Irish Chemical News

A Journal of the Institute of Chemistry of Ireland

ICI Postgraduate Chemistry Research Symposium

Wednesday, September 9th, 2020

Organising Committee

Top row Dr Joseph Byrne (Honorary Research Lecturer, NUI Galway),); Dr Mark Kelada (ICI Young Chemists Representative); Jessica O'Neill (Dublin City University); *middle row* Lauryn Bracken (Athlone Institute of Technology); Fionn Ó Fearghail (Techological University Dublin; Colm McKeever (Maynooth University); *Bottom row* Lukas Hallen (Trinity College Dublin); Siobhán O'Flaherty (Royal College of Surgeons in Ireland); Syl Byrne (NUI Galway); Niamh O'Mahoney (University College Cork).

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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A Message from the President

Dear Fellows, Members, Graduates and Associates,

I sincerely hope you and your families are all keeping safe and well. It is hard to believe that Christmas is nearly upon us. I have no doubt you are all really looking forward to it. Nobody could have predicted the year that has been. Nobody could have imagined on the 12th March of this year, the day the World Health Organisation declared the Covid-19 outbreak as a worldwide pandemic, the impact it would have across the globe. Our editor of the Irish Chemical News, Dr. Patrick Hobbs, has been working tirelessly behind the scenes since then to keep us all abreast of the latest scientific developments in the fight against the virus. This last issue of 2020, for example, contains over fifty pages with links to interesting updates and publications related to the SARS CoV-2 virus. As leading pharmaceutical and biotechnology companies continue to work hard to fast-track vaccines through clinical trials, we are reminded of the need to continue to investigate alternative options in an interesting article published in Nature entitled 'The underdog coronavirus vaccines that the world will need if front runners stumble', just one of the many publications highlighted by our editor in this issue.

As you know, we had to defer our AGM and annual award ceremony which was due to take in April of this year as well as the annual ICI Congress scheduled in UCC in September 2020. The Irish Universities Chemistry Research Colloquium was deferred as were most other national and international scientific conferences and meetings. Indeed, the EuChemS Congress which we, the Institute, were due to host in August 2022, has now been deferred to the summer of 2024. This was to facilitate the organisers of the EuChemS Congress who requested that they defer their Congress, which was due to take place in Lisbon this year, to 2022.

On a very positive note, our ICI Young Chemists' Representative and Council member, Dr Mark Kelada, together with Dr Joseph Byrne from NUIG, are to be congratulated for putting together an organising committee comprising postgraduate scholars from higher education institutions across Ireland to host the ICI's Inaugural Postgraduate Research Symposium in September of this year. This virtual symposium, which attracted approximately 150 delegates, provided an invaluable opportunity for our Irish postgraduates to showcase their research as well forge new collaborations. A full account of this highly successful symposium is provided in this issue. I am particularly delighted that our editor has added a screenshot of the organisers on the front cover of this ICN issue for they deserve great credit for bringing our postgraduate community together at a time when many research laboratories were still closed. On the foot of the success of the symposium, Dr Kelada has since established the Irish Young Chemists' Network. We are very excited by this most recent ICI development and we look forward to sharing updates with you in due course.

As you know, we also recently hosted our first ever *virtual* ICI annual award ceremony. Professor Declan McCormack, the recipient of the ICI Annual Award for Chemistry (Eva Philbin Public Lecture Series) delivered an outstanding award lecture. This lecture will soon be available on the ICI website (www.chemistryireland.org). Another highlight was the presentation of the ICI Postgraduate Award 2020. The standard of nominations, which were sent for independent review and evaluation, was incredibly high. We had two recipients this year, Conor Crawford from UCD who worked under the supervision and mentorship of Professor Oscarson and Priyanka Ganguly from IT Sligo who worked under the supervision

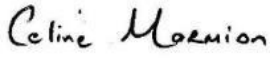
and mentorship of Professor Pillai and Dr Breen. Another highlight during the ceremony was the presentation of the ICI Second Level Education Awards 2019 to Brian Durkan from St Muredach's College, Ballina, Co Mayo and Óran O'Sullivan from Coláiste Choilm, Ballincollig, Co Cork. This is an award presented to students who have achieved the highest grade in Leaving Certificate higher level chemistry in Ireland. The award ceremony also included a special guest presentation from Dr Fiona Desmond, the State Examinations Commission Chief Examiner for Chemistry and Physics and Chemistry. Dr Desmond provided a wonderful insight into all aspects of the assessment of leaving certificate chemistry. We are very grateful to Dr Desmond for taking the time out of her busy schedule to do this. As you know, Professor A.P. De Silva from Queen's University Belfast is the 2020 recipient of the Boyle Higgins Gold Medal and Lecture Award. I am delighted to let you know that Professor De Silva will be delivering his award lecture in the New Year. We very much look forward to this lecture and to presenting Professor De Silva with his gold medal award.

The 71st ICI AGM took place virtually immediately following the Colloquium. I am delighted to announce that Dr Peter Childs was awarded an honorary fellowship during this AGM in recognition of his outstanding and diverse contributions in the field of chemical education. We are enormously grateful to Dr Childs for all that he has done over his distinguished career in promoting this important chemistry field.

