean prohibition." They recommend that germline editing be done only on genes that lead to serious diseases and only when there are no other reasonable treatment alternatives. Among other criteria, they stress the need to have data on the health risks and benefits and the need for continuous oversight during clinical trials. They also recommend following up on families for multiple generations.

Recent research

There have been many recent research projects based around CRISPR. "The pace of basic research discoveries has exploded, thanks to CRISPR," said biochemist and CRISPR expert Sam Sternberg, the group leader of technology development at Berkeley, California-based Caribou Biosciences Inc., which is developing CRISPR-based solutions for medicine, agriculture, and biological research.

Here are some of the most recent findings:

- In April 2017, a team of researchers released research in the journal Science that they had programmed a CRISPR molecule to find strains of viruses, such as Zika, in blood serum, urine and saliva.
- On Aug. 2, 2017, scientists revealed in the journal Nature that they had [removed a heart disease defect in an embryo successfully using CRISPR](#).
- On Jan. 2, 2018, researchers announced that they may be able to stop fungi and other problems that threaten chocolate production using CRISPR to make the plants more resistant to disease.
- On April 16, 2018, researchers upgraded CRISPR to edit thousands of genes at once, according to research published by the [journal BioNews](#).

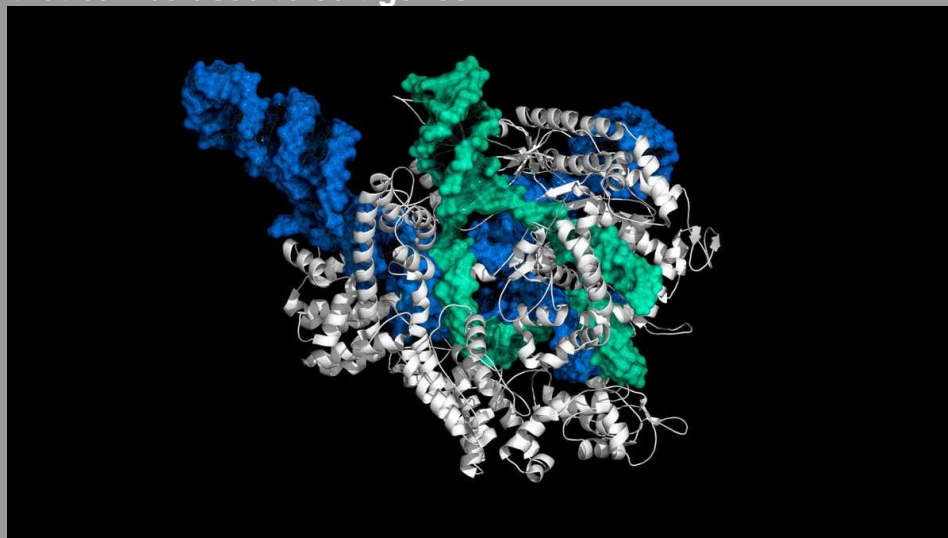
Additional reporting by Alina Bradford, Live Science contributor.

Additional resources

- [Broad Institute: A timeline of pivotal work on CRISPR](#)
- [Genetic Engineering & Biotechnology News: CRISPR-Cas9 Improved 10000-Fold by Synthetic Nucleotides](#)
- [Broad Institute: Questions and Answers about CRISPR](#)

What is CRISPR?

A technology that can be used to edit genes



CRISPR is a technology that can be used to edit genes and, as such, will likely change the world.

The essence of CRISPR is simple: it's a way of finding a specific bit of [DNA](#) inside a cell. After that, the next step in CRISPR gene editing is usually to alter that piece of DNA. However, CRISPR has also been adapted to do other things too, such as turning genes on or off without altering their sequence.

There were ways to edit the genomes of some plants and animals before [the CRISPR method was unveiled in 2012](#) but it took years and cost hundreds of thousands of dollars. CRISPR has [made it cheap and easy](#).

CRISPR is already [widely used for scientific research](#), and in the not too distant future many of [the plants](#) and [animals](#) in [our farms](#), gardens or homes may have been altered with CRISPR. In fact, [some people already are eating CRISPRed food](#).

CRISPR technology also has the potential to transform medicine, enabling us to not only [treat](#) but also [prevent](#) many diseases. We may even decide to use it to [change the genomes](#) of [our children](#). An [attempt to do this in China](#) has been condemned as premature and unethical, but [some think](#) it could [benefit children in the future](#).

CRISPR is being used for all kinds of other purposes too, from fingerprinting cells and [logging what happens](#) inside them to [directing evolution](#) and creating [gene drives](#).

The key to CRISPR is the many flavours of “Cas” proteins found in bacteria, where [they help defend against viruses](#). The Cas9 protein is the most widely used by scientists. This protein can easily be programmed to find and bind to almost any desired target sequence, simply by giving it a piece of RNA to guide it in its search.

When the CRISPR Cas9 protein is added to a cell along with a piece of guide [RNA](#), the Cas9 protein hooks up with the guide RNA and then moves along the strands of DNA until it finds and binds to a 20-DNA-letter long sequence that matches part of the guide RNA sequence. That's impressive, given that [the DNA packed into each of our cells](#) has six billion letters and is two metres long.

What happens next can vary. The standard Cas9 protein cuts the DNA at the target. When the cut is repaired, mutations are introduced that usually disable a gene. This is by far the most common use of CRISPR. It's called genome editing – or gene editing – but usually the results are **not as precise** as that term implies.

CRISPR can also be used to **make precise changes** such as replacing faulty genes – true genome editing – but this is far more difficult.

Customised Cas proteins have been created that do not cut DNA or alter it in any way, **but merely turn genes on or off**: CRISPRa and CRISPRi respectively. Yet others, called base editors, **change one letter of the DNA code to another**.

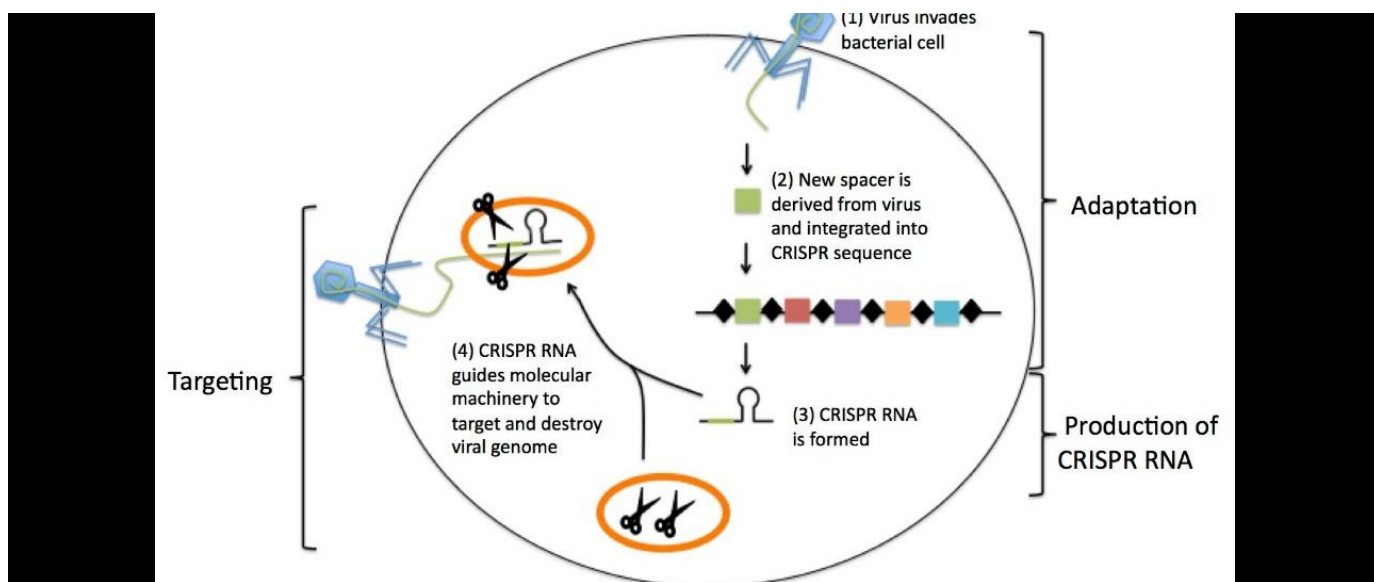
So why do we call it CRISPR? Cas proteins are used by bacteria to destroy viral DNA. They add bits of viral DNA to their own genome to guide the Cas proteins, and the odd patterns of these bits of DNA are what gave CRISPR its name: clustered regularly interspaced short palindromic repeats. *Michael Le Page*

MORE ON WHAT IS CRISPR?

Read more: <https://www.newscientist.com/term/what-is-crispr/#ixzz6eNe44Tau>

CRISPR: A game-changing genetic engineering technique

<http://sitn.hms.harvard.edu/flash/2014/crispr-a-game-changing-genetic-engineering-technique>



Have you heard? A revolution has seized the scientific community. Within only a few years, research labs worldwide have adopted a new technology that facilitates making specific changes in the DNA of humans, other animals, and plants. Compared to previous techniques for modifying DNA, this new approach is much faster and easier. This technology is referred to as “CRISPR,” and it has changed not only the way basic research is conducted, but also the way we can now think about treating diseases [1,2].

What is CRISPR

CRISPR is an acronym for Clustered Regularly Interspaced Short Palindromic Repeat. This name refers to the unique organization of short, partially palindromic repeated DNA sequences found in the genomes of bacteria and other microorganisms. While seemingly innocuous, CRISPR sequences are a crucial component of the immune systems [3] of these simple life forms. The immune system is responsible for protecting an organism's health and well-being. Just like us, bacterial cells can be invaded by viruses, which are small, infectious agents. If a viral infection threatens a bacterial cell, the CRISPR immune system can thwart the attack by destroying the genome of the invading virus [4]. The genome of the virus includes genetic material that is necessary for the virus to continue replicating. Thus, by destroying the viral genome, the CRISPR immune system protects bacteria from ongoing viral infection.

How does it work?

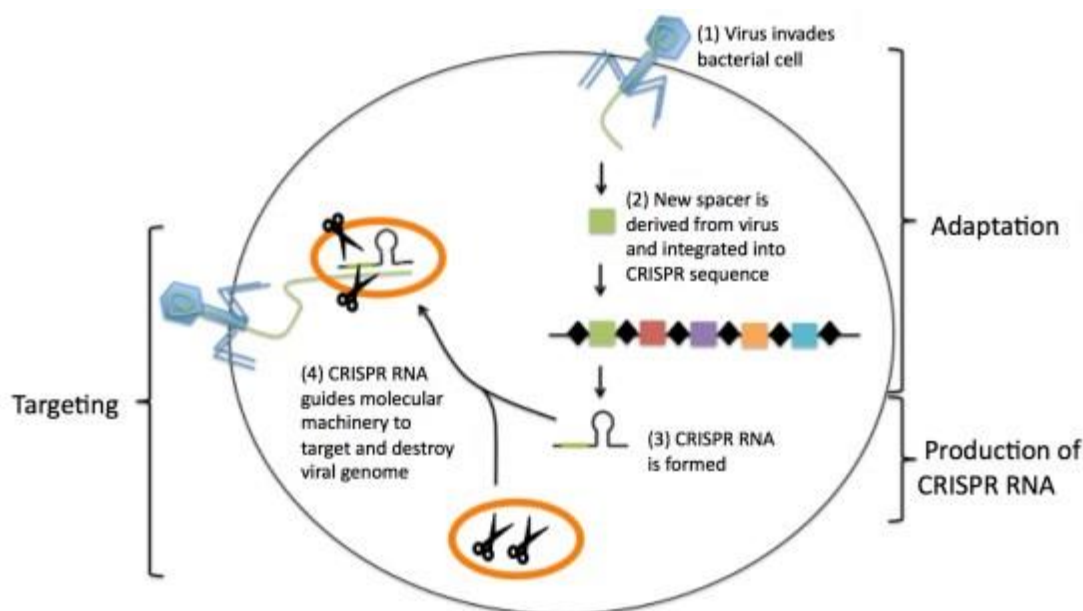


Figure 1 ~ The steps of CRISPR-mediated immunity. CRISPRs are regions in the bacterial genome that help defend against invading viruses. These regions are composed of short DNA repeats (black diamonds) and spacers (colored boxes). When a previously unseen virus infects a bacterium, a new spacer derived from the virus is incorporated amongst existing spacers. The CRISPR sequence is transcribed and processed to generate short CRISPR RNA molecules. The CRISPR RNA associates with and guides bacterial molecular machinery to a matching target sequence in the invading virus. The molecular machinery cuts up and destroys the invading viral genome. Figure adapted from *Molecular Cell* 54, April 24, 2014 [5].

Interspersed between the short DNA repeats of bacterial CRISPRs are similarly short variable sequences called spacers (FIGURE 1). These spacers are derived from DNA of viruses that have previously attacked the host bacterium [3]. Hence, spacers serve as a 'genetic memory' of previous infections. If another infection by the same virus should occur, the CRISPR defense system will cut up any viral DNA sequence matching the spacer sequence and thus protect the bacterium from viral attack. If a previously unseen virus attacks, a new spacer is made and added to the chain of spacers and repeats.

The CRISPR immune system works to protect bacteria from repeated viral attack via three basic steps [5]:

Step 1) Adaptation – DNA from an invading virus is processed into short segments that are inserted into the CRISPR sequence as new spacers.

Step 2) Production of CRISPR RNA – CRISPR repeats and spacers in the bacterial DNA undergo transcription, the process of copying DNA into RNA (ribonucleic acid). Unlike the double-chain helix structure of DNA, the resulting RNA is a single-chain molecule. This RNA chain is cut into short pieces called CRISPR RNAs.

Step 3) Targeting – CRISPR RNAs guide bacterial molecular machinery to destroy the viral material. Because CRISPR RNA sequences are copied from the viral DNA sequences acquired during adaptation, they are exact matches to the viral genome and thus serve as excellent guides.

The specificity of CRISPR-based immunity in recognizing and destroying invading viruses is not just useful for bacteria. Creative applications of this primitive yet elegant defense system have emerged in disciplines as diverse as industry, basic research, and medicine.

What are some applications of the CRISPR system?

In Industry

The inherent functions of the CRISPR system are advantageous for industrial processes that utilize bacterial cultures. CRISPR-based immunity can be employed to make these cultures more resistant to viral attack, which would otherwise impede productivity. In fact, the original discovery of CRISPR immunity came from researchers at Danisco, a company in the food production industry [2,3]. Danisco scientists were studying a bacterium called *Streptococcus thermophilus*, which is used to make yogurts and cheeses. Certain viruses can infect this bacterium and damage the quality or quantity of the food. It was discovered that CRISPR sequences equipped *S. thermophilus* with immunity against such viral attack. Expanding beyond *S. thermophilus* to other useful bacteria, manufacturers can apply the same principles to improve culture sustainability and lifespan.

In the Lab

Beyond applications encompassing bacterial immune defenses, scientists have learned how to harness CRISPR technology in the lab [6] to make precise changes in the genes of organisms as diverse as fruit flies, fish, mice, plants and even human cells. Genes are defined by their specific sequences, which provide instructions on how to build and maintain an organism's cells. A change in the sequence of even one gene can significantly affect the biology of the cell and in turn may affect the health of an organism. CRISPR techniques allow scientists to modify specific genes while sparing all others, thus clarifying the association between a given gene and its consequence to the organism.

Rather than relying on bacteria to generate CRISPR RNAs, scientists first design and synthesize short RNA molecules that match a specific DNA sequence—for example, in a human cell. Then, like in the targeting step of the bacterial system, this ‘guide RNA’ shuttles molecular machinery to the intended DNA target. Once localized to the DNA region of interest, the molecular machinery can silence a gene or even change the sequence of a gene (Figure 2)! This type of gene editing can be likened to editing a sentence with a word processor to delete words or correct spelling mistakes. One important application of

such technology is to facilitate making animal models with precise genetic changes to study the progress and treatment of human diseases.

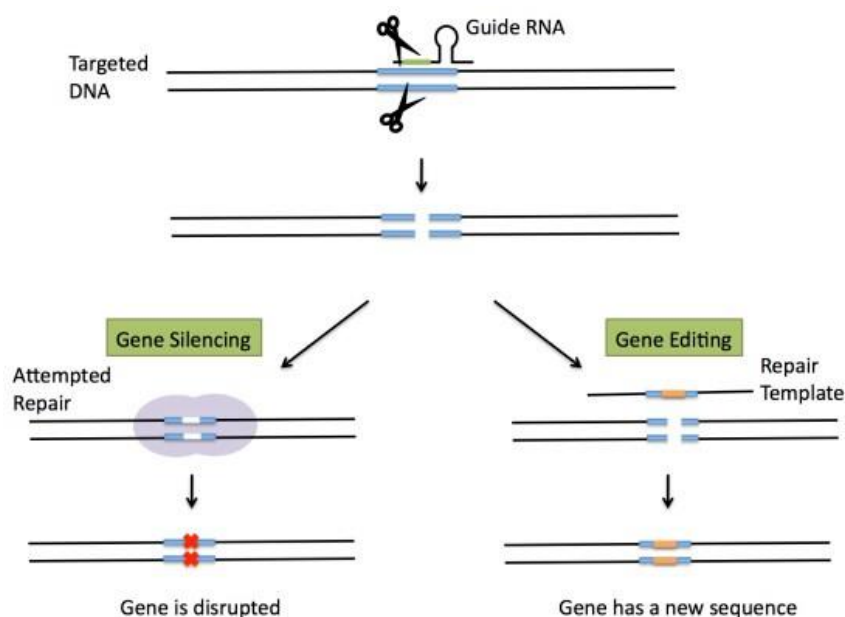


Figure 2 ~ Gene silencing and editing with CRISPR. Guide RNA designed to match the DNA region of interest directs molecular machinery to cut both strands of the targeted DNA. During gene silencing, the cell attempts to repair the broken DNA, but often does so with errors that disrupt the gene—effectively silencing it. For gene editing, a repair template with a specified change in sequence is added to the cell and incorporated into the DNA during the repair process. The targeted DNA is now altered to carry this new sequence.

In Medicine

With early successes in the lab, many are looking toward medical applications of CRISPR technology. One application is for the treatment of genetic diseases. The first evidence that CRISPR can be used to correct a mutant gene and reverse disease symptoms in a living animal was published earlier this year [7]. By replacing the mutant form of a gene with its correct sequence in adult mice, researchers demonstrated a cure for a rare liver disorder that could be achieved with a single treatment. In addition to treating heritable diseases, CRISPR can be used in the realm of infectious diseases, possibly providing a way to make more specific antibiotics that target only disease-causing bacterial strains while sparing beneficial bacteria [8]. A recent SITN Waves article discusses how this technique was also used to make white blood cells resistant to HIV infection [9].

The Future of CRISPR

Of course, any new technology takes some time to understand and perfect. It will be important to verify that a particular guide RNA is specific for its target gene, so that the CRISPR system does not mistakenly attack other genes. It will also be important to find a way to deliver CRISPR therapies into the body before they can become widely used in medicine. Although a lot remains to be discovered, there is no doubt that CRISPR has become a valuable tool in research. In fact, there is enough excitement in the field to warrant the launch of several Biotech start-ups that hope to use CRISPR-inspired technology to treat human diseases [8].

Ekaterina Pak is a Ph.D. student in the Biological and Biomedical Sciences program at Harvard Medical School.

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What is CRISPR, the gene editing technology that won the Chemistry Nobel prize?

October 8, 2020. The Conversation

The Royal Swedish Academy of Sciences yesterday awarded the 2020 Nobel Prize in Chemistry to Emmanuelle Charpentier and Jennifer Doudna for their work on CRISPR, a method of genome editing.

A genome is the full set of genetic “instructions” that determine how an organism will develop. Using CRISPR, researchers can cut up DNA in an organism’s genome and edit its sequence.

CRISPR technology is a powerhouse for basic research and is also changing the world we live in. There are thousands of research papers published every year on its various applications.

These include accelerating research into cancers, mental illness, potential animal to human organ transplants, better food production, eliminating malaria-carrying mosquitoes and saving animals from disease.

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Charpentier is the director at the Max Planck Institute for Infection Biology in Berlin, Germany and Doudna is a professor at the University of California, Berkeley. Both played a crucial role in demonstrating how CRISPR could be used to target DNA sequences of interest.

Taking advantage of bacterial immunity

CRISPR technology is adapted from a system that is naturally present in bacteria and other unicellular organisms known as archaea.

This natural system gives bacteria a form of acquired immunity. It protects them from foreign genetic elements (such as invading viruses) and lets them “remember” these in case they reappear.

Like most advances in modern science, the discovery of CRISPR and its emergence as a key genome editing method involved efforts by many researchers, over several decades.

In 1987, Japanese molecular biologist Yoshizumi Ishino and his colleagues were the first to notice, in E. coli bacteria, unusual clusters of repeated DNA sequences interrupted by short sequences.

Spanish molecular biologist Francisco Mojica and colleagues later showed similar structures were present in other organisms and proposed to call them CRISPR: Clustered Regularly Interspaced Short Palindromic Repeats.

In 2005, Mojica and other groups reported the short sequences (or “spacers”) interrupting the repeats were derived from other DNA belonging to viruses.

Evolutionary biologists Kira Makarova, Eugene Koonin and colleagues eventually proposed CRISPR and the associated Cas9 genes were acting as the immune mechanism. This was experimentally confirmed in 2007 by Rodolphe Barrangou and colleagues.

A programmable system

The CRISPR-associated genes, Cas9, encode a protein that “cuts” DNA. This is the active part of the defence against viruses, as it destroys the invading DNA.

In 2012, Charpentier and Doudna showed the spacers acted as markers that guided where Cas9 would make a cut in the DNA. They also showed an artificial Cas9 system could be programmed to target any DNA sequence in a lab setting.

This was a groundbreaking discovery which opened the door for CRISPR’s wider applications in research.

In 2013, for the first time, groups led by American biochemist Feng Zhang and geneticist George Church reported genome editing in human cell cultures using CRISPR-Cas9. It has since been used in countless organisms from yeast to cows, plants and corals.

Today, CRISPR is the preferred gene-editing tool for thousands of researchers.



Chemistry Nobel Prize award recipients Jennifer A. Doudna and Emmanuelle Charpentier have joined the ranks of Marie Curie, Frances Arnold, Ada E. Yonath and Dorothy Crowfoot Hodgkin. J.L.

Cereijido/EPA

A technical revolution with endless applications

Humans have altered the genomes of species for thousands of years. Initially, this was through approaches such as selective breeding.

However, genetic engineering – the direct manipulation of DNA by humans outside of breeding and mutations – has only existed since the 1970s.

CRISPR-based systems fundamentally changed this field, as they allow for genomes to be edited in living organisms cheaply, with ease and with extreme precision.

CRISPR is currently making a huge impact in health. There are clinical trials on its use for blood disorders such as sickle cell disease or beta-thalassemia, for the treatment of the most common cause of inherited childhood blindness (Leber congenital amaurosis) and for cancer immunotherapy.

CRISPR also has great potential in food production. It can be used to improve crop quality, yield, disease resistance and herbicide resistance.

Used on livestock, it can lead to better disease resistance, increased animal welfare and improved productive traits – that is, animals producing more meat, milk or high-quality wool.

With great power...

A number of challenges to the technology remain, however. Some are technical, such as the risk of off-target modifications (which happen when Cas9 cuts at unintended locations in the genome).

Other problems are societal. CRISPR was famously used in one of the most controversial experiments of recent years.

Read more: [Why we need a global citizens' assembly on gene editing](#)

Chinese biophysicist He Jiankui unsuccessfully attempted to use the technology to modify human embryos and make them resistant to HIV (human immunodeficiency virus). This led to the birth of twins Lulu and Nana.

We need a broad and inclusive discussion on the regulation of such technologies – especially given their vast applications and potential.

To quote CRISPR researcher Fyodor Urnov, Charpentier and Doudna’s work really has “changed everything”.

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Green Hydrogen & Fuel Cells Chemistry & Technology

October – November 2022

Hazards with Hydrogen

Hydrogen has many properties and focusing on its hazardous properties there are parameters used to assess the severity of these hazardous properties. The most important ones are Explosion Class, K_{st} value, minimum ignition energy and flammability limits. The following tables summarise the implications of these hazard values.

| Powder Class | K_{st} value [bar.m/s] | comment |
|--------------|--------------------------|-----------------------|
| St0 | 0 | Does not explode |
| St1 | 1 to 200 | Weak explosion |
| St2 | 201 to 300 | Strong explosion |
| St3 | >300 | Very strong explosion |

In fact, K_{st} is an internationally agreed ‘normalized’ rate of pressure rise. It is defined as the maximum rate of pressure rise in a 1 cubic meter vessel.

| Material | P max | K_{st} bar m/s |
|----------|-------|------------------|
| Methane | 8.4 | 58 |
| Hydrogen | 8.2 | 503 |

Here it is seen that a hydrogen St3 explosion is severe with a K_{st} value of 503 m/s bar.

The classes of the minimum ignition potential:

| Ignition sensitivity | MIE (mJ) |
|----------------------|--------------|
| Normal | MIE > 10 |
| Specific | 3 < MIE < 10 |
| Extreme | MIE < 3 |

Hydrogen flammability limits are 4 – 75% at atmosphere pressure based on the volume percent of hydrogen in air. In oxygen it's 4% to 94% which is a wide ranging.

| Properties | Methane |
|-------------------------|-----------------|
| Molecular formula | CH ₄ |
| Explosible range | (vol. %) 4.4-17 |
| Max. explosion pressure | 8.1 (barg) |
| Hydrogen MIE | 0.017mJ |

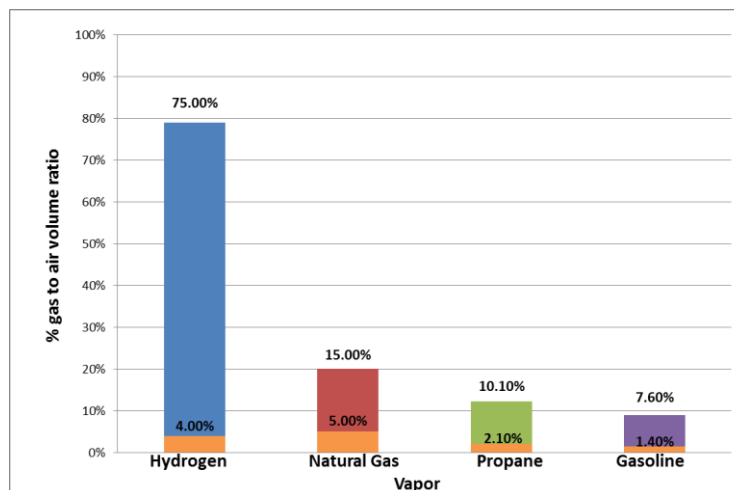
| Substance | | Flammability limit (%vol.) | | NFPA class | Flash point | Minimum ignition energy (mJ) @ proportion in air at which achieved ^{[4][5]} | Autoignition temperature |
|-----------------------|---------------|----------------------------|-------|------------|---------------|---|--------------------------|
| | | Lower | Upper | | | | |
| Hydrogen | | 4/18.3 ^[28] | 75/59 | IA | Flammable gas | 0.016 @ 28%; 0.0012, in pure oxygen | 500–571 °C |
| Methane (natural gas) | ISO10156 | 5.0 | 14.3 | IA | Flammable gas | 0.21 @ 8.5% | 580 °C |
| | IEC60079-20-1 | 4.4 | 17 | | | | |

Hydrogen's very low MIE makes explosion likely in many situations

Hydrogen is classified among the “extremely flammable” substances as shown by its properties compared with methane and petrol in the below table:

| Properties | | Hydrogen | Methane | Petrol |
|--------------------------------------|-----------------------------|----------|------------|-----------|
| Ignition limits in air | (vol. %) | 4 - 75 | 5,3 - 15 | 1,0 - 7,6 |
| Detonation limits in air | (Vol. %) | 13 - 65 | 6,3 - 13,5 | 1,1 - 3,3 |
| Minimum ignition energy in air (MIE) | (mJ) | 0,02 | 0,29 | 0,24 |
| Heat of combustion | (kJ/g) | 120 | 50 | 44,5 |
| Self-ignition temperature | (°C) | 585 | 540 | 228 - 501 |
| Flamme temperature | (°C) | 2 045 | 1 875 | 2 200 |
| Theoretical explosion energy | (kg TNT/m ³ gas) | 2,02 | 7,03 | 44,22 |
| Diffusion coefficient in air | cm ² /s | 0,61 | 0,16 | 0,05 |

[SY_hydrogen_GB_2009.pdf \(developpement-durable.gouv.fr\)](#)



Explosive range of sample gases

[Experimental Evaluation of Hydrogen Explosion Hazards in Industrial Battery Rooms - SFPE](#)

H₂ ignition properties and factors. Mechanisms proposed for igniting H₂ include those shown in FIG. 1. However, even this list may not be exhaustive, as indicated by Gummer and Hawksworth's work through 2007,³ which indicated that the proposed mechanisms do not explain some reported H₂ ignitions (or non-ignitions). In addition, these mechanisms are not universally agreed upon, or in some cases may not be significant enough to cause ignition in H₂ fuel applications.

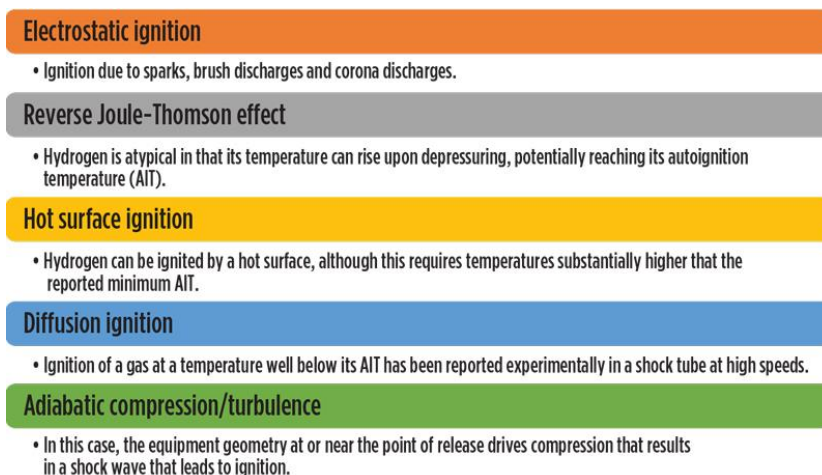


Fig. 1. Hydrogen ignition mechanisms.

[Hydrogen fuel risk assessment and differing views of ignitability | Gulf Energy Information](#)

Hydrogen presents many hazards because of its minimum ignition energy 0.017 mJ, explosion severity 10 times that of methane (natural gas) and wide explosive in ambient air. Putting a key in the ignition of a car can cause a 5 mJ spark for comparison. I have expressed concerns about hydrogen for cars and use at garage forecourts in past editorials and the data presented here would support this stance.

Below is an example of the destruction caused by a hydrogen explosion:

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[Case Study: Power Plant Hydrogen Explosion - WHA International, Inc. WHA International, Inc. \(wha-international.com\)](http://www.wha-international.com)

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Rolls-Royce in talks to build mini-nuclear reactor for Sir Jim Ratcliffe's chemicals plant

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SFI News, Updates & Reports



Minister Harris announces €3.2m to research project targeted at degenerative retinal diseases

5th September

Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD, today announced an award of €3.2 million to the EYE-D research project into degenerative retinal diseases, led by researchers from Trinity College Dublin. Science Foundation Ireland will provide €1.3 million funding to EYE-D, matched by the project partners.

Announcing the funding, Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD, said: “I am delighted to announce today this funding to the EYE-D research project. This research has the potential to have an invaluable impact in identifying treatments that help tackle degenerative eye diseases. This project will aim to put Ireland at the forefront of international research into degenerative eye disease. I wish the EYE-D team every success in the rollout of this project. My department is delighted to be in a position to support this important work.”

Degenerative retinal diseases can result in severe loss of vision and is estimated to affect 224,000 people in Ireland, and 40 million people worldwide. The research project is led by Prof Matthew Campbell, Smurfit Institute of Genetics, Trinity College Dublin and Prof Sarah Doyle, Trinity College Institute of Neuroscience (TCIN), Trinity College Dublin.

The proposed partnership also involves separate collaborations with three companies: Roche, Disarm/Eli Lilly, private ophthalmology clinic, Progressive Vision Research, and the charity Fighting Blindness Ireland. Cumulatively, these groups will fund an additional €1.6 million to advance various research programmes focused on identifying the underlying causes of degenerative eye diseases.

Commenting on the funding, **Prof Matthew Campbell, Smurfit Institute of Genetics at TCD** said: “We are excited about the potential developments that will emerge from this grant. Spearheading a project with a cumulative budget of €3.2 million will allow us to make a major impact on the international stage of vision research. In addition, our research endeavours put us in a perfect position to identify the cause of some of the most common forms of blindness.”

Co-PI Prof Sarah Doyle Trinity College Institute of Neuroscience (TCIN), TCD said: “This funding will allow us to build on the major successes our group has had in understanding degenerative eye diseases. Added to this, we can now recruit the most talented group of scientists internationally and place Ireland at the forefront of vision research.”

Aideen Curtin, CEO, Progressive Vision Research, commenting on the funding said: “We are delighted to support and contribute to the fundamental research into degenerative retinal disease that this award will make possible. We hope that this research will increase our understanding of retinal disease and ultimately may lead to new treatments that will be sight saving for many people.”

Commenting on the announcement, **Professor Philip Nolan, Science Foundation Ireland**, said: “We are looking forward to working with the researchers and collaborators of EYE-D research project as they work to find solutions to vision loss caused by retinal diseases. The project highlights the impact that the Strategic Partnership Programme can deliver. I welcome the broad partnership involved in supporting this research which includes industry, charities and higher education institutes.”

Anna Moran, interim CEO at Fighting Blindness said: “As Fighting Blindness strive to promote patient-focused vision research, we are proud to support Prof Campbell and Prof Doyle in the innovative EYE-D project. An important strategic aim for us is to build capacity in Ireland in the area of retinal disease. This project has great potential to make significant impact nationally and internationally to bring us a step closer to identifying possible treatments for these debilitating conditions.”

The EYE-D research project seeks to identify new therapeutic treatments for Age Related Macular Degeneration (AMD), glaucoma, and other inherited diseases that cause vision loss.

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Minister Simon Harris announces the winner of the Food Challenge

The Leaf No Waste team awarded €2m in funding to develop a solution to reduce food waste through a novel combination of plant fortification and sustainable packaging.

14 September

The Minister for Further and Higher Education, Research, Innovation, and Science today announced the winner of the Food Challenge as part of the SFI Future Innovator Prize programme and awarded €2m in funding to the Leaf No Waste team.

Speaking about the award, **Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris** said: “I am delighted to announce Leaf No Waste as the winner of this year’s Food Challenge as part of the SFI Future Innovator Prize. This innovative idea represents the true nature of challenge funding.”

This clever solution to reducing food waste could not only have significant influence across STEM research but across all aspects of society as we work together to meet our sustainability goals and protecting our planet for future generations.

The Leaf No Waste team is led by Lorraine Foley of TU Dublin along with core team members Prof. Jesus Frias Celayeta of TU Dublin and Dr Lael Walsh and Dr Shivani Pathania of Teagasc. The Societal Impact Champion on the team is Stephen McCormack of McCormack Family Farms.

The Leaf No Waste team is developing a novel solutions that have the potential to address food waste by combining plant fortification with sustainable compostable packaging to enhance the shelf life of fresh produce.

Commenting on the award, **Lorraine Foley, Leaf No Waste Principal Investigator**, said: “This award presents a great opportunity for Leaf No Waste to find pathways to reduce food loss and identify the best use of alternative plastic packaging that will benefit growers, retailers and consumers alike. It will also enable food producers to move away from single use plastic packaging in favour of more sustainable methods, uniquely positioning the Irish agriculture sector as a global leader in sustainable food production.”

During initial phases of the Food Challenge competition, the Leaf No Waste team identified that despite consumer demand for more sustainable and compostable packaging, its use can cause premature food spoilage and increase food waste.

To address this problem, the Leaf No Waste team plan to explore this issue from a new perspective that combines silicon plant biostimulant and compostable plastic packaging design. Specifically, the team will develop approaches that use silicon-based fortification for a range of Irish crops in combination with

compostable plastic packaging selection and design to optimise the shelf life of products and minimise food spoilage and waste.

The Leaf No Waste team has already conducted a number of preliminary field trials that have produced highly compelling data which suggests, for certain products, food waste risks could be reduced by as much as 50% in an environmentally sustainable manner. Using the Prize award from the programme, the team plans to build on these findings and create relatable solutions for growers and retailers transitioning to a more sustainable future in food production.

Dr Ruth Freeman, Director of Science for Society, Science Foundation Ireland added her congratulations: “I would like to commend Leaf No Waste for their proposal to create a more sustainable packaging approach which could reduce food waste significantly, while also meeting the demand for more sustainable food packaging. It is estimated that one-third of all food produced globally for human consumption is lost or wasted, representing massive systematic inefficiency. This inefficiency contributes to many significant national and global issues. This project, therefore, has the potential to have an impact in addressing problems such as land degradation, food insecurity and malnutrition.

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Minister Harris launches Science Foundation Ireland's 2021 annual report

20th September

Dublin, Ireland: Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD, has today launched the [2021 Science Foundation Ireland \(SFI\) annual report](#). The report highlights that in 2021 Ireland continued to be recognised globally for its scientific achievements, ranking 2nd in the world for quality of science in immunology and 3rd in both agricultural sciences and neuroscience and behaviour.

Welcoming the report, **Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD**, said: “The Government has outlined an exciting and ambitious agenda for research and innovation through our Impact 2030 strategy.

“I am really pleased to launch SFI’s 2021 Annual Report, which demonstrates the breadth and positive impact of research supported by Science Foundation Ireland across the higher education institutions. SFI has played a critical role in policymaking and developing and attracting talent here.”

“Now, as we take a step forward with the progression of Impact 2030, the Government will continue to maximise the impact of research and innovation, to make research expertise more accessible to policymakers and the public, and to nurture and attract top talent.”

Prof Peter J. Clinch, Chairman of the Board of SFI, said: “The achievements outlined in the 2021 SFI annual report illustrate the determination of our research community to make significant contributions to society, the economy and to improve lives. I am deeply proud of SFI’s role in supporting excellent research in Ireland and promoting innovation. SFI-supported researchers engaged in 5,708 international academic collaborations with 84 countries, expanding our global footprint in 2021. SFI continues to play a key role in building Ireland’s research and innovation capabilities, training highly sought-after PhD students and supporting early career frontiers researchers. This is also attracting the best global STEM talent, helping to deliver tangible benefits to Ireland today and into the future.”

The SFI 2021 annual report also details the success of the Creating Our Future engagement campaign which sought ideas from the public on future research. With 18,000 research ideas being submitted by the

public, key themes and research areas of interest identified will be integrated into the government's new national research, development, and innovation strategy Impact 2030 and form a major element of the National Challenge Fund.