May I take this opportunity to thanks Dr Patrick Hobbs on publishing yet another excellent edition of the Irish Chemical News. May I encourage you please to submit articles of interest or indeed notifications that you feel may be of interest to our members for inclusion in future editions. I would also like to personally thank all Council members for sharing their expertise and for their continued support.

Finally, on behalf of Council, may I wish all our Fellows, Members, Graduates and Associates continued good health and happiness.

Yours sincerely,



Professor Celine J. Marmion PhD FRSC FICI
President, Institute of Chemistry of Ireland
4th December, 2020

Editorial

The festive season approaches and we are about to emerge however briefly from the second lockdown. There are very positive developments with vaccines and we may have approval of two before Christmas. The Pfizer/BioNTech and Moderna vaccines look likely to be the first approved in Europe and the US. There are challenges like a temporary hick-up with the Oxford AstraZeneca vaccine but that will be rectified by more clinical trials. Logistics will be challenging in particular for the Pfizer/BioNTech vaccines at very low temperature of -70^{O}C. Also some challenge trials are due to start in January where volunteers will be vaccinated and then exposed to the SARS CoV-2 virus. Also treatments for infected patients with drug regimes are improving as medics gain more understanding of the progress of Covid-19 disease.

The achievements by multi-disciplinary teams of scientists worldwide in less than a year are magnificent testament to what can be accomplished when scientists cooperate. The molecular structural elucidation of the virus and mechanisms of infection are impressive. The virus in Europe and the US has mutated and the mutations are designated D614 and G614 where just one amino acid at position 614 had made the virus, up to 10 times more infective but luckily not more potent. See pages 10, 147-149.

The number pf publications emerging with open access for now is overwhelming. This Issue is very large, some 206 pages, mainly due to the amount of material I have setup links to for readers. There are weeks of reading here and the material is roughly in time order over two months as I gained access. I do expect that the number of publications will tail off shortly as vaccines become available so this section of the journal will decrease. There are of course the contrarians and conspiracy theorists out there trying to undermine the great work of scientists and front-line medical staff, out of self-interest, on social media and unreliable sources and are best ignored.

In this Issue I have introduced a new section **"Irish University & 3rd Level Chemistry News"** to highlight the work and achievements of our chemists in these institutions. I have extracted the content from Press Releases and Web content. This is time consuming so I urge academics to send any announcements about their work to info@instituteofchemistry.org and feedback is welcome. Circulate this Issue amongst your colleagues.

The section "Chemistry and related Science around the World" is expanded and I hope to develop this with time. The Usual SFT, IDA, EI, Siliconrepublic and Industry & Business sections continue.

The inaugural Institute of Chemistry of Ireland Postgraduate Chemistry Research Symposium (ICI PCRS) was a great success in September and the organisers deserve the front page for their efforts. As a result of the Symposium a new group "**Irish Young Chemists Network" (IYCN)** has been formed –see P16.

This year's Annual Award Lecture (Eva Philbin) 2019, Post Graduate 2020 and Irish Second Level awards were online. The Annual Award was given by our 2019 winner Prof Declan McCormack (TU Dublin). Our 2020 Boyle Higgins Gold Medal Lecture Award will be given by Prof AP De Silva in 2021.

Comments and Responses are welcome and can be sent to: - **info@instituteofchemistry.org**

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

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.

ICI website: http://www.chemistryireland.org
Nominations to be sent to the ICI President at: president@instituteofchemistry.org
Details in relation to other ICI Awards are available on the ICI website

Postponed to August 28, 2022

"The COVID-19 pandemic that so deeply affects our lives and countries is not expected to end soon, and its consequences will be felt for a long time. In particular, satisfactory conditions for international scientific conferences to take place will certainly not be fulfilled in the next months. We are thus forced to postpone the 8th EuChemS Chemistry Congress. On the 3rd of May, 2020 the Executive Board of EuChemS, in consultation with the Scientific and Organizing Committee in Portugal were able to settle on a new date for the 8th EuChemS Chemistry Congress.