Director General of SFI, Prof Philip Nolan, said: "The 2021 SFI annual report clearly demonstrates the talent of our researchers and the impact of their research, and the opportunities for researchers to conduct highly innovative, impactful research. SFI-funded researchers published 5,384 publications in 2021, and 6,201 people worked on SFI-supported projects. We have made good progress on many of the actions of our new strategy "Shaping Our Future", including the delivery of Creating Our Future, which stimulated a timely national conversation on research in Ireland. SFI has driven outstanding research, and collaboration to make that knowledge useful, growing industry partnerships and working to better inform policy, ensuring all of Ireland's people benefit from public investment. I am delighted to work with the research community to help us shape a healthier, more sustainable, more equal and inclusive future."

In 2021, SFI invested €222 million in supporting Irish research and generating new industry and international collaborations. This investment generated a further €234 million from the EU, charities and other sources.

Additional highlights from the 2021 Science Foundation Ireland Annual Report:

- The SFI Frontiers for the Future programme saw €46 million invested across 70 grants to support independent researchers. This will provide opportunities for early career researchers through to well established leaders to conduct high-risk, high reward research projects.
- A €23 million joint investment to support post-doctoral researchers to become research leaders was announced, co-funded by SFI and the Irish Research Council (IRC). The SFI-IRC Pathway Programme will see 40 early career researchers across all disciplines, developing cutting-edge projects over a four-year period and will ensure greater cohesion across Ireland's research performing institutions.
- A new €2.47 million challenge-based funding call was launched, in partnership with Irish Aid, to develop solutions that contribute to the UN's Sustainable Development Goals. Another new challenge in collaboration with the Defence Organisation was also launched, while eight teams progressed under challenges in the areas of food waste and plastics.
- SFI was appointed to design and deliver national-scale challenge-based funding under the National Recovery and Resilience Plan, for launch in 2022.

- Prof Dimitra Psychogiou became the first woman to be awarded a prestigious SFI Research Professorship to spearhead a pioneering research programme at Tyndall National Institute (TNI) and University College Cork (UCC). She is a world-leading expert in radio frequency and wireless communication, and her research will help lead to lower-cost broadband wireless infrastructure, making digital and internet services more accessible to the general public.
- The SFI Industry RD&I Fellowship was launched to support research development and innovation (RD&I) in industry. Companies across the world will host a PhD qualified research expert to facilitate cutting-edge, industry-informed research and the sharing of knowledge. 27 awards were made in 2021, co-funded with industry, across a variety of research areas including microbiology, virtual reality (VR), biotechnology, coastal erosion, breast cancer, photodynamic therapy and more.
- SFI supported 40,595 jobs in Ireland, directly and indirectly.

Science Foundation Ireland's 2021 Annual Report can be viewed: <https://www.sfi.ie/research-news/publications/annual-reports/>.

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2023 SFI St. Patrick's Day Science Medal

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eAlert: October 2022

SFI St. Patrick's Day Science Medal Award 2023

Call for nominations now open

The **SFI St. Patrick's Day Science Medal** is awarded annually to a distinguished scientist, engineer or technology leader living and working in the USA with strong Irish connections.

Nominations must be submitted by 5pm (Dublin local time) on **Friday 4th November 2022**. More information is available [here](#)

SFI St. Patrick's Day Science Medal Award 2023

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e-Alert: October 2022

The Co-Centre Programme

Collaboration for Transformative Research and Innovation

The [Co-Centre Programme](#) is a €74M (£64M) research fund established in partnership between SFI, the Department of Agriculture, Environment and Rural Affairs and UK Research & Innovation that will support collaboration between academic researchers across Ireland, Great Britain and Northern Ireland, co-funded by industry, to support a competitive economy and address societal and environmental challenges.

The new 'Co-Centre Programme' will open in November for proposals focused on high-quality research and innovation within the areas of climate, and sustainable and resilient food systems.

Full details on the programme and how to apply will be made available here:

[The Co-Centre Programme](#)

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Minister Simon Harris announces the winner of the €2 million Plastics Challenge

The Grain-4-Lab team, led by Dr Jennifer Gaughran and Dr Brian Freeland, were awarded €2m in funding for their proposed solution to two different sustainability challenges.

5th October

The Minister for Further and Higher Education, Research, Innovation and Science is today delighted to announce the winner of the Plastics Challenge as part of the SFI Future Innovator Prize Programme and award €2.4 m funding to the Grain-4-Lab team.



The Grain-4-Lab team, led by Dr Jennifer Gaughran and Dr Brian Freeland, were awarded €2m in funding for their proposed solution to two different sustainability challenges. The team has developed a way of harvesting waste from breweries and distilleries to create bioplastics for use in laboratories. The project can have significant benefits for both laboratories and the growing Irish brewing and distilling industries.

The project, undertaken by Dr Jennifer Gaughran, Dr Brian Freeland, Ms Samantha Fahy, Dr Susan Kelleher and Dr Keith Rochfort from Dublin City University, was selected as the front runner of the Challenge and is developing a solution to tackle sustainability challenges in plastic usage in Irish research laboratories by using waste produced from the brewing and distilling industry in Ireland. The research team has been working in partnership with organisations such as Waterford Distillery, Murphy & Son, Smallwares and Key Plastics to develop, test and trial the solution.

Speaking about the award, **Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris** said: *“I am delighted to announce Grain-4-Lab as the winner of this year’s Plastic Challenge as part of the SFI Future Innovator Prize. I want to congratulate the team - Dr. Jennifer Gaughran, Dr. Brian Freeland, Ms Samantha Fahy, Dr. Susan Kelleher and Dr. Keith Rochfort from*

Dublin City University - for their leadership. The project is aimed at developing a solution to tackle plastic usage in Irish research laboratories by using waste produced from the brewing and distilling industry in Ireland. The Grain-4-Lab team will work towards reducing plastic waste with our labs and our colleges. This is the leadership we need to help us meet our climate targets – innovative solutions and dynamic leadership.”

Commenting on the award Dr Jennifer Gaughran, said *“The whole Grain-4-Lab team are so grateful to be receiving this prize. As a society, we are producing too much plastic from non-renewable sources, and at the same time sending plastic waste to incineration or landfill at a rate that is environmentally and economically unsustainable. At Grain-4-Lab, we have the solution to tackle this problem. This funding will allow us to make great strides in sustainability by creating new, compostable plastics from waste that will help to combat this growing challenge facing our planet.”*

Grain-4-Lab identified two sustainability challenges as central to their research project. Firstly, they identified the underutilisation of native waste streams from breweries and distilleries in Ireland as a missed opportunity, particularly in the context of a growing number of breweries across Ireland and therefore an increasing amount of waste materials produced. Secondly, the team acknowledged the use and disposal of fossil-fuel based plastics, particularly large quantities of single-use plastics from Irish labs to incineration and landfills as a persisting sustainability issue that had yet to be tackled.

The research team proposed a solution that addresses these growing challenges in parallel by transforming these waste streams into poly-lactic acid (PLA), which can be used to manufacture compostable bioplastics.

During the prize phase of the award, the Grain-4-Lab team will focus on the scale-up of their process for the manufacture of lab components, starting with petri dishes and extending this to other consumables, while developing a framework for the adoption of sustainable practices in laboratories. The team will also continue to validate their approach, engaging with stakeholders across the value chain and developing commercialisation plans for their technology.

Dr Ruth Freeman, Director of Science for Society, Science Foundation Ireland added her congratulations: *“I would like to commend Grain-4-Lab, Microplastics-free Plastics and the other teams that competed in the SFI Plastics Challenge, for their innovative, cutting-edge ideas which make significant strides in addressing future societal challenges and sustainability goals. Single-use plastic is a major contributor to global pollution, and it is essential that we try to reduce our consumption in all aspects of society. Similarly, waste material produced in Irish breweries and distilleries is an emerging and growing problem with a considerable impact on the environment. Grain-4-lab has proposed an inventive solution to two sustainability challenges, which will allow STEM researchers in Ireland to lead by example by reducing single-use plastics in laboratories while tackling evolving sustainability challenges”.*

A runner-up prize of €250,000 has also been awarded to the Microplastics-free Plastics team, led by Prof John Boland from Trinity College, Dublin.

The Grain-4-Lab team, led by Dr Jennifer Gaughran and Dr Brian Freeland, were awarded €2m in funding for their proposed solution to two different sustainability challenges. The team has developed a way of harvesting waste from breweries and distilleries to create bioplastics for use in laboratories. The

project can have significant benefits for both laboratories and the growing Irish brewing and distilling industries.

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Irish, British and Northern Ireland Ministers, Harris, Ghani and Poots announce joint investment in co-centres for research and innovation

24 October



Irish Minister for Further and Higher Education, Research, Innovation and Science Simon Harris TD, UK Minister for Science and Investment Security, Nusrat Ghani MP and Northern Irish Minister for Agriculture, Environment and Rural Affairs, Edwin Poots MLA, have today announced a €74 million (£64 million) investment to create new collaborative research centres across Ireland, Great Britain and Northern Ireland.

The call under the ‘Co Centres: Collaboration for Transformative Research and Innovation’ Programme will open in November and will focus on two thematic areas: Climate, and Sustainable and Resilient Food Systems.

Announcing the collaboration, **Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris TD** said: “I am delighted to announce the launch of the new Co-Centres Programme.

“We have seen in recent years how important it is to invest in collaborative research and we are pleased to be able to support this ambitious new programme through the Government’s Shared Island initiative.”

“By working together, we can foster new research collaborations that are crucial to addressing both climate, and sustainable and resilient food systems, these are critical issues that impact on all of us.”

Announcing the collaboration, **Minister for Science and Investment Security, Nusrat Ghani, said:** “This excellent new programme will further deepen the relationships between the research sectors in Great Britain and Northern Ireland and Ireland, encouraging valuable cross-border collaboration between our friendly nations.”

“By working closely with industry, the Co-Centres will ensure their excellent research translates into innovation that helps us tackle some of the most important challenges we face, from climate change to sustainable food systems.”

Announcing the collaboration, **Minister for Agriculture, Environment and Rural Affairs, Edwin Poots** MLA, said: “I am pleased to welcome the opening of this call, which represents a major joint investment for new research in the areas of Climate and Sustainable and Resilient Food Systems. I look forward to our research community responding to the call and subsequently delivering world-leading collaborative science to provide the evidence and innovation we need to enable Northern Ireland to reduce

carbon emissions and biodiversity crisis in the right way; balancing climate, driving efficiency, environment and green jobs.”

The new Co-Centres programme will bring together leading academic and industrial researchers, as well as policy makers across Ireland, Great Britain and Northern Ireland.

The call will be managed by Science Foundation Ireland (SFI), Northern Ireland’s Department of Agriculture, Environment and Rural Affairs (DAERA) and UK Research and Innovation (UKRI).

The new programme will provide for an investment of €74million, funded through DAERA (up to £17M), SFI (up to €40million) and UKRI (up to £12 million), to support future joint research.

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COCENTRE

COLLABORATION FOR TRANSFORMATIVE
RESEARCH AND INNOVATION

SFI, in partnership with the Department of Agriculture, Environment and Rural Affairs (DAERA) and UK Research & Innovation (UKRI), is pleased to announce that the **Co-Centre Programme** has launched today.

The programme will support large-scale, virtual Centres with the aim of strengthening the research and innovation base within Ireland, Great Britain and Northern Ireland, building strategic partnerships across these regions within the areas of climate, and sustainable and resilient food systems.

Funding of €40 million has been provided through the Shared Island Fund and the Department of Further and Higher Education, Research, Innovation and Science, to SFI for the Co-Centre programme. Additional funding includes an allocation of up to £17 million by DAERA and a UKRI budget allocation of up to £12 million.

The closing date for applications is 16th March 2023, 13:00 Dublin Local Time.

Further information on the Co-Centre Programme and how to apply is available here:

Co-Centre Programme



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e-Alert: November 2022

Four New Calls Now Open For The National Challenge Fund

SFI is pleased to advise that the next calls for the National Challenge Fund have launched today. Click on the challenge names below for full details.

The [Healthy Environment for All Challenge](#) seeks solutions to ensure clean and healthy air, water and soil for humans, animals and plants, with an overall prize award of 2m.

The [Energy Innovation Challenge](#) seeks solutions to accelerate Ireland's transition to a clean and secure energy system, with an overall prize award of 2m.

The [OurTech Challenge](#) supports research teams to address the challenge of enhancing the connections between government, communities and people, with an overall prize award of 1m.

The [Digital for Resilience Challenge](#) supports research teams to focus on the challenge of enhancing Ireland's capabilities in crisis prediction & response, with an overall prize award of 1m.

In addition to funding, research teams will be provided with non-financial support through training and mentorship. All challenges will support inter- and trans-disciplinary teams made up of scientists, engineers and researchers from different domains working together with non-technical experts and those beyond academia. Sesame will open for submissions on November 14th.



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Science Foundation Ireland 2022 Awards recognise key leaders in the Irish research community

21st November Limerick)

21st November 2022 (Limerick) - The winners of the prestigious 2022 Science Foundation Ireland Awards were revealed at the annual SFI Science Summit, held in person for the first time in two years. Joined by over 500 leading members of the Irish research community, SFI is celebrating the contribution researchers have made to our society and economy.

Acknowledging the award winners **Prof Philip Nolan, Director General, Science Foundation Ireland**, said:

"I want to congratulate all the award recipients. The SFI Awards recognise exceptional achievements within our research community, and the ways in which research contributes to our wellbeing and our environmental, social and economic development and sustainability. These awards reflect the dedication and determination of our researchers as they work to discover new knowledge, to innovate, and to make the world a better place. The awardees are truly inspiring."

"I would like to congratulate Prof Orla Hardiman as the 2022 SFI Researcher of the Year. She has made an outstanding contribution to our understanding of, and the treatment and care of people with motor neurone disease. It is wonderful to acknowledge her achievements and the achievements of researchers across all in our Higher Education Institutions and the wider research ecosystem."

This year there are nine categories in total, with Engaged Research being acknowledged for the very first time:

SFI Researcher of the Year 2022

Recipient: Professor Orla Hardiman, Trinity College Dublin

Prof Hardiman is a clinician scientist and a world authority on the causes, diagnosis, and treatment of Amyotrophic Lateral Sclerosis (ALS)/ Motor Neuron Disease (MND). ALS/MND. Prof. Hardiman is a professor of neurology and the Head of the Academic Unit of Neurology at Trinity College Dublin and leads the SFI Precision ALS Spoke. She is a researcher at the FutureNeuro and ADAPT SFI Research Centres. She is the founder and director of the National Amyotrophic Lateral Sclerosis (ALS)/ Motor Neuron Disease (MND) Clinical and Research Programme, and the HSE National Clinical Lead for Neurology

Commenting on receiving the Award **Professor Hardiman** stated: "I am greatly honoured to receive this prestigious award, which is a reflection of the hugely talented individuals with whom I have had the privilege of supervising, mentoring and collaborating over the years. I am also aware of the enormous benefits of being in a position to engage in international collaborations with like-minded clinician scientists. Understanding the processes that drive neurodegeneration is the "final frontier" in neuroscience.

As clinician scientists, we seek to unravel the complexity of neurodegenerative disease in humans, and our work in Ireland has focussed on how best to enable the successful translation of laboratory discoveries to new drugs for those with different subtypes of disease."

"Our ultimate collective objective is to ensure that we provide the right drug for the right patient at the right time. I am particularly conscious of my privileged position as a female leader in science, and of the importance of mentoring from experience other younger women as they juggle careers, family life and research. I am enormously grateful to both SFI and the HRB in enabling my scientific career over the years, and of course to my husband Gerry and my children for their ongoing love and support."

SFI Early Career Researcher of the Year 2022

Recipient: Dr Claire Gillan, Trinity College Dublin

Dr Gillan is an internationally renowned expert on mental illnesses, and was the first to show that patients with obsessive-compulsive disorder (OCD) have tendencies to form habits, a ground-breaking discovery in OCD that features in several undergraduate textbooks today.

SFI Commercialisation Award 2022

Recipient: Dr Alison Liddy, University of Galway

Dr Liddy and her team are developing a novel, disruptive, treatment for chronic pain without the usual addictive side-effects current treatments possess. This advancement has the potential not only for a transformative impact on the lives of those suffering from chronic pain but also has the potential to reduce the significant negative societal impact associated with prescription drug addiction.

SFI Best International Engagement Award 2022

Recipient: Prof. Michael Morris, Trinity College Dublin, AMBER, the SFI Research Centre for Advanced Materials and BioEngineering Research

In recognition of his long-standing association and engagement with international companies, researchers, and policy makers, Prof. Morris is the winner of the 2022 SFI Best International Engagement Award.

Prof Morris is a professor of Surface and Interface Chemistry at Trinity College Dublin and the director of AMBER, the SFI Research Centre for Advanced Materials and BioEngineering Research, who has spearheaded the facility for the last 7 years. Prof. Morris is the first European scientist to be awarded three or more awards from the Semiconductor Research Council in the United States. He has promoted the circular economy internationally and has engaged with researchers and policy makers in the United States, Turkey, Switzerland and the UK and is a member of the European Materials Characterisation. He is the lead PI on DeMANS, an MSCA programme on developing printable biopolymers which involve companies and universities across Europe as well as New Zealand and Australia.

SFI Outstanding Contribution to STEM Communication Award 2022

Recipient: Ms. Jackie Gorman, CEO, Midlands Science

Ms. Gorman has been engaging and educating young people, parents, youth groups and leaders, schools, industry representatives, local government and key stakeholders since 2008. Jackie has been steering Midlands Science, through impactful, creative and innovative work in promoting STEM and impacts over 16,000 people directly every year and with specific efforts to engage with those from lower socio-economic backgrounds.

SFI Industry Partnership Award 2022

Recipient: NexSys led by Prof. Andrew Keane, University College Dublin

The core mission of NexSys, is to decarbonise our energy system. Importantly, NexSys brings together researchers from across the island, with key industry partners, policy-makers and communities to resolve the challenges of a just transition to a decarbonised system. EirGrid and ESB have partnered with NexSys with a commitment to research and innovation for over 15 years.

SFI Mentorship Award 2022

Recipient: Prof. Walter Kolch, Director of the Systems Biology Group, University College Dublin

Through Systems Biology Ireland (SBI), Prof Walter Kolch has built a highly interdisciplinary and multinational research environment. Ever since its inception in 2009, SBI has hosted over 260 team members including 105 researchers, 63 postgraduate students, 12 clinician scientists, 36 management and admin staff, and 46 research support staff from over 35 countries. Prof. Kolch has supervised over 50 postdocs and over 40 doctoral students providing his team with the tools and infrastructure to develop their independence at early in their careers several of whom have secured various positions in academia and industry, some even starting their own companies.

SFI Engaged Research of the Year Award 2022

Recipients: Ms Aoife Deane, Public Engagement Manager and Prof. Brian Ó Gallachóir, Director, MaREI the SFI Research Centre for Energy, Climate and Marine Research, UCC and the Dingle Peninsula 2030 team

MaREI's transdisciplinary research group at the University College Cork is harnessing the community spirit on the Dingle Peninsula to advance a groundbreaking engaged research initiative called Dingle Peninsula 2030. This initiative is co-producing solutions with the community to address critical energy and climate challenges while also building societal resilience and capacity. MaREI has established a diverse multi-disciplinary research team combining expertise from energy engineering (Prof. Brian Ó Gallachóir, Dr Connor McGookin), sociology (Dr Clare Watson, Dr Evan Boyle), and community engagement (MaREI Public Engagement Manager, Aoife Deane), who work in a deeply embedded way with the community partners in the Dingle Peninsula 2030 team.

SFI Research Image of the Year Award 2022

Recipient: Mariana Oliveira Diniz, PhD student, SSPC, SFI Research Centre for Pharmaceuticals, University of Limerick

Image title: A spring garden of griseoflowers



Description: Griseofulvin is a drug with wide interest in the pharmaceutical field as it is used as an antifungal antibiotic to treat skin infections. Griseofulvin was first isolated from *Penicillium griseofulvum* in 1939 and became the first clinical oral antifungal approved to be used in 1950. For its relevance, griseofulvin is listed on the List of Essential Medicines of the World Health Organization (WHO). In my PhD research, I investigate the nucleation kinetics of griseofulvin in different solvents and different scales. These crystals were formed when a solution of griseofulvin in acetonitrile was left to evaporate at room temperature on a fume hood for 3 days. This image was captured by a phone camera without any further treatment.

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Science Week: Minister Harris announces €16.2 million to support 15 research projects led by Technological Universities and Institutes of Technology

16th November

Minister for Further and Higher Education, Research, Innovation and Science Simon Harris TD has today announced €16.2 million in funding from Science Foundation Ireland for 15 collaborative projects aimed at increasing research capacity within the Technological Universities (TUs) and Institutes of Technology (IoTs).

Speaking today, **Minister Harris** said: “I’m delighted during Science Week to announce these exciting new research projects. Through these new awards we are delivering on several key objectives, including an enhanced focus on research activities within the TU sector.”

“In order for TUs to grow and reach their full potential, we need to ensure they have the ability to deliver impactful research and this funding allows them to do that.”

“This research will address key areas too, such as healthcare and climate change.”

The [SFI Frontiers for Partnership](#) Awards support research proposals led by the Technological University (TU) / Institutes of Technology (IoT) sector with partners from the established University sector.

The funding will support research in areas such as the development of a traceability tool for seafood, green hydrogen, sheep breeding, cancer therapies, tremor in Parkinson’s’ disease, and reducing energy use in AI technology.

Examples of projects include:

- Prof James Curtin (Technological University Dublin) and Prof Paula Bourke (University College Dublin) will use cold plasma to create smart drugs that reduce toxicity and improve the effectiveness of chemotherapy.
- Dr Conor Graham (Atlantic Technological University) and Dr Liam Morrison (University of Galway) aim to develop the world’s first scientifically based traceability tool for seafood. This will help protect the health of consumers, deter food fraud and enhance the marking of Irish seafood abroad.

- Dr Deirdre Purfield (Munster Technological University) is partnering with Dr Nóirín McHugh (Teagasc) to increase productivity in Irish sheep farming in a sustainable and welfare friendly manner by exploiting genomic information in sheep breeding.
- Dr Suresh Pillai (Atlantic Technological University) and Prof Paula Colavita (Trinity College Dublin) are developing low-cost materials to allow commercial hydrogen production from renewable sources. This project is co-funded by SEAI.

Prof Philip Nolan, Director General, Science Foundation Ireland, said: “We have developed this programme following detailed consultation with the sector.”

“It is important we provide the support to build excellent research capacity in our Technological Universities and Institutes of Technology, and working in partnership with their colleagues in the wider University sector is an excellent way to do this. I wish the awardees every success with these projects.”

This week is national [Science Week](#) (13th- 20th November) with hundreds of events for all age groups taking place throughout the country. Science Week aims to encourage people to discuss and explore the possibilities that science offers.

Science is an important part of a shared better future – helping us to understand our world, inspiring new opportunities, and providing potential solutions. From the infinite variety of our amazing planet and the adaptability of nature to our ability to face the unexpected, the possibilities are endless.

The Infinite Possibilities theme was developed as a result of the findings of the Government’s Creating Our Future public consultation campaign. Creating Our Future sought submissions from the public on what they would like researchers to explore.

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SFI Gender Dashboard

Analysis of the SFI Review Process

Science Foundation Ireland has been collecting and analysing data on application submission and success rates by gender since 2011. These data have enabled us to examine success rates and funding amounts across SFI's portfolio of grants and to expose any unintended biases which may exist between the genders (binary) in the review process.

In support of SFI's commitment to the transparency of its review processes, we present 2 interactive dashboards representing analyses of gender disaggregated data across a cohort SFI Funding Programmes from 2011. A full data description can be found in the [data summary](#).

Two dashboards are presented below: The ***SFI Gender Dashboard*** includes the number of applications and grants awarded, success rates and average grant size awarded by gender for programme calls between 2011-2021; The ***Funding Analysis Dashboard*** shows the average grant size requested by applicants and the average grant size awarded, by gender, for programme calls between 2011-2021.

To navigate between the two dashboards, please click on the navigation button to the right-hand side. To access the Data Summary file explaining the data, please click on the 'Click here to access Data Summary file' button. To navigate the dashboard, please select the year and/or programme from the drop-down menu on the right-hand side. To directly compare different programmes on the SFI Gender Dashboard, please choose from the drop-down menu at the bottom of the dashboard. To cancel all filters, please click the reset button on the right-hand side of the dashboard.

Check the links below:

The data presented as part of the SFI Gender Dashboard is available to use free of charge and licensed under the [Creative Commons Attribution \(CC-BY\) Licence](#). Please refer to the [data summary](#) for a full description of these data.

- [SFIGenderDashboard_TableauPublic_2022 \(csv\)](#)
- [SFIGenderDashboard_TableauPublic_2022 \(xlsx\)](#)

[SFI Gender Initiatives](#)

SFI Frontiers for the Future programme

SFI-IRC Pathway programme

SFI Research Professorship programme

SFI Research Centres

Future work

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[Home](#)> [Funding](#)> [Funding calls](#)> Healthy Environment for All Challenge

Healthy Environment for All Challenge

The Healthy Environment for All Challenge will support researchers in seeking solutions to ensure clean and healthy air, water and soil for humans, animals, and plants.

DEADLINE Open 10th February 2023, CONTACT challenges@sfi.ie



Do you have an idea for a solution that could help Ireland become an environmentally sustainable economy?

The Healthy Environment for All Challenge gives academic research teams a unique opportunity to contribute to Ireland's transition to an environmentally sustainable and climate-neutral economy. Following review of applications, successful teams will receive funding of up to €250,000 and training to accelerate development of their idea. A number of teams will then be selected as finalists and receive up to €500,000 to further develop their idea before an overall winner is selected for the €2 million prize award.

The National Challenge Fund is an agile, fast-paced programme that allows research teams to work with societal stakeholders to deliver tangible impact through their research. In addition to funding, teams are provided with training and mentoring to support acceleration of an idea and to demonstrate how it can solve real-world problems. Participation has the potential to open up significant career development and collaborative opportunities.

Healthy Environment for All Challenge Handbook

Check these active links below:

[Who can apply?](#)

[Funding](#)

[Key Dates](#)

[Challenge Description](#)

[How to apply?](#)

[Downloads](#)

DEADLINE

[Open](#)

[10th February 2023](#)

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SARS CoV-2 Virus Updates and Developments

October – November 2022

New Omicron strains on the horizon could drive future COVID waves | CBC New

1 October

[New Omicron strains on the horizon could drive future COVID waves | CBC News](#)

New coronavirus subvariants a worry for winter COVID wave - Los Angeles Times

1 October

[New coronavirus subvariants a worry for winter COVID wave - Los Angeles Times \(latimes.com\)](#)

Long COVID Is Still Raising More Questions Than Answers, Say Researchers

2 October

[Long COVID Is Still Raising More Questions Than Answers, Say Researchers : ScienceAlert](#)

Brazilian study reveals the effects of SARS-CoV-2 infection on the central nervous system

30 September

<https://www.news-medical.net/news/20220930/Brazilian-study-reveals-the-effects-of-SARS-CoV-2-infection-on-the-central-nervous-system.aspx>
[10.1073/pnas.2200960119](https://doi.org/10.1073/pnas.2200960119)

Our Immune System Is No Match – Coronavirus Protein Caught Severing Critical Immunity Pathway

2 October

[Our Immune System Is No Match – Coronavirus Protein Caught Severing Critical Immunity Pathway \(scitechdaily.com\)](#)

Will there be a COVID winter wave? What scientists say

3 October

<https://www.nature.com/articles/d41586-022-03157-x>
 doi: <https://doi.org/10.1038/d41586-022-03157-x>

Omicron BA.4.6 makes up nearly 13% of COVID variants circulating in U.S. - CDC | Reuters

4 October

[Omicron BA.4.6 makes up nearly 13% of COVID variants circulating in U.S. - CDC | Reuters](#)

New Omicron subvariant could be trouble for vulnerable population

4 October

[New Omicron subvariant could be trouble for vulnerable population \(citynews.ca\)](#)

Effectiveness of COVID-19 vaccines against Omicron and Delta hospitalisation, a test negative case-control study | Nature Communications

30 September

<https://www.nature.com/articles/s41467-022-33378-7>
 DOI <https://doi.org/10.1038/s41467-022-33378-7>

SARS-CoV-2 spike protein and messenger ribonucleic acid found to translocate into the nucleus

30 September

[SARS-CoV-2 spike protein and messenger ribonucleic acid found to translocate into the nucleus \(news-medical.net\)](https://doi.org/10.1101/2022.09.27.509633)

doi: <https://doi.org/10.1101/2022.09.27.509633>

<https://www.biorxiv.org/content/10.1101/2022.09.27.509633v1>

The duration of the infectious stage of individuals infected with the SARS-CoV-2 Omicron variant

3 October

[The duration of the infectious stage of individuals infected with the SARS-CoV-2 Omicron variant \(news-medical.net\)](https://doi.org/10.1101/2022.09.27.509633)

doi: [10.1093/ofid/ofac237](https://doi.org/10.1093/ofid/ofac237)

New COVID variants could fuel California winter surge, experts say

5 October

[New COVID variants could fuel California winter surge, experts say \(sfchronicle.com\)](https://www.sfchronicle.com)

SARS-CoV-2 Omicron variant emerged under immune selection | Nature Microbiology

4 October

[SARS-CoV-2 Omicron variant emerged under immune selection | Nature Microbiology](https://doi.org/10.1038/s41564-022-01246-1)

DOI <https://doi.org/10.1038/s41564-022-01246-1>

Antibody escape mutations of SARS-CoV-2 BA.2.75

4 October

[Antibody escape mutations of SARS-CoV-2 BA.2.75 \(news-medical.net\)](https://doi.org/10.1016/j.chom.2022.09.015)

doi: [10.1016/j.chom.2022.09.015](https://doi.org/10.1016/j.chom.2022.09.015)

How the splintering of Omicron could shape Covid's next phase – STAT

6 October

[How the splintering of Omicron could shape Covid's next phase - STAT \(statnews.com\)](https://www.statnews.com)

Protective Effect of Previous SARS-CoV-2 Infection against Omicron BA.4 and BA.5 Subvariants | NEJM

5 October

[Protective Effect of Previous SARS-CoV-2 Infection against Omicron BA.4 and BA.5 Subvariants | NEJM](https://doi.org/10.1056/NEJMc2209306)

DOI: [10.1056/NEJMc2209306](https://doi.org/10.1056/NEJMc2209306)

Omicron reduces host antibody response by lower B-cell antigenicity

4 October

[Omicron reduces host antibody response by lower B-cell antigenicity \(news-medical.net\)](https://doi.org/10.1016/j.celrep.2022.111512)

doi: [10.1016/j.celrep.2022.111512](https://doi.org/10.1016/j.celrep.2022.111512)

COVID cases are rising in England – here's how things might play out as we move towards winter

6 October

[COVID cases are rising in England – here's how things might play out as we move towards winter \(theconversation.com\)](https://www.theconversation.com)

Mouthwashes inhibit the infectivity of SARS-CoV-2 variants

6 October

[Mouthwashes inhibit the infectivity of SARS-CoV-2 variants \(news-medical.net\)](https://www.news-medical.net/doi.org/10.1038/s41598-022-18367-6)
doi.org/10.1038/s41598-022-18367-6

Long COVID may be linked to a totally different and common virus, new study finds | Fortune

4 October

[Long COVID may be linked to a totally different and common virus, new study finds | Fortune](https://www.fortune.com/2022/10/04/long-covid-linked-to-different-virus/)

SARS-CoV-2 mimics a host protein to bypass defences

5 October

<https://www.nature.com/articles/d41586-022-02930-2>
doi: <https://doi.org/10.1038/d41586-022-02930-2>

COVID rebound after Pfizer treatment likely due to robust immune response, study finds | Reuters

7 October

[COVID rebound after Pfizer treatment likely due to robust immune response, study finds | Reuters](https://www.reuters.com/healthcare/covid-rebound-after-pfizer-treatment-likely-due-to-robust-immune-response-study-finds-2022-10-07/)

Effectiveness of an inactivated Covid-19 vaccine with homologous and heterologous boosters against Omicron in Brazil | Nature Communications

6 October

[Effectiveness of an inactivated Covid-19 vaccine with homologous and heterologous boosters against Omicron in Brazil | Nature Communications](https://www.nature.com/articles/s41467-022-33169-0)
DOI <https://doi.org/10.1038/s41467-022-33169-0>

Intranasal vaccine represents an effective broad-spectrum COVID-19 vaccine strategy

6 October

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31 October

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11 November

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16 November

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26 November

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27 November

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Small CDC study looks at SARS-CoV-2 viral shedding in vaccinated and unvaccinated

28 November

[Small CDC study looks at SARS-CoV-2 viral shedding in vaccinated and unvaccinated \(news-medical.net\)](#)

<https://doi.org/10.1016/j.vaccine.2022.11.030>

Plasma from vaccinated and COVID-19 convalescent subjects as passive immunotherapy against the new Omicron BQ.1.1, XBB, and BF.7 variants

30 November

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doi: [10.1101/2022.11.25.517977](https://doi.org/10.1101/2022.11.25.517977)

Drop in COVID alertness could create deadly new variant, WHO says | Reuters

2 December

[Drop in COVID alertness could create deadly new variant, WHO says | Reuters](#)

Study shows SARS-CoV-2 VOCs disseminated around the world according to different spatial source-sink dynamics

30 November

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Isolated monoclonal antibodies targeting SARS-CoV-2 S1/S2 cleavage effective against Delta and Omicron

28 November

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doi: [10.1038/s41598-022-24730-4](https://doi.org/10.1038/s41598-022-24730-4)

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IDA Updates & Reports

Johnson & Johnson Vision announces €100m investment in Limerick

16 September



Johnson & Johnson Vision Care Ireland UC, a global leader in eye health and part of [Johnson & Johnson MedTech](#), today announced an expansion of its existing facility in Plassey, Limerick. The €100 million investment has the potential to create 80 new jobs and will support the company's ambition to redefine healthy sight for life for more people around the world.

The Johnson & Johnson Vision site in Limerick is one of the largest contact lens manufacturing facilities in the world. The investment will expand the facility's manufacturing capacity, with the installation of fully automated flexible manufacturing lines built with industry-leading technology. This will support the future growth of Johnson & Johnson Vision Care's ACUVUE® Astigmatism product family and deliver the company's future new product introduction pipeline. Construction is currently underway with production expected to commence in 2024.

Recruitment is currently underway across a range of roles including in Operations (Process and Production Technicians), Engineering (Manufacturing Engineers and Supervisors), and Quality (Lab Technicians and Engineers). To learn more about joining the Johnson & Johnson Vision team in Limerick visit www.careers.jnj.com.

Speaking at today's announcement, **Taoiseach Micheál Martin TD** said: *"The MedTech sector is a crucial part of the Irish economy, and the continued commitment shown by Johnson & Johnson Vision to do business here is most welcome. The work done at their Limerick facility has a profound impact on the lives of people all over the world, and I am delighted that this site continues to go from strength to strength."*

The Johnson & Johnson Vision site in Limerick plays a key role in the Johnson & Johnson Vision contact lens business, supporting the production of the company's fastest-growing daily disposable lenses for global markets.

*"Our aspiration is to bring improved sight to people around the world through the research, development, and manufacturing of new medical device technologies", said **John Lynch, Plant Leader, Johnson & Johnson Vision Care Ireland Unlimited Company.** "We have been in Limerick for more than 25 years and our success is testament to our talented workforce. We will hope to add 80 new roles as part of this announcement. It is an incredible opportunity to join a diverse workforce made up of the best and brightest minds, delivering cutting edge medical technologies that transform lives."*

Chris Ewer, Vice President, E2E Supply Chain Leader, Johnson & Johnson Vision Care, Inc. said: *"Globally, at least 2.2 billion people have a vision impairment. With the growth of our manufacturing operations in Limerick and our strong supply chain network around the world, we look forward to supporting more patients and eye care professionals with the products they need where they need them. Our 25 years of experience working in Ireland is remarkable and the expansion of our site is proof of our commitment to helping more patients around the globe."*

CEO of IDA Ireland, Martin Shanahan said: *"IDA Ireland welcomes this investment by Johnson & Johnson in its Vision Care facility in Limerick. This is a testament to the success of Johnson & Johnson Vision Care's operations in Ireland over the past 26 years. I wish them continued success in their operations and ongoing partnership with IDA Ireland."*

The Limerick site has a strong track record in environmentally sustainable operations, and the facility is powered by electricity from 100 percent renewable sources, including wind generation from an onsite turbine. The site has been ISO 50001 certified since 2015 and this has helped deliver continued energy performance.

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NIBRT announces construction start for a new ADVANCED THERAPEUTICS facility at its Dublin site

13th September

- NIBRT, a global leader in biopharmaceutical manufacturing training and research, announces major extension project.
- Extension will enhance Ireland's global position in biopharma manufacturing and help attract new high value jobs in the new area of advanced therapeutics; which includes cell and gene therapies, mRNA-based therapies and other novel vaccines.
- Tánaiste Leo Varadkar and Martin Shanahan, CEO of IDA Ireland officially launch construction of NIBRT's new state-of-the-art advanced therapeutics research and training facility.



The National Institute for Bioprocessing Research and Training (NIBRT) has commenced construction work on an ambitious expansion of its existing facility in Dublin, Ireland. This expansion will increase NIBRT's capacity and capability to conduct manufacturing-focused research and training in advanced therapeutics. Advanced therapeutics is a category of innovative biological medicines that includes cell therapies, gene therapies, mRNA and DNA-based therapies and vaccines, and other novel vaccines.

Tánaiste Leo Varadkar and Martin Shanahan, CEO of IDA Ireland attended today's announcement at NIBRT's facility in Dublin. The construction of this extended facility is expected to be complete and the facility operational in the second quarter of 2023. The new facility will accommodate around twenty-five new researchers and training staff and will serve new and existing NIBRT clients by providing research solutions to manufacturing challenges and staff training in the manufacturing of these highly innovative and complex medicines.

This €21 million project is funded by the Irish Government through IDA Ireland and incorporates 1,800 m² of new space, including five research laboratories and state of the art training suites, into the existing NIBRT facility that will be dedicated to advanced therapeutics.

Tánaiste and Minister for Enterprise, Trade and Employment Leo Varadkar TD said “Ireland is fast becoming a world leader in advanced therapeutics, the really high value, highly skilled work involved in making new vaccines and new treatments for rare and devastating diseases. In order to keep pace with what is always going to be a fast-developing area, we need to continuously invest in cutting-edge research and training for our workforce, so they can compete with the best on an international stage. So, I’m really happy to announce the start of this expansion today. The Government is investing €21m, which will give us five new research labs, two new training suites and accommodate 25 new researchers. The work being done here will make a real difference to thousands of people’s lives.”