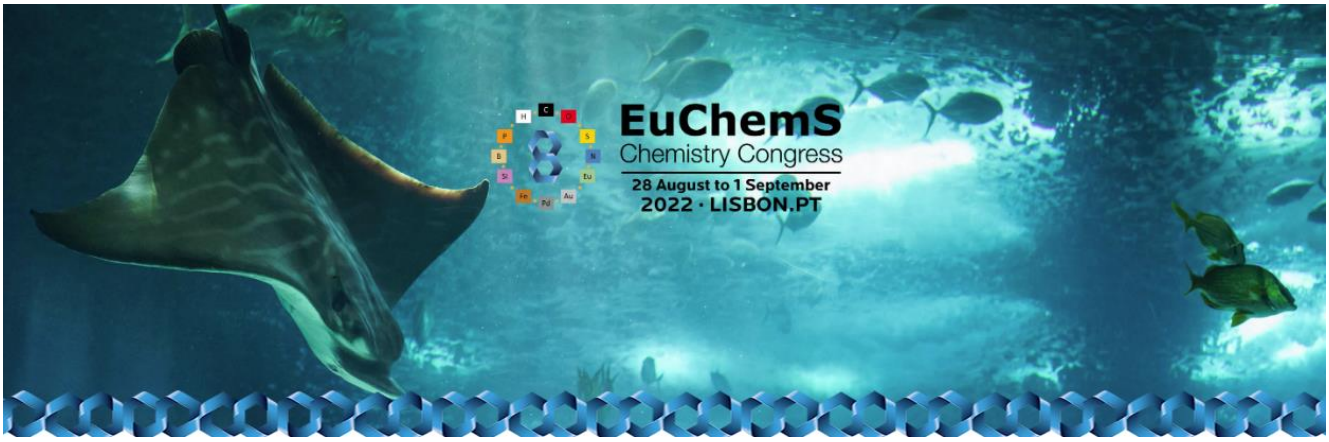
This was no easy decision but was a necessary one, and the only appropriate option, given the enormous material and immaterial compromise already assumed by the local organization. We praise our supporters and all the body of EuChemS, in particular the organizers of the forthcoming event on the series, for joining the Portuguese Chemical Society (SPQ), with the support of the Portuguese Electrochemical Society (SPE), in the announcement of the new date of 8th EuChemS Chemistry Congress (ECC8), to be held in **Lisbon, Portugal, from August 28 to September 1, 2022".**

Congress Program

Loyal to the initial theme, the 8th EuChemS Chemistry Congress will be built under the unifying theme of **Chemistry the Central Science**. The focus will remain on the central role of chemistry at the interfaces with biology, material and environmental sciences, both for the progress of humankind and for the solution of fundamental problems of modern societies. Some changes will be indeed introduced since nothing remains the same after the enormous test to which we are all being submitted. For the time

being, we are still working on an exciting scientific program led by world-class experts, that will develop around the main scientific previously selected.

All previously submitted contributions will not be processed without notice to the 2022 ECC8 program. An opportunity for updating your contributions will be announced in due time. We will keep your pre-registration in our files so that we may send you further information in due time. If you do not agree, please let us know (by a simple e-mail to euchems2020@chemistry.pt) and we will delete your full record. Nevertheless, we hope to see you all in Lisbon in 2022, for celebrating the continuation of this regular series of EuChemS Chemistry Congresses.



Cancellation Procedure and Refund policy

Registrations completed before congress postponement, will remain valid for the 2022, 8th EuChemS Chemistry Congress, if desired. Participants who want a refund, **must cancel their participation by June 30** addressing their request to euchems2020@chemistry.pt. Refunds will be handled promptly with no charges.

Registration is temporarily suspended and will reopen during **2021**.

(https://euchems2022.eu)

EuChemS
European Chemical Society

9th EuChemS European Chemistry Congress to be held in 2022 in Dublin, Ireland, deferred to 2024

At the meeting of its Executive Council, The European Chemical Society (EuChemS) executive awarded the 9th EuChemS European Chemistry Congress to Dublin. This prestigious congress is held every two years and brings together the leading researchers and industry partners in all chemistry disciplines from across Europe and the wider international arena.

Ireland Section

The organisers expect over 1,500 delegates from around the globe to attend the event in The Convention Centre Dublin, in 2024. The five-day programme will consist of plenary and parallel lectures, poster sessions, symposia, networking events, and an industrial exhibition.

The European Chemical Society, was official announced at ECC7 in Liverpool, August 2018. Formerly (2004–2018) the European Association for Chemical and Molecular Sciences (EuCheMS) and before that (1970–2004) the Federation of European Chemical Societies (FECS).

The European Chemical Society (EuChemS) coordinates the work of almost all the European Chemical Societies. As an organization, it provides an independent and authoritative voice on all matters relating to chemistry, and places chemistry at the heart of policy in Europe. Furthermore, EuChemS seeks to develop its members through various activities, workshops and awards.

Under the new EuChemS the next Congress, ECC8 will be hosted by **The Portuguese Chemical Society** (SPQ), with the support of the **Portuguese Electrochemical Society** (SPE), invites you to attend this must go to series of European chemistry conferences, the **8th EuChemS Chemistry Congress (8ECC)**, to be held in Lisbon, Portugal, from 28th August to 1st September, 2022.

The Institute of Chemistry of Ireland Postgraduate Chemistry Research Symposium – Connecting young chemists in challenging times

12 October 2020 (Immediate release) – The inaugural Institute of Chemistry of Ireland Postgraduate Chemistry Research Symposium (ICI PCRS) took place on September 9th 2020, with over 150 registered delegates joining the conference over Zoom call throughout the day. This online event was designed to give postgraduates an opportunity to share their research results, in a year when most physical conferences have been cancelled.