Speaking at today’s announcement, **NIBRT CEO Darrin Morrissey** commented “The role of NIBRT is to help the growth and development of the biopharma manufacturing sector in Ireland by providing cutting edge training and research solutions. NIBRT intends to further enhance our current capability by becoming a leader in the pioneering and fast-evolving area of advanced therapies and vaccines. It is an immensely exciting time for NIBRT. With this expansion, we expect to deliver training for many more potential and newly-hired biopharma staff, as well as considerable growth in our research activities. This has the potential to rapidly enhance Ireland’s standing as a location of choice for advanced therapy and vaccine manufacturing.”

The Irish biopharma industry continues to go from strength-to-strength, with over twenty new biologics manufacturing facilities developed across Ireland over the last decade and in excess of €12 billion in capital investment. The sector now supports over 40,000 high quality jobs with a diverse range of new opportunities currently available with the world’s leading biopharma and biotech employers.

Advanced therapeutics, also known as Advanced Therapy Medicinal Products (ATMPs), treat diseases at molecular level and represent a potential step-change in the personalisation of treatment and in the treatment outcomes. For example, cell therapy is a medical approach that aims to introduce new, healthy cells into a patient’s body to replace diseased or missing ones. While gene therapy treats or prevents disease by correcting the underlying genetic problem that causes the disease. Delivering these treatments to patients has the potential to offer tremendous therapeutic benefits, in some cases even a cure, in previously intractable illnesses like cancer, diabetes and neurological conditions. However, the manufacture of these highly sophisticated therapies is highly complex and producing them in a cost-effective and safe way presents unique challenges.

Martin Shanahan, CEO IDA Ireland said “The expansion of NIBRT to respond to innovation in the sector greatly adds to Ireland’s reputation as a global location of excellence for next-generation biopharmaceutical products. IDA Ireland continues to partner with and support NIBRT to ensure that Ireland is well positioned to support companies in these emerging advanced therapeutic areas. Cell & Gene therapy is a core pillar in the developing field of Advanced Therapy Medicinal Products (ATMPs) which is widely considered as the next generation of pharmaceutical therapies. These products require highly innovative approaches to manufacturing and offer unparalleled opportunities in the treatment of disease.”

NIBRT has pulled together a team of global experts to develop the new facility, with PM Group having designed the extension, Sisk delivering the construction works and BPE Biopharma Engineering managing the overall project. The new facility will be open in quarter 2 2023 and information on NIBRT’s advanced therapeutic-related services and programmes can be located at <https://www.nibrt.ie/atmp/>

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MSD opens Ireland's largest self-supply solar project in Co Tipperary

28th September

Pharma giant MSD has officially opened Ireland's largest self-generation solar project at its Ballydine site in Co Tipperary.

In partnership with ESB, MSD built the 7.3MW ground-mounted solar PV array to support the facility in significantly reducing its carbon footprint. This is in line with MSD's announcement last year to achieve carbon neutrality across its operations by 2025.

It is estimated that the system will generate approximately 7.9GWh of clean and renewable electricity for the MSD site – meaning that around 20pc of its energy requirements will now come from renewable energy sources.

The company claims that the 7.9GWh of clean energy to be generated in the first year is equivalent to the electricity consumption of 5,000 households.

“By investing in Ireland's largest solar project, MSD is taking the lead while also securing a renewable energy source for its operations into the future – which we know now more than ever is crucial,” said Tánaiste Leo Varadkar, TD.

MSD is the international name for US-based pharma and healthcare giant Merck. The company employs more than 2,800 staff across six sites in Ireland, with bases in Tipperary, Carlow, Cork, Meath and Dublin.

Last month, the company began construction of a new facility at its Carlow site to strengthen its medical manufacturing capabilities and meet increased global demand for its medicines and vaccines. This will result in the creation of 100 new jobs.

Mairead McCaul, head of MSD Ireland's country leadership team, said the company is looking forward to working with ESB's Smart Services over the next 20 years “as we continue to grow our sustainability efforts”.

“We view environmental protection and sustainability as key pillars of how we do business,” she said. “This new project at MSD Ballydine is supporting MSD Ireland in our commitment to ensuring that in everything we do, we're making a difference.”

As of last month, MSD said it had invested more than \$4bn into its Irish operations – which manufacture around half of its top 20 products.

Vish Gain

This article originally appeared on www.siliconrepublic.com and can be found at:
<https://www.siliconrepublic.com/machines/msd-ireland-solar-power-project-ballydine-tipperary>

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Waters Marks 25 Years in Ireland with €6 Million Clinical Diagnostics R&D Center Expansion

7 October

- Waters Corporation commits multi-year investment with support from IDA Ireland to help accelerate life sciences industry growth in the South-East.
- Research and Development center expansion will create new scientific jobs focused on solutions for broader clinical diagnostic applications.
- Waters celebrates 25th anniversary in Ireland at Wexford facility with Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar TD.



Waters Corporation (NYSE: WAT) today announced a combined investment of up to €6 million with support from IDA Ireland to expand its operations in Drinagh, Wexford to fund research and development (R&D) of new clinical diagnostics products. The operational expansion at the Wexford facility will create new scientific jobs through 2024.

Waters' Wexford facility is the company's primary site for manufacturing and delivery of its portfolio of in-vitro diagnostic (IVD) systems, reagent kits, and software used by thousands of hospitals and laboratories worldwide for applications that include health screening for millions of newborn babies. Waters is formally making the announcement at its Wexford campus this afternoon with government and business leaders to mark 25 years of doing business in Ireland.

"This is a fantastic investment in Wexford by Waters Corporation which will bolster the thriving life sciences cluster in the region," said **Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar TD**. "The Government is committed to job creation in all corners of our country, and we are creating the right environment for investment in the South-East with improved road, port and broadband infrastructure as well as the new Technological University. Ireland has become recognized globally for our workforce talent, including the scientific research which is making big advances in medical technologies and diagnostics software."

“This €6 million R&D investment will further improve Waters’ mass spectrometry offerings for clinical diagnostics,” he continued. “These developments have real-life impacts, improving the outcome for many conditions, including early disease detection. Waters Corporation is a global leader and a significant employer in Wexford where it has operated for 25 years. I wish the team every continued success.” The multi-year investment is part of Waters’ strategic mission announced in 2021 to evaluate the potential of its mass spectrometry technologies for broader diagnostic solutions in areas of early disease detection such as cancer screening.

“This expansion in Wexford is a tremendous step forward for the Waters Clinical Diagnostics business and we’re delighted with the support from IDA Ireland who are enabling growth of the life sciences industry in the South-East,” said **Liam Hore, Waters Corporation, Wexford General Manager**. “With the creation of new jobs and opening of new lab space in Wexford, our R&D Center will make it possible for Waters’ mass spectrometry technology to play an even greater role in clinical diagnostics, raising the standard of accuracy in the diagnosis of many clinical conditions where the performance of existing tests is lacking.”

“This announcement by Waters to expand its site in Wexford is very welcome news,” said Martin Shanahan, CEO of IDA Ireland. “The investment will significantly enhance the capability of the facility. IDA Ireland remains committed to winning jobs and investment for regional locations. I wish Waters every success with this project.”

Tánaiste, Wexford Mayor Maura Bell, IDA Ireland Executive Director Mary Buckley, and Waters Senior Vice President of Global Operations Chris Ross gathered with employees and leaders from national and local government and industry at an event held at Waters’ Wexford site to formally announce the investment in partnership with IDA Ireland (event photos available through PR contacts below). The Wexford facility is one of Waters’ key global sites, incorporating a variety of manufacturing, warehouse, laboratory and office spaces. Waters has been a significant employer in Wexford since its establishment in 1997, with over 400 employed at the site today. It is a global production and distribution center for a range of consumables (‘columns’) for the company’s High Performance Liquid Chromatography (HPLC) and Ultra Performance Liquid Chromatography (UPLC) instruments. Waters employees at the Wexford facility also assemble and test mass spectrometry instruments and replicate instrument software.

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GE Healthcare Opens New €30.5 Million Manufacturing Line in Cork, Ireland, to Increase Contrast Media Supply

14th October

Minister for Public Expenditure and Reform Michael McGrath T.D. has officially opened a new €30.5 million (\$30 million) manufacturing line at GE Healthcare's Carrigtohill, Co. Cork facility. The new line, which has created 140 jobs, manufactures injectable diagnostic imaging agents (contrast media) used in Xray and Computed Tomography (CT) procedures around the world.



Minister McGrath welcomed the expansion of GE Healthcare's plant at the IDA Industrial Park, Carrigtohill, by saying, "GE Healthcare has consistently invested in manufacturing here in Cork, bringing together state-of-the-art technology, global best practices in pharmaceutical healthcare and a highly qualified workforce. I am delighted today to open Line 6, the newest filling line, at the Cork campus, and welcome the creation of 140 jobs at the plant. Today's opening represents yet another vote of confidence in Cork as a location for pharmaceutical manufacturing. I would like to commend all those who worked on this €30.5 million project and I wish GE Healthcare continued success here in Cork."

The growing global prevalence of chronic disorders has driven significant growth in Computed Tomography (CT) procedures, leading to increased demand for iodinated contrast media, used to enhance visualization of organs, blood vessels and tissues across disease pathways. GE Healthcare's Pharmaceutical Diagnostics business develops and manufactures imaging agents used to support over 100 million procedures per year globally, equivalent to three patient procedures every second. It is estimated that the new manufacturing line will increase production capacity at the Cork facility by over 50 percent by 2025.

Speaking at the opening of the new production line, President & CEO of GE Healthcare Pharmaceutical Diagnostics, Kevin O'Neill, said, "We expect global demand for iodinated contrast media to double over the next ten years due to the growth of CT imaging procedures. As an industry leader, we understand our responsibility to help meet this growing demand from customers and patients and this new production line

is part of our wider commitment to produce 30 million more patient doses of contrast media annually by 2025.”

Eugene Barrett, GE Healthcare Ireland Site Leader, who leads the 765 strong team at the Cork facility, said, “We have a great team here in Cork focused on supplying for our customers and their patients. Next year marks our 30-year anniversary of production and this new production line is central to our continued growth. We are delighted to have Minister McGrath and Kevin O’Neill on campus to celebrate this milestone.”

IDA Ireland Executive Director Mary Buckley said, “Today’s announcement by GE Healthcare is terrific news for Cork and indeed the entire South West Region. It speaks to this global healthcare leader’s continued commitment to Ireland. IDA Ireland remains focused on winning jobs and investments, like this, in regional locations. I wish GE Healthcare every success with this investment and expansion.”

Roles currently open at GE Healthcare include operatives, project managers, engineers, quality control personnel as well as facility management. Current Jobs available at <https://jobs.gecareers.com/global/en>

The project was delivered over 24 months, with Design & Project Management led by BioPharma Engineering, Filling Line completed by Dara Pharmaceutical Equipment and construction works completed by MMD Construction.

All stages of GE Healthcare’s contrast media manufacturing, from development of Active Pharmaceutical Ingredient (API) to finished product, are managed entirely by GE Healthcare, adhering to Good Manufacturing Practices. With over 4000 employees globally and seven manufacturing sites, the Pharmaceutical Diagnostics business also develops and supplies radiopharmaceuticals used to support diagnosis, monitoring and treatment selection across Neurology, Cardiology and Oncology clinical pathways

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Avantor® Continues Investment to Support Biopharma Market with Opening of New Distribution Centre

3rd November

Avantor, Inc. (NYSE: AVTR), a leading global provider of mission-critical products and services to customers in the life sciences, advanced technologies and applied materials industries, today opened a new distribution center in Dublin, Ireland. The nearly 69,000-square-foot facility is the most advanced distribution center in Avantor's global network and places mission-critical products and operational support close to Avantor's customers enhancing the security of supply.



“Avantor’s continued investment to expand our global footprint with on-site storage capacity and capabilities in Ireland strengthens our ability to provide essential products and services to the markets that need them,” said **Sheri Lewis, Executive Vice President, Global Supply Chain Operations**. “This cutting-edge center continues the capital investments we are making in our supply chain to meet growing global demand across all the end markets we serve.”

The new facility will offer certified Good Manufacturing Practice (cGMP) warehousing, on-site clean rooms, batch-to-batch traceability, custom palletization, inbound and outbound product quality inspections and vendor managed inventory solutions.

“Avantor’s value to the biopharma industry is our ability to support customers from discovery to delivery,” said **Dr. Ger Brophy, Executive Vice President, Biopharma Production**. “As a leading materials provider to the growing bioproduction industry, it is vital that we are responsive to customer needs in key markets such as Ireland while also having the capacity to meet growing demand in the region. This investment reflects our commitment to the industry and our anticipation of continued growth.”

The distribution center is Avantor’s second in Ireland, adding to its current footprint of 76,000-square-feet. The facility will also create 40 new jobs, adding to the 200 associates the company currently employs in Ireland. The site is part of a global footprint that includes more than 200 manufacturing, distribution and sales centers in over 30 countries that help ensure life-changing medicines reach patients quickly. “Avantor traces its heritage in Ireland back to 1998,” said **Michael Lohan, Divisional Manager Life Sciences and Talent Transformation & Innovation, IDA Ireland**. “The company has played an

important role in the development of Ireland's life science ecosystem and continues to create high-quality career opportunities here in Dublin."

Irish Minister for Trade Promotion, Digital and Company Regulation, Dara Calleary TD, welcomed the announcement saying, "Avantor's expansion is a strong endorsement of Ireland as a world-leading hub for the life science and medtech sectors, which is built on the strength of our talented and skilled workforce along with our access to markets and pro-enterprise policy environment. I wish the team all the very best with this new chapter."

This most recent investment demonstrates Avantor's commitment to strengthening its global biopharma supply chain. In October 2022, a new manufacturing and distribution hub in Singapore began initial operations. In 2021 the company opened a new logistics hub in Westminister, Massachusetts, a single-use solutions facility in Hillegom, Netherlands and completed major capacity expansions for critical process ingredients, excipients and single-use clean rooms in multiple sites across its network in Europe and the US. These investments are in addition to capabilities and capacity added through the acquisitions completed in 2021 including Ritter GmbH, RIM Bio, and Masterflex.

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Grifols inaugurates new albumin plant at its expanding Dublin site

19 October

- With more than 17,000 sq m, the new albumin plant brings Grifols' total investment in its Irish operations to around EUR 300 million since first establishing a presence in the country in 2012
- Expansion provides considerable employment opportunities across entry-level and specialist roles in manufacturing, logistics and packaging, with as many as over 200 additional jobs that would bring total employment to more than 500 in the next two years
- Grifols growth in Dublin is facilitated by Ireland's position between North America and continental Europe, its business-friendly environment and diverse, highly educated talent pool

Barcelona, Spain, Oct. 19, 2022 – Grifols (MCE:GRF, MCE:GRF.P, NASDAQ:GRFS), a global leader in plasma-derived medicines, today will inaugurate a new albumin purification and filling plant at its global manufacturing and supply hub in Grange Castle, Dublin, which will help address the growing demand for this vital plasma-derived medicine.

The newly built plant, which adds more than 17,000 sq m (183,000 sq ft) to Grifols' cutting-edge facilities in Dublin, is part of the company's continued global growth strategy and investment in critical plasma infrastructure. This expansion brings Grifols' total investment in Irish operations to over EUR €300 million since first establishing a presence in the country in 2012.

Dublin is the Group's fifth manufacturing site for essential plasma medicines alongside Barcelona; Clayton, North Carolina; Los Angeles, California, and Dreieich, Germany. Additional Grifols manufacturing sites under construction will become operational in Montreal, Canada, in 2024, and El Cairo, Egypt, in 2025.

Ireland has continued to prove an attractive location for Grifols given its highly educated and skilled workforce, in addition to its strategic position between North America and continental Europe and its pro-business environment. The expansion will provide considerable employment opportunities in the Dublin region across entry-level and specialist roles in manufacturing, logistics and packaging. Grifols expects the number of employees, currently more than 300, to increase to over 500 between 2022 and 2024.

Tánaiste and Minister for Enterprise, Trade and Employment Leo Varadkar said: "I very much welcome Grifols' continued investment in Ireland and the 200 extra jobs this will bring to Dublin. Having steadily grown its presence in Ireland over the last decade, Grifols further expansion reinforces Dublin as an important center of the company's global operations. It's further proof of Ireland's role as a major biopharmaceutical and international trade hub, with a highly talented workforce available."

Martin Shanahan, CEO of IDA Ireland said; "This significant investment by Grifols marks a 10-year milestone in its commitment to Ireland. The Irish site plays an important role in in providing vital plasma-derived medicine to treat disease around the world. We welcome the company's plans to create new employment opportunities across several activities and look forward to continued success for Grifols in Ireland."

"The new plant, displaying Grifols' industry-leading technological excellence, is part of our broader expansion in Dublin that includes the growth of the supply chain and logistical operations of our

Biopharma business unit, all of which brings additional professional development opportunities to the Irish workforce,” said Shane O’Brien, vice president of Grifols Worldwide Operations.

Specifically, the new plant will help Grifols meet growing demand for albumin, which is expected to increase by a compound annual growth rate of around 5% over the next five years¹. The most abundant protein found in plasma, albumin is used to replace lost fluids, restore vital blood volume and to treat prevalent diseases such as cirrhosis. Grifols is also advancing its potential use to treat neurological degenerative disorders.

“This new magnificent Dublin manufacturing facility, which incorporates Grifols industry-leading engineering, is indicative of this company’s commitment to investing in essential plasma-medicine infrastructure globally to treat more patients around the world. The significant investment underlines our long-term commitment to Ireland and reinforces Dublin’s role as a critical nerve center for Grifols’ global operations,” said Víctor Grifols Deu and Raimon Grifols, Grifols co-CEOs.

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Enterprise Ireland Updates & Reports

5 October 2022

Enterprise Ireland launches new investment offer for early-stage start-ups



- **Up to €100,000 per business available under new ‘Pre-Seed Start Fund’**
- **Enterprise Ireland fund targets early-stage entrepreneurs and start-up teams**
- **New fund is ‘important and timely’ – Enterprise Ireland CEO Leo Clancy**

Enterprise Ireland today launched a new stream of funding to support the specific early-stage funding needs of new start-up companies.

Ireland is recognised as a great place in which to start and scale an internationally-focused business. The focus of this new funding support is designed specifically with high-growth early stage start-up companies and entrepreneurs in the manufacturing and internationally traded services sectors in mind. It follows on from extensive consultation with entrepreneurs and stakeholders in Ireland’s vibrant start up ecosystem which guided Enterprise Ireland on how to enhance its offer to early-stage entrepreneurs. It is one of a series of specific targeted initiatives which Enterprise Ireland is taking as part of its strategic ambition to encourage and support an increased number of new high growth start-up companies in Ireland.

Enterprise Ireland’s CEO, Leo Clancy said,

“Enterprise Ireland is delighted to announce this exciting new fund for early stage start-up companies. It is an important and timely strategic intervention. This builds on the extensive range of supports available to assist entrepreneurs and start-up teams to take those critical first steps in establishing and developing innovative new high growth businesses with international potential.

“Securing private sector investment for very early-stage companies has always been challenging and Enterprise Ireland plays a critical role in bridging this gap when cash is required for activities including product development, recruitment into the team and developing channels to market.

“In designing the new Pre-Seed Start Fund we have listened carefully to the start-up community and the wider start-up ecosystem about the needs of new businesses, resulting in a new, enhanced offer for early-stage entrepreneurs. The new Pre-Seed Start Fund, in conjunction with the Enterprise Ireland broader

range of services for start-ups, responds to current market needs and provides entrepreneurs with an attractive financial offering to help accelerate their start-up business plans.”