Professor Celine Marmion, President of the Institute of Chemistry of Ireland opened the event by thanking the organising committee for arranging such a varied programme in a very short space of time. Acknowledging that it has been a difficult year for postgraduate students, having been shut out of their universities for many months by Covid-19 restrictions, she thanked the organisers of the Symposium for quickly bringing together a new event in this challenging time to present an opportunity to postgraduate students to present their work and build their profiles. Professor Marmion launched the competition for this year's ICI Postgraduate Award. The 2019 winner of the ICI Postgraduate Award Saoirse Dervin delivered her award lecture at the end of the day.

Flash and oral presentations by postgraduate chemists made up the bulk of the programme, organised into four thematic sessions, with topics ranging from medicinal and synthetic chemistry to supramolecular and analytical chemistry. In total 43 PhD students from all over the island of Ireland shared their work with their peers.

The symposium also hosted the **first ever mental health seminar delivered at an Irish chemistry event**. Delivered by **Miffy Hoad of Mental Health Ireland**, the two 30-minute sessions gave concrete methods on how to stay connected, reduce stress, increase mindfulness and cope with these unprecedented times.

The event design also included time for meaningful connection and networking, with breakout rooms used to allow small groups to meet each other and talk about the content of the 13 research posters on display.

Dr. Adele Gabba of Johannes Gutenberg University Mainz, who won the ICI's Postgraduate Award in 2018, delivered a unique and unforgettable career talk, bravely sharing both her personal successes and struggles, and outlining how this has influenced her and her career. Industrial chemists also delivered career talks to the assembled young chemists, including **Will Gough & Yeliz Genc from GSK** as well as by **Dr. Patrick Kielty from Abbvie.**

In total, 11 of Ireland's top research institutions were represented in flash and oral presentations, with a number of international attendees also tuning in. Nine prizes were sponsored by the ICI, the European Young Chemists' Network and Eurachem.

Lorna Conway from UCD, winner of the ICI Award for Best Oral Presentation said of the day: "I thought that it being online and free to attend made it very accessible. It meant taking less time out of the working week to attend, which is always good. Not only was it great to see the vast range of interesting topics being researched by our fellow postgraduates, but it was also a wonderful opportunity to connect and network with our colleagues at such a strange time. "

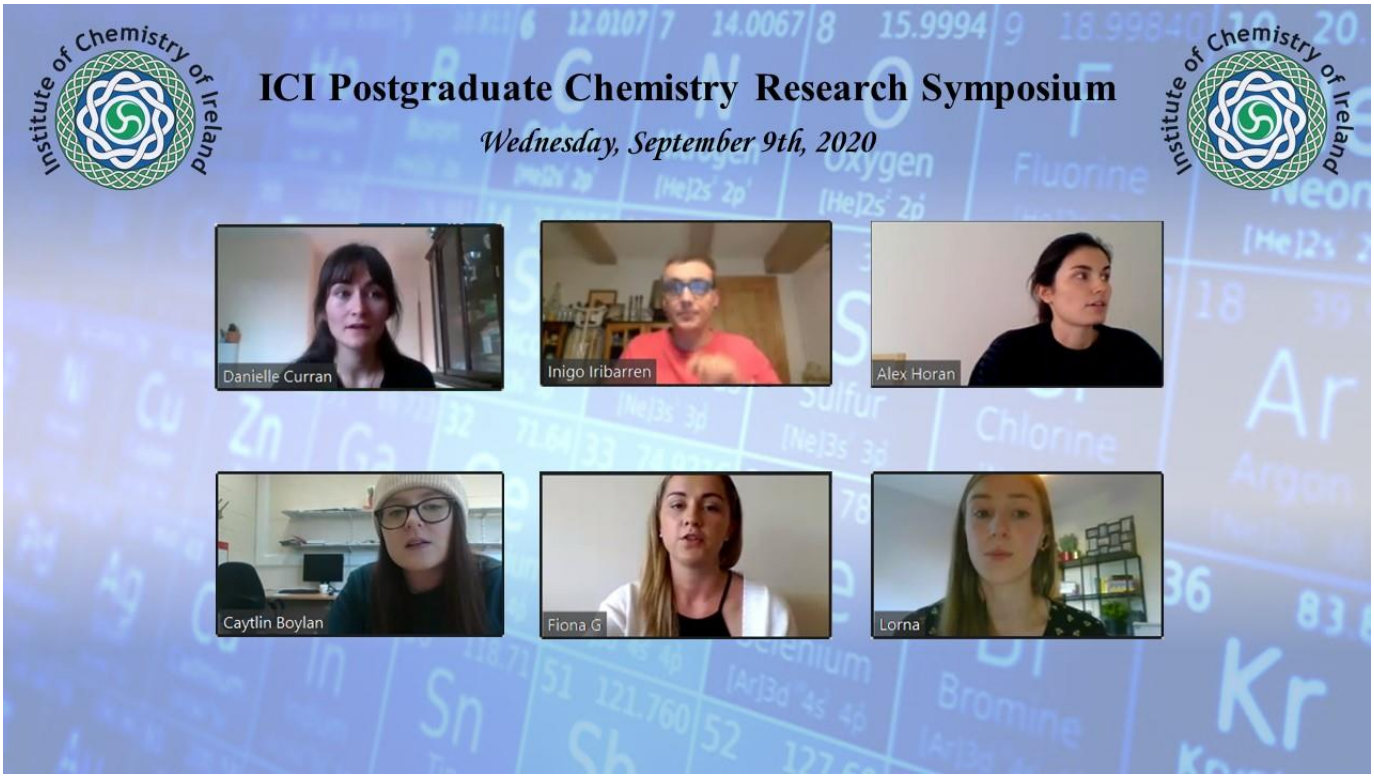
Fiona Gordon from NUI Galway, winner of the Eurachem Prize for Best Flash Presentation said: "The symposium was an excellently organised event provided by the ICI. It was the first conference I attended since the start of the COVID-19 outbreak. The event provided me a great platform to share my research. It was nice to meet with PhD students in the different universities and see the diversity of chemistry

research happening in Ireland! Overall it was a very enjoyable day. The organising committee did a fantastic job in making the event possible and running the event so smoothly"

A notable aspect of this symposium was that the **organising committee was made up of postgraduate students** nominated by various Third Level Institutions across Ireland, in order to represent the diversity of research interests in the country and create a unique event designed for postgrads and by postgrads. Dr Mark Kelada (ICI Young Chemists Representative) and Dr Joseph Byrne (NUI Galway) coordinated the meetings, which due to the current times, all, just like the event itself, took place over Zoom. The members of the committee, who chaired various sessions of the Symposium were: Colm McKeever (Maynooth University), Fionn Ó Fearghail (Technological University Dublin), Jessica O'Neill (Dublin City University), Lauryn Bracken (Athlone Institute of Technology), Lukas Hallen (Trinity College Dublin), Niamh O'Mahoney (University College Cork), Siobhán O'Flaherty (RCSI) and Syl Byrne (NUI Galway).

Prof. Celine Marmion, President of the ICI said: "On behalf of the Institute of Chemistry of Ireland, I would like to congratulate the symposium organising committee for bringing together our Irish postgraduate chemistry community at a time when many conferences are either being cancelled or deferred as a result of the COVID-19 pandemic. This virtual symposium provided PhD scholars across Ireland with a unique opportunity to showcase their cutting-edge research, forge new collaborations and build their professional profiles. A particular strength of the symposium was that it was led by postgraduates for postgraduates. The quality of the research and the tangible enthusiasm of the postgraduate scholars on the day were clearly evident for all to see. "

A survey was carried out on the day, where 71% of attendees said they would be interested in joining a new professional network targeted at young chemists, in order to continue to connect with and support their peers across the island on an on-going basis. As a result of this level of support, the Council of the ICI approved the **establishment of the *Irish Young Chemists' Network*** at their meeting on October 1st 2020. This network will be launched formally in the coming weeks and will build on the success of the Symposium in future years.



Some of the Prize Winners at the Symposium

The full list of those who won prizes at the Symposium is as follows:

ICI Oral Presentation Prize: **Lorna Conway (UCD)**

Eurachem Flash Presentation 1st place prize: **Fiona Gordon (NUIG)**

EYCN Flash Session 1 Prize: **Danielle Curran (UCD)**
EYCN Flash Session 2 Prize: **Iñigo Iribarren Aguirre (TCD)**
EYCN Flash Session 3 Prize: **Alex Horan (UCD)**

Eurachem Flash Session 4 Prize: **Caytlin Boylan (MU)**

ICI Peoples' Choice 1st Place Poster Prize: **Ciara-Ruth Kenny (CIT)**
ICI Peoples' Choice 2nd Place Poster Prize: **Aoibhín A. Cullen (DCU)**
ICI Judges' Choice Poster prize: **Sophie M. Connolly (DCU)**

About the Institute of Chemistry of Ireland (ICI)

The Institute of Chemistry of Ireland is the professional body representing chemists in Ireland. Its members are chemists who satisfy the requirements of the Institute with regard to qualifications and experience. The Institute promotes the study of chemistry, sets professional standards and organises lectures, meetings and social events for its members. It offers advice and comment to Government in areas relevant to the profession. Irish Chemical News, the official journal of the Institute is published twice yearly. The Institute of Chemistry of Ireland promotes excellence in chemistry through a series of competitions and awards for chemists at all career stages from 2nd level students onwards. More information is available at www.chemistryireland.org

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.

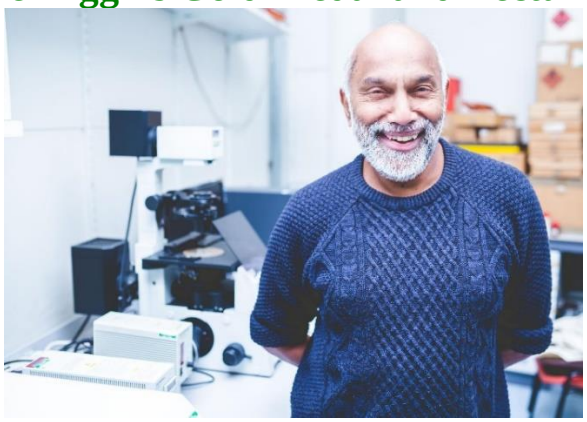
Mark Kelada, B.Sc. MICI Ph.D.