Enterprise Ireland standard investment will be in the form of a Convertible Loan Note (CLN), and is intended to convert into equity on a future priced round at a 20% discount.

In addition to the investment, successful applicants will be supported by an Enterprise Ireland Development Advisor in their sector and can avail of a range of Start-up supports, including mentoring, access to Enterprise Ireland Market Research Centre, market insights, access to business networks and wider ecosystem offerings to support development of their start up business.

Applications received will be reviewed and assessed by considering the objective of the offer, required criteria, the stage of development of the start-up and assessment of the potential of the business.

For more information please note:

A number of ‘PreSeed Start Fund’ application-support workshops will be held online by the national Business Innovation Centres (BICs) over the coming weeks. Details of these workshops as well as the relevant application forms and eligibility criteria can be accessed on the Enterprise Ireland website at www.enterprise-ireland.com/pssf

Going for Growth celebrates 15th year of business development initiative for female entrepreneurs

6 October 2022



Pictured at the launch of the 15th Going for Growth programme are left to right: Chupi Sweetman-Durney, founder of Chupi and Going for Growth Lead Entrepreneur; Leo Clancy, CEO Enterprise Ireland; Olivia Lynch, Partner KPMG and Jennifer Corley, founder of Equitrace and Going for Growth past participant.

More than 850 women have participated in Going for Growth

Ambitious entrepreneurs strongly focused on growth sought for 15th cycle of award-winning programme

Going for Growth will today begin accepting applications for the 15th year of the award-winning business development scheme for female entrepreneurs.

The programme, which is supported by Enterprise Ireland and KPMG, assists ambitious female entrepreneurs to achieve their growth ambitions and the **deadline for applications for the 15th cycle is Friday, 18th November, 2022.**

Going for Growth has seen more than 850 businesswomen take part over the past 15 years.

Some of the past participants include Aimee Connolly of Sculpted by Aimee; Áine Kerr of Kinzen; Jennifer Corley of Equitrace; Louella Morton of TestReach; Tara Beattie of Mange Tout and Prepsheets.com; and Vanessa Creaven of Spotlight Oral Care.

Going for Growth, which was launched in 2008 to help women drive their business forward, has been repeatedly recognised by the EU, OECD, and European Institute of Gender Equality as a key initiative in the effort to foster greater ambition among female entrepreneurs and to support their growth aspirations.

Fifteen years ago, Global Entrepreneurship Monitor (GEM) research clearly showed that men were more ambitious than women in respect of their new businesses – 5.5 times as many men had growth aspirations.

The most recently published GEM research (July 2022) shows there is an increasing number of women starting businesses, about 1,400 every month. Even more importantly, the proportion of those with growth aspirations has significantly increased; this ratio now stands at 2.5:1, with an increasing aspiration for growth evident among female entrepreneurs.

Continuing the work to help women achieve their business growth ambitions, the call has gone out today for applications for the next group of Going for Growth participants to take part in the 15th cycle of the programme.

Up to 60 places will be available and organisers are seeking applications from female entrepreneurs across all sectors who are strongly focused on growth. The deadline for applications is Friday, 18th November, 2022. There is no charge for those selected and the six-month initiative will begin in January 2023.

The programme brings together female entrepreneurs for monthly peer-to-peer roundtable discussions led by successful Lead Entrepreneurs with the aim of growing their business. The participation of Lead Entrepreneurs is completely voluntary and five of this year's Lead Entrepreneurs are former Going for Growth participants themselves.

This year's voluntary Lead Entrepreneurs include **Anne Cusack**, formerly Critical Healthcare; **Chupi Sweetman-Durney**, Chupi; **Jeananne O'Brien**, Artizan Food Co.; **Leonora O'Brien**, formerly Pharmapod; **Louise Phelan**, Phelan Energy Group; **Monica Flood**, formerly Olas IT; and **Oonagh O'Hagan**, Meaghers Pharmacy Group.

The 14th cycle of Going for Growth reported significant results for its 57 participants. Combined turnover increased from €35million at the start of the cycle to €43m by the end, a 23% increase in just six months. Their combined workforce increased by 41 people over the cycle, while 27 participants began exporting their products and services for the first time.

Feedback from the previous cycle was also extremely positive, with 88% of participants saying that their involvement brought about practical change within their business and 93% saying they felt nearer to achieving their ambitions. All participants said they would recommend Going for Growth to others.

That support does not end on completion of the six-month cycle, with most past participants becoming part of the Going for Growth community. Going for Growth alumni can apply to participate in the Continuing the Momentum programme, which offers Lead Entrepreneur-facilitated roundtables to those looking to continue their growth journey, with the aid of peer support, focused goals, and milestones.

CEO of Enterprise Ireland, Leo Clancy, said:

“Increasing support for ambitious female entrepreneurship is a key national priority and Enterprise Ireland is proud to support Going for Growth. I believe our close partnership with Going for Growth provides excellent support to our incredible women entrepreneurs in scaling their businesses and achieving global ambition. Strong peer groups, wonderful Lead Entrepreneurs, excellent formal learning opportunities and frameworks for business growth make this a ‘must consider’ for anyone seeking to accelerate her business.”

Partner at KPMG, Olivia Lynch, said:

“KPMG is committed to encouraging domestic entrepreneurship and supporting female entrepreneurs in achieving their growth aspirations. As part of our commitment to diversity we are passionate about ensuring females have the supports they need to succeed. We are delighted to continue supporting Going for Growth; this is an exceptional programme for ambitious women looking to take their businesses to the next level. With the invaluable expertise and encouragement of the Lead Entrepreneurs, this programme engages participants with insights and experiences to succeed and connects them with their peers to boost entrepreneurship in Ireland.”

National Director of Going for Growth, Paula Fitzsimons, said:

“Going for Growth has recognised from the outset that it is not just about the numbers of men and women that are starting a business that is important. That is only one part of the challenge. The other challenge relates to the potential impact of the entrepreneurial effort of those men and women, not only in the early days but over the life of the business.

“The objective of Going for Growth is to encourage female entrepreneurs to become more ambitious; to support them to achieve their growth aspirations; and to realise the full potential of their businesses, on Irish and export markets, throughout the lifetime of their business.”

Log onto www.goingforgrowth.com for more details.

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Taoiseach Micheál Martin places ceremonial stone for Galway Technology Centre Extension

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A computer generated image of how the enhanced Galway Technology Centre will look upon its completion.

- **Extension will see total space in GTC rise to over 65,000 sq feet**
- **Expected to enable creation of 12,500 jobs over next 15 years**
- **GTC says development highlights flourishing of scaling enterprises in the West and increased demand for enterprise space in region**

Taoiseach, Micheál Martin TD has placed a ceremonial stone marking the building of the new extension at Galway Technology Centre (GTC).

The project, which is being comprehensively facilitated by Enterprise Ireland, will see an additional 15,500 square feet added to the centre, bringing the total area to 65,500 square feet. The extension will also see the number of floors in GTC grow from two to four.

It is estimated that the enhanced centre will facilitate the creation of a cumulative total of 12,500 jobs over the next 15 years, along with estimated investment of €1.4 billion.

According to GTC, the development highlights the flourishing of scaling enterprises in the west of Ireland and the increased demand for space to facilitate their growth in the region.

When the work is complete, there will be a particular emphasis on facilitating rapid scaling for start-ups and other innovation driven enterprises in GTC, as well as ICT businesses in need of second sites. The enhanced facility will also include further conferencing and meeting space, state of the art IT infrastructure as well as other digital amenities such as a video production and broadcasting suite.

The extension project is being delivered by Monami Construction and project managed by MKO Planning and Environmental Consultants.

The Taoiseach, Micheál Martin TD was joined at the brick laying ceremony in IDA Mervue Business Park by Mayor of Galway, Cllr. Clodagh Higgins; Carol Gibbons, Divisional Manager and Head of Regions & Local Enterprise, Enterprise Ireland; Kenny Deery, Chairman of the Galway Technology Centre and CEO of Galway Chamber; John Brennan, GTC Board Member and CEO of WestBIC as well as Oliver Daniels, CEO of Galway Technology Centre.

Galway Technology Centre is a social enterprise which is jointly owned by Galway Chamber and WestBIC. It became the first technology innovation centre in Ireland when it first opened in 1994, following the closure of Digital Equipment Corporation's Galway facility.

In response to the closure of Digital, who at the time were Galway's largest employer, a special Government Task Force was established who invited Galway Chamber, WestBIC and An Forbairt to realise their vision of an indigenous ICT cluster in the west of Ireland. This led to the formation of GTC.

Since the mid-nineties, the footprint of GTC has been regularly extended to address the growing needs of ICT companies in the region. Over that time it has housed more than 300 companies who have created in excess of 3,000 jobs. Currently there are 41 companies in GTC with over 325 people employed directly on site and thousands more in the other satellite offices of these enterprises located in Ireland and abroad.

Some of the notable companies who have called GTC home over the years include Storm Technology, Blue Tree Systems, Aptarus, Hemdahl, SL Controls, Siren, PlanNet 21, Ex Ordo, Action Point, SourceDogg, Buymedia, Chipright, Triggerfish, 9th Impact, Electronic Arts, SAP, Wayfair and more.

Speaking at the ceremony to mark the extension, Taoiseach Micheál Martin TD said, "Since its inception, Galway Technology Centre has played a central role in enabling the growth of scaling enterprises across the west of Ireland. It has provided numerous start-ups and high potential businesses with the space and support they needed in order to flourish and prosper. The centre has come a long way from its first opening in the mid-nineties, when there were eight units filled by seven start-up companies. In the years since they have developed alongside the enterprises they have supported, providing greater space and resources as the need for their service has grown. Galway Technology Centre's new extension, supported by the Government through Enterprise Ireland, will see their positive contribution to scaling companies in the west extend even further, enabling both their impact and the centre itself to reach new heights," he said.

The Taoiseach's remarks were echoed by GTC CEO, Oliver Daniels who said, "Galway Technology Centre has been rooted in supporting the development of scaling enterprises in the west of Ireland since its inception. That was our founding principle and it will continue to be the driving mission behind our centre. We exist to enable the growth of scaling ICT businesses and high potential start-ups. Our purpose is to meet their needs. That is why this project represents a lot more than just an extension. It highlights how scaling enterprises in Galway and the west are flourishing and the increased demand for space to facilitate that growth. Through this extension Galway Technology Centre will be able to assist even more thriving companies, bringing more dynamic enterprises to our centre as well as further nurturing those who already call GTC home," he said.

Carol Gibbons, Divisional Manager and Head of Regions and Local Enterprise at Enterprise Ireland said, “A key focus for Enterprise Ireland is fostering regional entrepreneurship and job creation and we are proud to have supported this expansion project through the Regional Enterprise Development Fund (REDF). For almost 30 years, Galway Technology Centre has played an important role in supporting the scaling of technology enterprises in Galway and across the west region. Enterprise Ireland has worked closely with GTC in their efforts to aid these dynamic businesses and we have seen first-hand how they have grown in line with the enterprise needs of the region. We wish the entire team at GTC every continued success in this new chapter and look forward to seeing even more start-ups and scaling companies benefit from the top-class business environment provided by the centre for many years to come.”

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[Deirdre Geraghty](#)

Three Enterprise Ireland Companies Secure €24m in Horizon Europe Funding

21 October 2022



The European Commission has released evaluation results showing that three Enterprise Ireland-backed companies have been selected and approved for a total of €24.3m in funding from the European Innovation Council (EIC) Accelerator Programme.

Part of the EU's Horizon Europe 2021-2027 Research and Innovation Programme, the EIC Accelerator Programme provides grant funding of up to €2.5 million combined with an equity investment ranging from €0.5 to €15 million in a blended finance offer.

The three successful Irish companies are ATXA Therapeutics, Peregrine Technologies and Ostoform Limited. The successful Irish led projects cover areas including accelerating the clinical path of a disease modifying drug targeting cardiopulmonary disease; AI development and robotics targeting the WEEE recycling sector and the development of a novel appliance to improve the skin condition of ostomy bag users.

The EIC Accelerator Programme provides transformational funding to high-potential, high-risk start-ups, scale ups and SMEs led by a strong, well-balanced leadership team which are already making good progress in commercialising highly differentiated, deep-tech products capable of creating new markets or disrupting existing ones.

In this second round of the 2022 EIC programme, 75 companies from 21 European countries were selected by panels of experienced investors and entrepreneurs to receive over €396 million in funding. Over one thousand organisations applied, 265 of which were shortlisted for the interview phase.

Leo Clancy, CEO, Enterprise Ireland said: *“Enterprise Ireland welcomes this announcement by EIC. It is a great success for Ireland and is testament to the capability and talent within the Irish research and innovation system. Start-ups, particularly in the deep-tech sector play a critical role in the development*

and growth of regional innovation ecosystems. The three successful Enterprise Ireland applicants, working with the EIC, will be able to enhance their entrepreneurial capability and get the critical support required at this juncture in their development and scaling journey.”

Commenting on the announcement, **ATXA’s Founder and CEO Prof. Therese Kinsella** stated: *“We are honoured to accept this prestigious EIC award endorsing us as a disruptive, deep-tech, innovative technology within the wider EC community. We believe it will be transformational in enabling us to fulfil our mission to bring accessible, affordable, and life-changing treatments for heart and lung diseases.”*

Commenting on the announcement, **Peregrine Technologies CEO Paudy O’Brien** said: *“The EIC Accelerator funding is a game-changer for us as we scale FPD Recycling, our dedicated end-to-end solution for recycling flat panel displays. Electronic waste is the fastest growing and most hazardous waste on the planet. Using AI-powered technology, our mission is to ensure that every used flat screen become a valuable commodity rather than hazardous waste in landfill. This funding will enable us to scale internationally, create new high-level jobs in Ireland and abroad, and upgrade existing sites. It has been a long process, but it is gratifying to see everyone’s hard work pay off.”*

The EIC is an integral part of the Innovative Europe pillar of Horizon Europe, the EU research and innovation €95.5bn programme which provides funding to projects through open and competitive calls for proposals and presents insights and expectations from the European Commission whilst offering a unique international networking experience to forge winning partnerships of the future.

Since its launch in March 2021, over 7,000 start-ups and SMEs have sent their ideas and over 4000 have submitted full applications. The companies announced in this round were among the 1006 that submitted to the second 2022 cut-off on 15 June, and join the 238 companies selected for funding by the EIC in 2021 and 2022.

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European Innovation Council - Horizon Europe

The EIC Accelerator supports individual Small and Medium Enterprises (SMEs), in particular start-ups and spin-out companies to develop and scale up game-changing innovations. In some cases, small mid-caps (up to 500 employees) are supported.

The EIC Accelerator provides substantial financial support with:

- grant funding (non-dilutive) of up to €2.5 million for innovation development costs
- investments (direct equity investments) of up to €15 million managed by the EIC Fund for scale up and other relevant costs.

In addition, EIC selected companies receive coaching, mentoring, access to investors and corporates, and many other opportunities as part of the EIC community.

The EIC Programme now also includes EIC Pathfinder for earlier stage development of future technologies as well as EIC Transition for taking the next steps towards technical and commercial validation. Both of these programmes are upstream of the EIC Accelerator programme and have their own eligibility criteria.

The EIC welcomes applications from innovators in all EU Member States and countries associated to the Horizon Europe programme. It particularly welcomes applications from start-ups and SMEs with female CEOs.

About ATXA Therapeutics

Headquartered in Dublin, ATXA Therapeutics Limited (ATXA) is a clinical-stage pharmaceutical company committed to bringing innovative, life-changing treatments to the market and the patient, primarily for cardiopulmonary (heart and lung) diseases.

We have developed and are clinically advancing our proprietary novel, first-in-class drugs that block (antagonize) the thromboxane receptor, a critical drug target implicated in many prevalent diseases but poorly served by good therapies today. As such, ATXA's drugs have so-called platform potential to treat a wide range of diseases. Through our research & development work, we have extensively validated several of our drugs in state-of-the-art animal models of diseases of the heart & lung (cardiopulmonary), as well as in blood clotting (thrombosis), acute pulmonary inflammation, oncology, and certain other clinical conditions. ATXA is initially focused on clinical advancement of our lead drug NTP42 for the treatment of Pulmonary Arterial Hypertension (PAH) and related cardiopulmonary diseases. NTP42 is confirmed to display excellent specificity, safety, and efficacy to treat this disease in the gold-standard PAH disease models. In the past year, NTP42 was tested in a first-in-human Phase I clinical trial where it was confirmed as safe, well-tolerated, and pharmacologically active at low oral doses.

ATXA's drugs pipeline is protected by a strong existing (currently 14 granted patents, mainly valuable composition-of-matter patents) and a growing patent estate globally. As a critical endorsement of its clinical potential, ATXA has Orphan Drug Designation for use of NTP42 in PAH from both the European Medicines Agency and the US Food & Drug Administration, carrying with it important business incentives for the company.

For further information, visit <https://www.atxatherapeutics.com/>

About Peregrine Technologies

Having identified a substantial gap in the electrical waste (e-waste) recycling market, Peregrine Technologies was founded in 2018 by Paudy O'Brien, Gary Moloney, and Declan Lynch.

Headquartered in Limerick, Peregrine Technologies is a clean-tech AI robotics company. It drives the circular economy, ensuring that e-waste is recycled in a safe, sustainable and profitable process driven by AI. Peregrine Technologies is a member of Irish Manufacturing Research and CIRCULÉIRE, the national platform for circular manufacturing.

FPD Recycling

FPD Recycling is Peregrine Technologies' first division, a dedicated end-to-end automated solution to recycle flat panel displays.

With clients in the USA, Europe and Australia, the company's vision is that every used flat screen in the world becomes a valuable commodity rather than hazardous waste in landfill. Using AI-powered extraction, FPD Recycling enables the best possible material recovery rates and the safest human and environmental outcomes.

FPD Recycling's core product, FPD PRO® is a fully automated, low-cost robotic recycling system that transforms FPD recycling into profit. For further information, visit <https://fpdrecycling.com>

For further information, please contact:

Deirdre Geraghty

[Enterprise Ireland Press Office](#)

State of the art incubator hub for Tallaght launched by Tánaiste

26 October 2022



- **Project will provide ‘gold standard’ facilities for local business**

A new state-of-the-art, eco-positive facility geared to kick-starting new entrepreneurship in Tallaght will be officially opened by Tánaiste, Leo Varadkar on Wednesday Oct 26th next at 10am.

‘The Edge’ located near Tallaght village and just off the M50, will provide 20 offices of different sizes, 12 dedicated desks, 20 hot-desks and sound-proof booths for zoom calls.

Key features include a ‘Black Box’ meeting facility with high-end technology for board meetings, podcasting, video production and theatre-style events. Solar panels, heat pumps and a heat recovery system with air exchange is designed to deliver carbon neutral heating and power.

The centre has been developed by Partas, a long established social enterprise that has supported both private and social enterprise jobs across the broad Tallaght area since 1984.

Tánaiste, Leo Varadkar said *“It’s fantastic to officially open the Edge incubator hub here in Tallaght, which is aimed at start-ups and SMEs in South Dublin County. There’s a strong focus on innovation and creativity and the hope is to attract a new generation into business, including people just starting out on their careers.*

“I am delighted that my own Department has provided funding of almost €1.4m for this exciting project through our Regional Enterprise Development Fund and Regional Enterprise Transition Scheme.

“Partas has redesigned the older enterprise centre to give it a fresh feel and to make the most of the available space. So there’s space for hotdesking and co-working, there are single private pods and multi-person units, and the hangout area in which we are launching this great facility.