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

ICI Award Ceremony and AGM – Update

The ICI Annual Award Ceremony and AGM took place on Thursday, 19th November, 2020

ICI Boyle Higgins Gold Medal and Lecture Award



Professor A.P. De Silva is the winner of the ICI Boyle Higgins Gold Medal & Lecture Award 2020.

Due to Covid-19 Pandemic restrictions Professor De Silva will deliver his award lecture in 2021.

ICI Annual Award for Chemistry (Eva Philbin Public Lecture Award Series) 2019

Professor Declan McCormack, TU Dublin winner the ICI Annual Award for Chemistry (Eva Philbin Lecture Award Series) 2019.

Prof Celine Marmion presented the award plaque to Prof Declan McCormack on morning of the Award Ceremony at RCSI maintaining social distance

Professor McCormack delivered an outstanding award lecture during the virtually ICI award ceremony on the 19th November, 2020. A recording of this lecture will be made available shortly for all to view on this ICI website. See more at TU Dublin under Irish University & 3rd Level Chemistry News section.

ICI Postgraduate Award 2020

The Institute received a number of outstanding nominations for this year's postgraduate award. All nominations were sent for independent review. ICI Council decided to present a joint award this year to **Dr Conor Crawford (UCD)** and **Dr Priyanka Ganguly (IT Sligo).** They were presented with their award during the ICI award ceremony which took place virtually on the 19th November, 2020. Priyanka is currently a Marie Curie Early Stage Researcher in the University of Glasgow, Scotland and Conor is a postdoctoral researcher in the Max Planck Institute of Colloids and Interfaces in Berlin, Germany. They are both wonderful ambassadors for chemistry research in Ireland.

ICI Second Level Education Award 2019

This year's awardees were Mr Brian Durkan from St. Muredach's College, Ballina, Co. Mayo and to Óran O'Sullivan from Coláiste Choilm, Ballincollig, Co. Cork.

This award is presented to students who achieved the highest grade in higher level Leaving Certificate Chemistry in Ireland in 2019.

Brian and Óran received their award medals during the virtual award ceremony on the 19th November, 2020. They were joined by their families, their teachers and school principals.

Dr Fiona Desmond, the Chief Examiner for Chemistry and Physics and Chemistry from the State Examinations Commission delivered a very informative presentation on the leaving certificate chemistry examination process.

It also put into context Brian and Óran's exceptional achievements on being the top two students in Ireland in Leaving Certificate Higher Level Chemistry in 2019. Brian is currently studying Chemistry in the University of Oxford, UK and Óran is studying mathematical science in UCC. We wish Brian and Óran continued success.

This year's award ceremony was unusual in that it was hosted online as a virtual event on Microsoft teams. Attendance was good with close to100 people logging in for at least for a while if they had lectures to deliver online to students. It was interactive and good humoured with live questions and replies. It worked well but on-line is not a great substitute for the person to person interaction, banter and catching up with old colleagues and friends at live events. Under the abnormal circumstances we find ourselves this year it was successful. So no casual photo or formal photos of presentations at the event but the recording is or will be posted on our web site www.chemistryireland.org

ICI Annual General Meeting – Thursday, 19th November 2020

The 71st Annual General Meeting of the Institute of Chemistry of Ireland was held virtually as a separate MS Teams event on Thursday, 19th November 2020, following the Awards ceremony.

University College Dublin
Ireland's Global University

Irish University & 3rd Level Chemistry News

UCD researchers named among world's most influential

18 November, 2020

University College Dublin has five professors that are among the top 1% of the most cited researchers in the world according to the latest Highly Cited Researchers report, compiled by Clarivate Analytics.

Working in the areas of food engineering, climate change and food chemistry, the influential UCD researchers included in the 2020 listings are:

- Professor Colm O'Donnell, Head of UCD School of Biosystems and Food Engineering.
- Professor Da-Wen Sun, UCD School of Biosystems and Food Engineering.
- Professor Paula Bourke, UCD School of Biosystems and Food Engineering.
- Professor Kenneth Dawson, UCD School of Chemistry. Associate.
- Associate Professor Nigel Brunton, UCD School of Agriculture and Food Science.

Professor Colm O'Donnell and Professor Da-Wen Sun

Now in its seventh year, the 'Highly Cited Researchers' report identifies researchers over the last ten years who are leading the way in solving the world's biggest challenges.

The list is a citation analysis of researchers who are among the top 1% most cited for their field and year of publication in one or more of 21 fields of study.

This year's rankings recognised some 6,167 researchers with the moniker of 'Highly Cited Researcher', and includes 26 Nobel laureates.

This is the sixth time that professors Da-Wen Sun and Colm O'Donnell have been included among the world's most influential researchers, and Professor Bourke, an Ad Astra Fellow, is the first female researcher at UCD to be named so.