“The Edge is conveniently located for the M50 corridor. I’m confident it has a very bright future, and will be the launchpad for many bright careers.”

Carol Gibbons, Divisional Manager and Head of Regions and Local Enterprise at Enterprise Ireland said *“Strengthening enterprise development is a key focus for Enterprise Ireland, and we are proud to have supported the development of this new state-of-the art, sustainable facility through the Regional Enterprise Development Fund (REDF) and the Regional Enterprise Transition Scheme (RETS). “The Edge incubation hub will provide numerous start-ups and entrepreneurs with the space and support needed to thrive and prosper and, in turn, create employment opportunities. There is a real sense of enthusiasm and energy here today - I look forward to seeing the positive impact this new home of innovation will have in the community.”*

Partas CEO, John Kearns, recently appointed as expert advisor on social enterprise to the European Commission, said that *‘The Edge’ is “aimed at changing the face of how new business ventures are supported and encouraged, by combining established high-end entrepreneurship with start-up ventures and offering ‘gold-standard’ eco-positive facilities.*

“The broader Tallaght area, which in the past has experienced high levels of unemployment and deprivation, is now a growing, vibrant and dynamic business centre. This development represents the cutting edge of this emerging entrepreneurial confidence of the area and its people,” he said.

Clients already on site include Alexandra Hambling - an interpreter for the Nordic Countries, who worked as interpreter for French President, Emmanuel Macron during the recent COP26 in Glasgow, translating from her office in The Edge via high speed broadband.

The Echo newspaper, the only sold, audited local newspaper in Dublin with a distribution of 10,000 copies weekly, has also based its offices in The Edge

Work on the centre, which also contains a boutique-style coffee lounge with local artisan food, began in 2020.

John Kearns says that *The Edge is “a sustainable work haven powered by a community of self-driven individuals and change-makers under the management of Partas. Sustainability is one of its main pillars, to guarantee a low carbon footprint in the local community.”*

The Edge is situated on the new, almost complete Dodder Greenway. When complete it will stretch for over 17km, linking Sir John Rogerson’s Quay in Dublin City Centre to the entrance to the Bohernabreena reservoirs at Glenasmole, South Dublin.

Other businesses already on site include:

Cadent Sourcing Ltd provides Recruitment-as-a-Service and a fixed single price sourcing for all your open vacancies, presenting a candidate shortlist from which a number of staff can be hired with no added cost

Thrive Talent Ltd is a recruitment agency working in the area of technology.

InDigital Marketing is run by Curtis Harley Murray.

Home Hunter Report is a one-stop shop for property research, collecting information from over 15 different sources to take the complexity and effort out of property research for buyers.

Get House Survey.ie use their experience in product and software development to simplify the process of booking a survey for house buyers and connect them with the best surveyors in their area, meeting the requirements for all Irish banks and financial institutions for residential mortgages.

FS Recruitment was established with the sole focus of providing a best in class, efficient, effective and enjoyable staffing experience to employers and job-seekers within the financial services recruitment sector.

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Tánaiste announces new €200m Ukraine Enterprise Crisis Scheme

27 October, 2022



Scheme will assist businesses with trading challenges and rising energy costs

Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar, and Michael McGrath, Minister for Public Expenditure and Reform have announced details of the new €200m Ukraine Enterprise Crisis Scheme.

There will be two streams of funding under the Scheme to assist viable but vulnerable firms of all sizes in the manufacturing and internationally traded services sectors. The first stream will assist firms suffering liquidity problems as a result of Russia's war on Ukraine, and the second stream will also help those impacted by severe rises in energy costs.

Speaking at the launch the Tánaiste said:

"Many businesses are very worried heading into the winter. The cost of energy and doing business is rising. Interest rates are going up. Consumer confidence is waning. The war on Ukraine is driving up energy and commodity prices and it's making it harder to get certain materials. At a time like this, you can rely on us to back business and protect jobs to ensure a strong economy.

"The Ukraine Enterprise Crisis Scheme will help businesses competing internationally and suffering the broader effects of the war in Ukraine as well as increasing energy costs.

"It will assist companies most exposed to the significant increases in energy costs largely driven by Russia's brutal invasion of Ukraine and other negative effects of this crisis. This particular Scheme will not be limited to agency client companies but will be limited to manufacturers and exporters."

The Tánaiste also confirmed that the Cabinet has approved the publication of legislation to unlock up to €1.2 billion in low-cost loans to SMEs and small mid-caps (up to 500 employees) under the **Ukraine Credit Guarantee Scheme**. It will open before the end of the year and provide low-cost unsecured working capital for SMEs and primary producers to help them to spread the increased input costs and limit disruption to supply chains.

The Tánaiste said:

"In recent years, the Government, working with the SBCI, has stepped in to underwrite low cost, unsecured loans for business. These State-backed loans are working well: 10,000 SMEs availed of the €2bn Covid Credit Guarantee Scheme.

“Whatever happens, you can rely on us to make sure that our economy stays strong, so that we have the resources to continue helping you with the cost of living, and continue investing in vital public services and public infrastructure like housing.”

Minister McGrath said:

“Government is acutely aware of the impact the situation in Ukraine is having on Irish businesses in terms of trading difficulties as well as rising energy costs. It is important that our supports are wide ranging and can deal with challenges across a number of fronts including falling operating margins, difficulties with supply chains and energy costs. The Ukraine Enterprise Crisis Scheme offers eligible companies financial assistance in a number of ways including assistance in addressing liquidity problems and addressing directly rising energy cost increases. This means that businesses can, with the help of our Agencies, consider what type of assistance would best addresses their particular needs.”

Mark Christal, Head of Food and Sustainability Division with Enterprise Ireland said:

“This new Scheme will provide two tailored options for support at what is a critical time for many enterprises. This Scheme is open to applications from all eligible Manufacturing and Internationally Traded Services companies, not just those who have an existing relationship with Enterprise Ireland. Importantly, companies applying for assistance will also have to demonstrate that they have an energy efficiency plan in place or are preparing a plan to reduce future energy consumption as the enterprise sector transitions to a more sustainable future.”

- Further information on the range of [Energy supports available to businesses](#)
- Further information on [Enterprise Ireland Ukraine Enterprise Crisis Scheme](#)

Note for Editors

Stream 1 of the Scheme will address direct liquidity issues, with aid of up to €500,000 in grants, repayable advances, equity, and/or loans. Applicant will have to demonstrate the impact of the Ukraine war on their business including supply chain and input cost increases including energy. Aid will be granted to implement a Business Sustainment Plan.

Stream 2 of the Scheme is for “energy-intensive businesses” (where energy cost was at least 3% of turnover prior to the crisis). It will be a grant of up to €2m for costs incurred between February and December 2022. The quantity of units of gas and electricity used to calculate the eligible costs must not exceed 70% of consumption for the same period in 2021 – this ensures that companies do not receive compensation for increased energy costs that have resulted from the company increasing production output compared to 2021.

Energy efficiency plan

For both Streams applicants must submit an energy efficiency plan either planned or underway - ratified by senior management of the company. Companies without such plans will be directed to SEAI and Enterprise Ireland climate action measures – particularly consultancy initiatives aimed at preparing an energy efficiency plan. This may increase the number of companies who will prepare energy efficiency plans in the medium to long run.

The Scheme will be implemented through Enterprise Ireland, IDA and Údarás na Gaeltachta on behalf of the Department of Enterprise, Trade & Employment.

The Credit Guarantee (Amendment) Bill 2022 will make amendments to the Credit Guarantee Scheme Act 2012 (as amended) to facilitate the creation of a €1.2 billion Ukraine Credit Guarantee Scheme, as

part of the provision of a suite of additional aids to businesses during this time of economic volatility and disruption.

The Enterprise, Trade and Employment Committee of the Oireachtas has agreed to the Tánaiste's request to waive the requirement for pre-legislative scrutiny for this Bill.

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Government invests €40m in 11 disruptive technologies projects across health and wellbeing, advanced robotics and machine learning

15 November, 2022



Disruptive Technologies Innovation Fund a major driver of Impact 2030 research and innovation strategy

The Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar TD, the Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris TD and the Minister of State for Trade Promotion, Digital and Company Regulation, Dara Calleary TD today announced that 11 innovative projects have been approved funding of up to €40m in the first tranche of awards under the fourth round of the Disruptive Technologies Innovation Fund.

Announcing the successful projects today the Tánaiste said:

“Today I have approved funding under the Disruptive Technologies Innovation Fund (DTIF) for another 11 ground-breaking projects that embody innovation and technological change.

“Now more than ever we should look to the future and embrace innovation as a means of building our capacity to conquer the challenges we face.

“Throughout the pandemic, the research community showed a commendable ability to adapt and rise to previously unthinkable challenges. We want to encourage and support that ingenuity and inventiveness through this fund, helping to deal with the adverse effects of COVID-19, Brexit, the war in Ukraine, and rising inflation.

“Projects announced today will benefit patients with heart failure, make online space safer for children and reduce greenhouse gases, paving the way for Ireland’s journey to a carbon neutral society, to name a few. These and other successful projects have identified emerging areas of opportunity in future markets to help solve societal challenges by building on our regional economic and research strengths.

“DTIF project partners continue to develop cutting-edge technologies and we will continue to invest in those enterprises and experts in the research community who apply innovative thinking to push boundaries and drive change.”

DTIF places a large emphasis on SME participation, to utilise their potential as drivers of disruptive innovation. The 11 successful consortia in this call have 40 partners, of which 58% (23) are SMEs and 10 of which are leading their projects. To date, 153 SMEs have been awarded funding in the four calls to date.

This brings the total allocation of DTIF funding to €275m. Over €157m (57%) of that funding has been awarded to project partners outside of Dublin. This will contribute to further economic growth in all regions and create high-quality jobs for talented people who live and work in rural Ireland.

Simon Harris, Minister for Further and Higher Education, Research, Innovation and Science said:

“This fund reinforces the significant impact research and innovation has on our industrial development and economic prosperity.

“Ireland continues to lead the world in research excellence, consolidated by our sustained commitment to research, development and innovation.

“This call includes many of Ireland’s talented and motivated research community which covers a wide range of disciplines. The diversity of these disciplines makes Ireland an attractive place for graduates to find sustainable long-term employment and gives enterprises, particularly SMEs, access to highly skilled talent.

“Of the 40 partners involved in this call, I am delighted to see that 15 research performing organisations have been awarded €15m. This level of funding reaffirms our Government’s commitment to supporting Irish ingenuity and the development of cutting-edge technologies in our higher education institutions and universities.”

Dara Calleary TD, Minister of State for Trade Promotion, Digital and Company Regulation congratulating the successful projects said:

“Innovation through collaboration is a key part of Ireland’s success now and into the future. The DTIF calls are terrific opportunities for companies and research institutions to harness the potential of disruptive technologies, such as AI, and apply this to real-world problems.

“The 11 projects announced today demonstrate that such innovation is alive and well within the Irish ecosystem and that collaboration can lead to significant benefits to society as well identifying further opportunities for further growth. This ultimately is good for business and good for the economy and gives Irish enterprise the competitive edge when trading into new markets and an increasingly competitive global environment.”

Over the four calls announced to date, 123 research institutions are participating in 83 projects. Research institutions are involved in all but two and are the lead partner in 18 projects.

Leo Clancy, CEO, Enterprise Ireland, who administer the Disruptive Technologies Innovation Fund, said:

“The investment offered through DTIF encourages Irish companies of all sizes, multinational companies and academic institutions to explore new opportunities by encouraging them to be more ambitious and pursue strategic research opportunities. It helps clients target investment in innovations in areas of major importance, such as future medical technologies and digitalisation.”

Note to Editors

The Disruptive Technologies Innovation Fund (DTIF) is a €500 million fund established under the National Development Plan (NDP) in 2018. The Department of Enterprise, Trade and Employment manages the DTIF with administrative support from Enterprise Ireland. The purpose of the Fund is to drive collaboration between Ireland's world-class research base and industry as well as facilitating enterprises to compete directly for funding in support of the development and adoption of these technologies. The aim is to support investment in the development and deployment of disruptive technologies and applications on a commercial basis.

Call 4 applications to DTIF were assessed by panels of international experts against four criteria – quality of the disruptive technology, excellence of overall approach, economic impact & sustainability, and strength of the collaboration.

[Download Disruptive Technologies Innovation Fund \(DTIF\) – Awards under Call 4 \(2021 – 2022\)](#)
[DTIF Projects awarded are between €1.5 and €7 million in DTIF funding](#)

Contact

For further information, please contact:

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Future looks bright for Space Sector in Ireland - 94 Enterprise Ireland companies secured European Space Agency support last year

22 November 2022



Padraig Doolan (Nat. Delegate to ESA, EI), Niall Bolger (Nat. Delegate to ESA, EI), Emma Jane Morgan (Head of Enterprise Innovation Programmes Unit, DETE), Damien English (Minister of State for Business, Employment and Retail, DETE), Aideen Cusack (Enterprise Space Policy, DETE), Joe Madden (Company R&D Dept. Manager, EI), Conor Sheehan (Nat. Delegate to ESA, EI)

Enterprise Ireland publishes ESA End of Year Activities Report for 2021

Last year saw record growth in the number of Enterprise Ireland companies engaging with the European Space Agency (ESA), 94 organisations in total, with 14 of those companies securing first time contracts in 2021. Overall, ESA placed contracts with a combined value of €15.8 million with 36 Irish-based companies, with an additional €4.8 million in industry co-funding.

Irish companies became increasingly active in developing space-based solutions – including participating in the biggest space story of 2021 – the James Webb Space Telescope (JWST), as well as incorporating advanced satellite systems to address a range of global challenges, including climate change and impacts

on specific sectors such as agriculture, water quality & biodiversity, as well as offshore and renewable energy:

- **Réaltra Space Systems Engineering** designed and manufactured the video system that was mounted on the Ariane 5 launch vehicle - the first time such a video system has been on a European launcher. The system relayed high-definition video images of the telescope as it separated from the launcher's fairing (equipment that enclosed and protected the Webb telescope during launch) as it began its journey to its final orbit location.
- Two Irish companies have partnered to assess the potential of satellite-based services for use in the renewable marine energy industry: **Mindseed**, a Dublin-based ICT consultancy has teamed up with Cork-based wave technology specialist **Ocean Energy** to assess the potential benefits of utilising satellite-based services within the marine energy sector to address key operational challenges

In line with the National Space Strategy for Enterprise, Irish companies are also increasingly exploiting space technologies in non-space markets, including the automotive, energy, agri-food and medical device markets. These include:

- Dublin-based **Davra Networks** is working on a Lifesaving Location Service (LifeLoS) initiative, which can be used by any hospital, nursing home or home care service. The solution will, with ESA support, integrate advanced satellite positioning and communications systems to track and trace 'free-to-move' patients in indoor and outdoor spaces and will enable rapid response to possible incidents
- **Treemetrics**, a Cork based forestry company, has developed a Global Forest Monitoring Platform using satellite data to determine crop health, unexpected loss due to natural and man-made disasters and have recently added a service to measure carbon sequestration around the globe.

The 2021 report of activities was launched today at the ESA Council of Ministers meeting in Paris. This meeting brings together Ministers from ESA's Member States, Associate States and Cooperating States to make critical decisions that will strengthen Europe's space sector and ensure it continues to serve European citizens.

Representing Ireland at the Council of Ministers meeting, Minister of State for Business, Employment and Retail, Damien English TD, said: *"I am delighted to highlight the significant contribution innovative Irish companies are making in the global space sector. Ireland's membership of ESA is of huge importance in growing jobs and increasing economic activity in participating firms. We have increased our financial contribution to the European Space Agency which is paid back in terms of valuable contracts for Irish technology companies and their impressively talented workforce."*

The future for the space sector in Ireland looks extremely bright – recently the Tánaiste and I signed an Exchange of Letters with ESA to facilitate the launch next year of Ireland's first satellite, EIRSAT1 which has been designed and built by academic staff and students at University College Dublin (UCD). I look forward to watching it launch early next year from French Guiana on board an ESA launch vehicle. The Government, through Enterprise Ireland, is committed to supporting Irish businesses to advance in the space sector and to help grow their impressive contribution to European and global space activities."

Joe Madden, National Delegation to ESA, Enterprise Ireland, said: *"Irish companies continued to offer innovative solutions to the global space sector in 2021, particularly through the inclusion of advanced technologies from other industrial sectors which are addressing pressing global issues, in particular climate change and the carbon reduction agenda."*

The scope of Irish involvement in space-related activities has increased substantially, with close to 100 Irish companies and a growing number of research teams actively involved in space-related developments supported by ESA, through Enterprise Ireland.”

Ireland has been a member of the European Space Agency (ESA) since 1975. In that time, it has participated in a number of high-profile ESA missions supported by technologies developed by Irish industry and research communities.

[Click here to download the ESA Annual Report 2021.](#)

ENDS

For further information please contact

[Press Office Enterprise Ireland](#)

12 investor ready start-ups pitch for investment at Enterprise Ireland's Big Ideas 2022

24 November, 2022



Big Ideas 2022

Big Ideas include an injectable gel treatment for knee osteoarthritis, AI-powered video summarisation, a medical device to treat dry eyes, and a solution to lower carbon emissions

Twelve investor-ready start-ups will pitch their new technology solutions to investors at Enterprise Ireland's *Big Ideas 2022* today. The annual event, which showcases deep tech start-up innovation emerging from higher education institutes, provides founders with direct access to investors and an opportunity to unveil their Big Idea. Now in its 14th year, *Big Ideas 2022* will take place as a hybrid event with a live audience in Croke Park Dublin and a wider international audience watching online.

This year, innovations address a wide range of issues, including an injectable gel treatment to give superior relief and protection from knee osteoarthritis, AI-powered video summarisation, a wearable medical device to treat dry and sore eyes, and a way to categorise transaction data to determine carbon hotspots and provide recommendations to lower carbon emissions.

The selected pitch teams will each have just three minutes to promote their innovations and business propositions to an invited in person and online audience made up of the Irish research and investment communities and the wider start-up ecosystem.

The teams pitching at Big Ideas today are representative of deep tech start-ups – companies that must successfully conquer high levels of technical, engineering and science risk in parallel to the other risks that companies face when starting out, such as market and finance risk. However, their combination of talent, and a differentiated, proprietary product means these types of start-ups can be highly disruptive to market incumbents and consequently impactful at a societal and economic level.

Minister of State for Trade Promotion, Digital and Company Regulation at the Department of Enterprise Trade and Employment, Dara Calleary, TD, said:

“Ireland has one of the most vibrant and collaborative commercialisation ecosystems in the world – due in no small part to the people that make the system what it is – the entrepreneurs and the founders and the technology and innovations they pursue. The origins of these technology-based start-ups are deep rooted in ground-breaking research emanating from State-funded Irish institutions and this new wave of deep tech entrepreneurs is helping to position Ireland as a leading player on the global innovation scene.

“As these founders face a more challenging start-up funding environment, it’s important to sustain and support their growth, and instruments such as the Disruptive Technology Innovation Fund (DTIF) play a critical role in addressing potential funding gaps for deep tech start-ups. I wish all 12 teams the best of luck today and into the future.”

Enterprise Ireland CEO Leo Clancy said:

“Given the severe global headwinds that Irish businesses are facing, it has never been more important to champion the courage and ambition of Irish founders, as their spirit and drive are the cornerstones of our local and national economies. Enterprise Ireland is committed to further accelerating entrepreneurship in Ireland and today’s event is an excellent example of this, with the interaction between investors, higher education institutes and our own support teams providing these 12 ambitious founders with an opportunity to take their businesses to the next level. The commercialisation of companies, born as a result of a research idea is an imperative for Enterprise Ireland and the State as their success will change our collective future for the better.