Professor Da-Wen Sun

An international authority in food engineering research, Professor Sun's work is standard reference material for researchers in the areas of computer vision, computational fluid dynamics modelling and vacuum cooling.

Last year he was among the world's most cited researchers in the field of Agricultural Sciences.

Professor Colm O'Donnell

With his primary research focus on novel food processing technologies and process analytical technology, Professor O'Donnell, Head of the UCD School of Biosystems and Food Engineering, leads a research team working on a range of projects funded by EU Framework, the Irish Research Council, the Food Institutional Research Measure, Enterprise Ireland and industry.

Professor Paula Bourke

Working largely in the areas of sustainable processing innovations and novel antimicrobial technologies, Professor Bourke is a Conway Institute Research Fellow and a member of the UCD Institute of Food and Health.

Her research crosses over to bio-medically relevant issues including infection prevention and cold plasma bioscience.

Earlier this year, she received funding to develop new therapies that use cold plasma to inactivate microbes and bacteria that cause infections following orthopaedic surgery.

Professor Kenneth Dawson

Establishing the Centre for BioNano Interactions at UCD in 2007, and acting as its Director ever since, Professor Dawson is recognised as a leading thinker on the principles governing the interactions of nanoscale entities with living organisms.

Associate Professor Nigel Brunton

Specialising in the area of phytochemicals and recovery of valuable compounds from food waste, Dr Brunton has over 30 years of expertise in food chemistry, sample extraction and chromatography analysis.

David Pendlebury, Senior Citation Analyst at the Institute for Scientific Information, who compiled the list on behalf of Clarivate Analytics, said: "In the race for knowledge, it is human capital that is fundamental and this list identifies and celebrates exceptional individual researchers who are having a great impact on the research community as measured by the rate at which their work is being cited by others."

By: David Kearns, Digital Journalist / Media Officer

Pat Guiry recipient of SFI Mentorship Award

Prof Pat Guiry UCD & Vice President Institute of Chemistry of Ireland

Congratulations to SSPC's Co PI, Pat Guiry on winning the SFI Mentorship Award 2020.

Pat Guiry is a full professor of synthetic organic chemistry and director of the Centre for Synthesis and Chemical Biology at the UCD School of Chemistry. His research interests include the design, synthesis and application of novel ligands in asymmetric catalysis, natural product synthesis and medicinal chemistry.

He has supervised 55 PhD and three MSc students to graduation to date and has worked with more than 20 postdoctoral researchers. His group has published more than 140 papers, review articles, book chapters and patents with more than 7,000 citations.

Pat has been with SSPC from the beginning and is currently a leader in our molecules 1 theme.

Francesco Civati, SSPC Graduate of the Year

9 September 2020

This award recognises Francesco Civati, NUI Galway, for being an exceptional SSPC PhD graduate based on his PhD achievements and outputs. Francesco was supervised by Andrea Erxleben and his PhD was based on Control of polymorphism, crystal size and habit in pharmaceuticals. Thank you to Eli Lilly for sponsoring this award.

Background

Solid state characteristics of an Active Pharmaceutical Ingredient (API), generally define a wide range of properties such as polymorphism and morphology. These characteristics contribute significantly to the arrangement of molecules in space, and they can also impact downstream production drastically increasing the productions costs. Some morphology like needle like and plates like crystals can create a vast array of problems, during filtration, manufacturing of the API. The aim of his research was to study not only polymorphism but also study several ways to avoid the formation of needle-like crystals. To tackle this problem three main methods were used.

1) Co- crystal approach. It was shown that carefully selected co-former can co-crystallize with the API to form a new material with different morphology resulting in a more processable crystals, which can greatly facilitate downstream production processes cutting down production costs.

2) Temperature cycling and additives addition. In this case a combination of deep temperature cycling using batch crystallization was combined with the addition of additives. In this case the synergic effect of this two-phenomenon results in the formation of more processable with a great change in morphology.
3) High Shear Ultra-Low Attrition Agitation (HSULAA). This method allowed needle-like crystals to grow to a more filterable shape without causing any crystal breakage.

Upon a carefully study of the intramolecular interaction and the growth mechanism, it shows that one of these methods could have been used to alleviate or avoid the formation of elongated crystals. These approaches can be applied to facilitate the production of already existing API, allowing an easier and more accessible production to medication.

SSPC's contribution to my PhD

SSPC is an extensive and dynamic networking platform which allows increased co-operation between academia and industry.

"My career goal is to be a well-rounded researcher and to bridge the industrial and academic worlds. Through the SSPC I was able to gain experience in both work environments. I was able to enrol in an industry-related project in collaboration between NUIG, UL and Roche. During this time, I gained valuable industry experience and I further developed my critical thinking and problem-solving skills with the supervision of an industrial tutor. I was able to independently develop a prediction method which to be used in the manufacturing process and advance the performance of the final product This experience allowed me to enhance my understanding of crystal engineering as well as develop a comprehensive overview of the research field."