“We have a really strong mix of companies pitching today and it is great to see that 50% of them have women founders. I wish each of them luck today.”

The Big Ideas pitch teams will also be vying for one of two accolades today. A judging panel will decide which of the 12 start-ups will be presented with this year’s ‘One to Watch Award’ for the outstanding pitch of the day. The live and online audience will also have their say – their vote will decide which pitch team will be presented with the ‘Viewer’s Choice Award’.

Full details on the event are available at www.bigideas.ie

ENDS

Notes to Editor

Big Ideas 2022 promoters include:

Darwin & Goliath: a Trinity College spin-out from the ADAPT research centre provides carbon calculators that categorise transaction data to determine carbon hotspots and provide recommendations to lower carbon emissions. The technology enables companies to calculate and ultimately reduce emissions in procurement by comparing vendors and displaying emissions information to end customers. **Promoter: Eamonn Donlyn.**

Fada Medical: With a mission to improve insulin delivery for people living with Type 1 diabetes mellitus. Fada Medical has developed a novel diffusion technology that can extend the wear time of infusion set cannulas, supporting consistent long term insulin pump use. **Promoter: Robert Wylie.**

Giyst: An emerging UCD start-up, giyst is using AI (Artificial Intelligence) and machine learning to create video summaries to tackle the issues of information overload and shortening attention spans for business, education and other markets. The aim is to repurpose content to drive better engagement and discovery. **Promoter: Avril Power.**

Infraprint: From medical implants to aircraft engine parts, 3D printing is defining the next industrial revolution. Infraprint’s technology enables the 3D printing of engineering plastics stronger than any system on the market, empowering companies to manufacture high strength, lightweight, customised parts in a cost and

time efficient way. This digital technology is leading the way to a sustainable, reliable and energy efficient production process for small batch components, from Aerospace to pharmaceuticals and beyond. **Promoter: Andrew Dickson.**

Lia Therapeutics: Following needs-led research conducted during the BioInnovate Fellowship Programme at University of Galway and a Commercialisation Fund at UCD, Lia Therapeutics has developed Nightleaf™, its drug-free, wearable medical device to treat dry and sore eyes. **Promoter: Sinead Buckley.**

NanobOx: Maintaining levels of dissolved oxygen in process waters is a significant operating cost and critical to productivity in many commercial bioprocesses. Dr John Favier, a serial entrepreneur, along with Dr Mohammad Ghaani at Trinity College Dublin have developed a highly energy efficient technology for oxygenation of water using nanobubbles. **Promoter: John Favier.**

OPEnS: Dr Conor Lynch, a research fellow & group lead at Nimbus research centre in MTU, has developed a solution for automating energy savings. The company OEPnS has a grid-connected smart network system encompassing energy market-tracking tariff prediction technologies that has the capacity to optimise based on energy cost, carbon emissions or both simultaneously. **Promoter: Conor Lynch.**

Pumpinheart: Royal College of Surgeons in Ireland (RCSI) spin-out company Pumpinheart has prototyped a transcatheter implantable diastolic heart pump ‘PReduction’ to treat advanced stage Heart Failure with preserved Ejection Fraction. The management team is mix of clinical, engineering and start-up expertise. Prior to joining RCSI, CMO Dr Aamir Hameed was a cardiothoracic surgeon. CEO Donald Hickey is an experienced EdTech and MedTech entrepreneur and CTO, Dr Andrew Malone is a medical physicist. **Promoter: Donald Hickey.**

ReleviumBio: Having previously managed projects for large multinationals such as ROCHE, Boston Scientific and Cook Medical, Dr Alison Liddy, Co-Founder of ReleviumBio has developed an injectable gel treatment to give superior relief and protection from knee osteoarthritis. The company is targeting knee osteoarthritis as a first clinical indication and plan to extend the treatment indications to target other joints affected by osteoarthritis, where the same treatment problems exist. **Promoter: Alison Liddy.**

TiLT (Transformation in Learning and Training): For organisations operating in an environment of diversity – this does not necessarily equal inclusion. TiLT has created a training solution to make diverse organisations more inclusive that focuses not on individual unconscious bias training but on shifting the norms around social interaction in the organisation. **Promoter: Anne Holohan.**

UniDoodle: has created a digital tool that addresses the problem of student disengagement in class-based learning - a Student Response System that understands students like never before. The Promoter Denise O’Grady is a serial entrepreneur in the EdTech domain, having founded Way2Pay a FinTech / EdTech start-up in 2013 and successfully exiting in 2019 selling to Evo Payments, a USA based, quoted company. **Promoter: Denise O’Grady.**

Vzarii: Age-related macular degeneration (AMD) is a neurodegenerative retinal disease affecting up to 10% of adults over 65 years. Vzarii has developed innovative platform gene therapies that target late-stage dry AMD. The Vzarii gene therapy technologies are the result of pioneering research from the Farrar team at the School of Genetics and Microbiology, Trinity College Dublin. **Promoter: Loretto Callaghan.**

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NovaUCD spin-out NanobOx wins 'One to Watch Award' at Enterprise Ireland's 2022 Big Ideas Showcase

25 November, 2022



Pictured L-R: Dr John Favier, Co-Founder and CEO at NanobOx; Marina Donohoe, Incoming Divisional Manager Research and Innovation at Enterprise Ireland; Dr Mohammad Ghaani, Co-Founder of NanobOx.

Dr John Favier and Dr Mohammad Ghaani of NovaUCD spin-out NanobOx were presented with the “One to Watch Award” at Enterprise Ireland’s *Big Ideas 2022* showcase event yesterday evening (Thursday, 24 November) in Croke Park Dublin.

Now in its 14th year, Enterprise Ireland held the 2022 Big Ideas pitch event in front of a live audience in Croke Park as well as a virtual audience online.

NanobOx was one of 12 investor-ready start-up companies to pitch their new technology solutions to investors at the annual showcase of start-up innovation emerging from higher education institutes. The Big Ideas pitch teams were competing for the One to Watch Award, which was decided by a judging panel.

NanobOx was pitched by Dr John Favier, a serial entrepreneur and CEO of the start-up. Favier founded NanobOx along with Dr Mohammad Ghaani. They have developed a highly energy-efficient technology to oxygenate water using nanobubbles. Many commercial bioprocesses require oxygen levels in process waters to be consistently maintained. This can be a significant operating cost for a process that can be critical to productivity.

In aquaculture, or the farming of fish stocks, for example, the energy cost of oxygenation can be the second highest expense after feed. It can represent 60pc to 70pc of operating costs in biological wastewater treatment.

Generating nanobubbles is particularly energy intensive, but with novel, patented technology NanobOx has managed to reduce the energy required to do so. Its nanobubble generators can be solar or battery-powered, and with no moving parts they are easy to clean and maintain. The company claims its technology is highly scalable and can oxygenate water at high flowrates.

A “Viewers’ Choice Award” was also presented to Robert Wylie of Fada Medical, which is on a mission to improve insulin delivery for people living with type 1 diabetes. To do this, Fada Medical has developed a novel diffusion technology that can extend the wear-time of infusion-set cannulas, supporting consistent long-term insulin pump use.

The selected pitch teams each had just three minutes to promote their innovations and business propositions to an invited in person and online audience made up of the Irish research and investment communities and the wider start-up ecosystem.

Other Big Ideas at this year’s event included innovations which address a wide range of issues, including an injectable gel treatment to give superior relief and protection from knee osteoarthritis, AI-powered video summarisation, a wearable medical device to treat dry and sore eyes, and a way to categorise transaction data to determine carbon hotspots and provide recommendations to lower carbon emissions.

Full details on the event are available at www.bigideas.ie

ENDS

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siliconrepublic

Women in Green Hydrogen to discuss future of energy at Dublin event

3 October

Catherine Sheridan, the COO of green energy company EIH2, said people from all fields ‘have something to offer’.

Women in Green Hydrogen, a global network of more than 1,000 members, is hosting its first event in Ireland next month and is looking for new voices to contribute to the discussion around the energy transition.

Titled Chorus, the event is taking place in Dublin on 21 November. It will bring people from different areas of expertise together to share their thoughts on the energy sector in Ireland.

“I would hope we will attract some people from the engineering and energy sectors,” said utility industry veteran Catherine Sheridan, a member of the organisation who will chair the event.

To continue reading go to:

[Women in Green Hydrogen to discuss future of energy at Dublin event \(siliconrepublic.com\)](https://siliconrepublic.com/women-in-green-hydrogen-to-discuss-future-of-energy-at-dublin-event)

Article by:

Vish Gain is a journalist with Silicon Republic

editorial@siliconrepublic.com

DCU project tackling plastic use wins €2.4m in SFI challenge

5 October

The Grain-4-Lab team is working to reduce plastic use in labs by utilising waste produced from the brewing and distilling industry.

A team of researchers from Dublin City University working to reduce plastic use in labs has won the Science Foundation Ireland (SFI) Plastics Challenge.

The Grain-4-Lab team, led by Dr Jennifer Gaughran and Dr Brian Freeland, has been awarded €2.4m to help scale up the process.

SFI's Plastic Challenge is one of several under the [Future Innovator Prize programme](#), which the agency launched in 2018 to encourage researchers to tackle societal problems through challenge-based funding. This competitive model is now playing a key role in [directing research activity](#) in Ireland.

To continue reading go to:

[DCU project tackling plastic use wins €2.4m in SFI challenge \(siliconrepublic.com\)](#)

Article by:

Leigh Mc Gowran is a journalist with Silicon Republic

editorial@siliconrepublic.com

Can we change how the body reacts to medical implants?

12 October

Dr Eimear Dolan and her team are working on a way to prevent the build-up of scar tissue on medical devices and improve drug delivery.

Medical devices have seen huge advancements in recent years and a focus in this sector is implantable drug delivery devices.

For example, there are devices that can release insulin into the body over long periods of time as an alternative way to treat diabetes without the need for insulin injections.

However, while emerging tech is advancing at a rapid pace, our own bodies don't always see these devices as a welcome addition.

The immune system can attack these devices after implantation in an attempt to protect the body from foreign objects. A thick layer of scar tissue can form around the implant, blocking the release of insulin.

To continue reading go to:

[Can we change how the body reacts to medical implants? \(siliconrepublic.com\)](#)

Article by:

Jenny Darmody is the deputy editor of Silicon Republic

editorial@siliconrepublic.com

Specialist collaborative research centres to be created in Ireland and UK

24 October

The new €74m collaborative initiative aims to build greater links between researchers in Ireland, Northern Ireland and the UK.

A new research and innovation initiative to boost collaboration between Ireland, Northern Ireland and the UK has been announced today (24 October).

The Co-Centres Programme involves the establishment of virtual collaborative research centres across these regions. The aim is to build strategic partnerships while addressing societal and environmental challenges.

The governments of Ireland, Northern Ireland and the UK are investing a total of €74m in the initiative.

In mid-November, a funding call will open to deal with two specific themes: climate and sustainable food systems.

To Continue reading go to:

[Specialist collaborative research centres to be created in Ireland and UK \(siliconrepublic.com\)](https://siliconrepublic.com/specialist-collaborative-research-centres-to-be-created-in-ireland-and-uk)

Article by:

Blathnaid O'Dea is Careers reporter at Silicon Republic
editorial@siliconrepublic.com

RCSI discovery could lead to new treatments for blood clotting disorders

3 November

Researchers said their discovery could help with developing new treatment options for disorders such as Von Willebrand disease, deep vein thrombosis and myocardial infarction.

New research suggests a blood clotting protein plays a vital role in regulating immune responses in blood vessel injuries.

It was conducted by researchers at the RCSI University of Medicine and Health Sciences in collaboration with Trinity College Dublin and the National Coagulation Centre at St James's Hospital.

The team focused on the Von Willebrand factor (VWF), the protein that helps blood clot properly.

In the new study published in the journal Nature today (3 November), the researchers said this protein also triggers local immune responses at sites of damage.

To continue reading go to:

[RCSI discovery could lead to new treatments for blood clotting disorders \(siliconrepublic.com\)](https://siliconrepublic.com/rcsi-discovery-could-lead-to-new-treatments-for-blood-clotting-disorders)

Article by:

Leigh Mc Gowran is a journalist with Silicon Republic
editorial@siliconrepublic.com

HEIs encouraged to apply for €12m EIT fund aimed at unlocking new ideas

10 November

The EIT is linked to Horizon Europe, the EU's research and innovation initiative. Successful applicants under this call will be notified in May 2023.

The European Institute of Innovation and Technology (EIT) has launched a funding call as part of a bid to boost innovation in higher education.

Up to 16 projects based on consortia consisting of academic and non-academic organisations will be selected under the call. The EIT is encouraging higher-education institutes (HEIs) and their partners from across Europe to apply for a slice of the total €12m funding.

Organisations who wish to apply can visit the [EIT's website](#) to see the full text of the funding call.

To continue reading go to:

[HEIs encouraged to apply for €12m EIT fund aimed at unlocking new ideas \(siliconrepublic.com\)](#)

Article by:

Blathnaid O'Dea is Careers reporter at Silicon Republic
editorial@siliconrepublic.com

Trinity scientists have discovered why some people are resistant to viruses

11 November

By studying women who were exposed to hepatitis C many years ago, Trinity scientists were able to determine what causes viral resistance.

Scientists in Ireland have unearthed the potential secret as to why certain individuals are [resistant to viral infections](#) such as hepatitis or Covid-19.

A new study by researchers based in Trinity College Dublin (TCD) screened the immune systems of women who were exposed to the hepatitis C virus through contaminated transfusions more than 40 years ago.

In the late 1970s, several thousand women in Ireland were exposed to the virus through anti-D, a medication made using plasma from donated blood and given to Rhesus negative women who are pregnant with Rhesus positive foetuses. The medication prevents the development of antibodies that could be dangerous in subsequent pregnancies. However, some of the anti-D used in that period was contaminated with hepatitis C.

To continue reading go to:

[Trinity scientists have discovered why some people are resistant to viruses \(siliconrepublic.com\)](https://siliconrepublic.com)

Article by:

Vish Gain is a journalist with Silicon Republic
editorial@siliconrepublic.com

35 academics in Ireland feature on global list of influential researchers

15 November

The US continues to dominate the global Highly Cited Researchers list, but China is closing the gap with each passing year.

The 2022 Highly Cited Researchers list has been released, highlighting the top 1pc of the world's researchers by citations.

The list features 6,938 researchers this year who have demonstrated significant influence in their field. It includes academics from 69 countries and regions around the globe – including 35 researchers based in Ireland.

The Highly Cited Researchers list is compiled annually by analytics company Clarivate. This year, it extended its methodology to consider academic misconduct and any researcher found guilty by their institution of plagiarism, image manipulation or false peer reviews was excluded from the list.

To continue reading go to:

[35 academics in Ireland feature on global list of influential researchers \(siliconrepublic.com\)](https://siliconrepublic.com)

Article by:

Blathnaid O'Dea is Careers reporter at Silicon Republic
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Advanced therapeutics: The next generation of medicines

17 November

NIBRT's Killian O'Driscoll looks back at how far drug development has come and what the future holds for the pharma sector.



The impact of innovative medicines on human health has been one of the great achievements of humankind. Once common and often fatal diseases such as smallpox, diphtheria, typhoid, polio, rubella, measles and mumps are now successfully managed and often effectively eradicated.

IRISH CHEMICAL NEWS ISSUE NO.4 NOVEMBER 2022

In 1982, a new wave of innovative medicines was launched with FDA approval of the first biotech drug in the US, a genetically engineered version of human insulin.

To continue reading go to:

[Advanced therapeutics: The next generation of medicines \(siliconrepublic.com\)](#)

Article by:

By [Killian O'Driscoll](#)

Killian O'Driscoll is the chief commercial officer of [NIBRT](#), the National Institute for Bioprocessing Research and Training.

Irish scientists find way to breed dairy cows with lower 'carbon hoofprint'

18 November

The moo-ve comes as Ireland's agriculture sector strives to reduce greenhouse gas emissions by a quarter by 2030.

Researchers in Ireland have developed a way to help farmers breed cattle based on their "carbon hoofprint".

To Continue go to:

[Irish scientists find way to breed dairy cows with lower 'carbon hoofprint' \(siliconrepublic.com\)](#)

Article by:

Blathnaid O'Dea is Careers reporter at Silicon Republic
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UCC appoints Dr Sally Cudmore as director of innovation

21 November

Cudmore was previously interim director of UCC Innovation, which helps bring university research out of the lab and into industry.

Entrepreneur and scientist Dr Sally Cudmore has been named director of innovation at University College Cork (UCC).

To read more about this topic go to:

[UCC appoints Dr Sally Cudmore as director of innovation \(siliconrepublic.com\)](#)

Article by:

Blathnaid O'Dea is Careers reporter at Silicon Republic
editorial@siliconrepublic.com

Trinity's Prof Orla Hardiman named SFI Researcher of the Year

21 November

Motor neurone disease expert Prof Orla Hardiman was one of several researchers recognised at the annual award ceremony.

Prof Orla Hardiman of Trinity College Dublin (TCD) has been named Researcher of the Year 2022 for her “outstanding contribution” to our understanding of motor neurone disease and treatments.

To read more about this topic go to:

[Trinity's Prof Orla Hardiman named SFI Researcher of the Year \(siliconrepublic.com\)](https://siliconrepublic.com/news/science/trinity-college-dublin-sfi-researcher-of-the-year-2022/)

Article by:

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UL study discovers ‘brain-like’ computing is possible at molecular level

21 November

The study involved the creation of a 2 nanometre-thick layer of molecules – about 50,000 times thinner than a strand of hair.

Researchers at the University of Limerick (UL) have made a breakthrough in physics by discovering that ‘brain-like’ computing activity is possible at the atomic and molecular scale.

To read more about this topic go to:

[UL study discovers ‘brain-like’ computing is possible at molecular level \(siliconrepublic.com\)](https://siliconrepublic.com/news/science/ul-study-discovers-brain-like-computing-is-possible-at-molecular-level/)

Article by:

Vish Gain is a journalist with Silicon Republic

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Nanotech could be the next frontier of drug delivery

23 November

Prof Ijeoma Uchegbu is working on transformational drug transport nanoparticles, but said the pharma ecosystem needs to be better equipped for this emerging field.

Nanotechnology is an emerging and rapidly developing area in the pharmaceutical and medicinal field.

To read more about this topic go to:

[Nanotech could be the next frontier of drug delivery \(siliconrepublic.com\)](https://siliconrepublic.com/news/science/nanotech-could-be-the-next-frontier-of-drug-delivery/)

Article by:

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Ireland makes €125m investment to help space-tech industry take off

23 November

As Ireland's first satellite gets set for launch, the country has reaffirmed its commitment to the ESA.

The Government is making a €125m commitment to the European Space Agency (ESA) over the next five years. This investment is expected to further support the expansion of Ireland's growing space industry.

To read more on this topic go to:

[Ireland makes €125m investment to help space-tech industry take off \(siliconrepublic.com\)](#)

Article by:

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Catalyst teams up with Techstart Ventures to fund more founders

28 November

By coming together on grant funding, Catalyst and Techstart hope to provide an 'improved experience' for Northern Ireland's early-stage entrepreneurs.

Catalyst and Techstart Ventures have teamed up to provide proof-of-concept grants to emerging start-ups in Northern Ireland.

To read more on this topic go to:

[Catalyst teams up with Techstart Ventures to fund more founders \(siliconrepublic.com\)](#)

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