SSPC really recognises the importance of education and public engagement, all researchers are encouraged to give back to the community and increase the understanding of the research by non-scientists. I was empowered by the importance placed on outreach and thoroughly enjoyed being able to contribute. I have always believed education should be free and fair for everyone, and this vision is shared by the SSPC community.

Over the course of my PhD I was encouraged to act as role model and take a leadership position in organising outreach events such as the BT young scientist exhibition in Dublin and Galway technology festival. I was afforded the opportunity to communicate my research to a young and enthusiastic audience and take part in events directed towards the general public such as Fame Lab and Threesis. I found the appreciative attitude of the SSPC towards outreach to be a strong motivating factor in seeking out new ways to interact with non-scientists who also shared my enthusiasm.

SSPC is a well-equipped and robust research centre where cutting edge research is undertaken by highly skilled and motivated scientists. It is for this reason PhD candidates are encouraged and supported to attend conferences and discuss their work with the wider community. This allowed me to expand my research through discussions with the vibrant and engaged scientific community. I completed a Short-Term Scientific Mission (STSM) at a leading academic research centre in Scotland, where once again the SSPC culture of fostering collaborative environments helped me to produce a productive stay at CMAC. I was supported by SSPC in the application for a scholarship which enabled me to sustain the cost of living abroad. This research stay allowed for sufficient data to produce a publication which will have a significant impact on the field.

"Over the course of my PhD I undertook research that had significant implications on a wide range of pharmaceutical applications. Through productive collaborations with both academic and industrial partners. The discoveries that I have made can have an impact and they can be used to ensure the public has access to less expensive more effective and potent medications. Through the SSPC I was given the necessary tools to enhancing my understanding of pharmaceutical chemistry as well as a solid collaborative platform in which I could have experience the best research possible."

Publications:

–**F. Civati, A. Erxleben,** P. McArdle, The Role of H-bonding and Molecular Stacking in the Growth of Needle Crystals. Manuscript under preparation.

– F. Civati, V. Svoboda, S. Urwin, P. McArdle, A. Erxleben, D. Croker, J.H. ter Horst, Manipulating co-crystal size and morphology using a combination of temperature cycling and additives. Submitted to Cryst. Growth Des.

–**F. Civati, A. Erxleben,** S. Kellehan, P. McArdle Conversion of gel-forming crystal needles to easily processable more equant crystals using high-shear-ultra- low-attrition agitation: Accelerated Ostwald ripening without crystal attrition. Cryst. Growth Des. 2019, 19, 1502–1504.

-A. R. Pallipurath, **F. Civati**, J. Sibik, C. Crowley, J. A. Zeitler, P. McArdle and A. Erxleben. A Comprehensive Spectroscopic Study of the Polymorphs of Diflunisal and their Phase Transformations. Int. J. Pharm. 2017, 528, 312-321.

–A. R. Pallipurath, **F. Civati, M.Eziashi,** E. Omar, P. McArdle, and A. Erxleben. Tailoring Cocrystal and Salt Formation and Controlling the Crystal Habit of Diflunisal. Cryst. Growth Des. 2016, 16, 6468-64

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

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Scope

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

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

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

http://pubs.rsc.org/en/journals/journalissues/cp#!recentarticles&adv

Breath test detects COVID-19 infection

Scientists have used breath samples to detect COVID-19 infection in up to 93.3% of patients who had a false negative nasal swab test.

The study, led by researchers from RCSI University of Medicine and Health Sciences, is published in the opens in the current edition of Thorax: Use of exhaled breath condensate (EBC) in the diagnosis of SARS-COV-2 (COVID-19) | Thorax (bmj.com)

The researchers collected breath samples from patients admitted to hospital who tested negative with nasal swab tests but had a clinical diagnosis of COVID-19. The patients were symptomatic for a median of seven days prior to admission.

They found that breath samples were able to detect the virus and that testing multiple genes increases detection. When testing for two genes of the virus, the breath test detected COVID-19 in two-thirds of patients. When the researchers tested for four genes, they detected the disease in 93.3% of patients.

While the study shows breath samples can be used as an effective, non-invasive test that may increase detection of COVID-19 infection, the study has limitations.

Due to decreased admissions as a result of public health measures, the number of patients in the study was too small to establish a statistically significant difference between nasal swabs and breath samples when testing for two genes of the virus. Since the breath samples were collected a median of two days after the nasal swabs, there is a potential for introducing bias favouring the breath test.

“It is essential to detect the disease at an early stage so that the infected person can immediately be isolated from the healthy population,” said Professor Bryan Hennessy, RCSI Associate Professor of Medicine and the study’s co-senior author.

“Due to the invasive nature of nasal swabs, some patients are too unwell to provide samples, so it is important to find alternative methods of testing. While more research is needed to confirm our findings, clinicians should consider testing breath samples to aid diagnosis of COVID-19 in patients who they suspect of being infected despite negative results from nasopharyngeal swabs.”

The study was funded by Science Foundation Ireland’s COVID-19 Rapid Response Call and the North East Cancer Research and Education Trust (NECRET).

“Our findings show that breath tests can detect SARS-CoV-2 and that testing multiple genes together increases detection; while our findings need to be repeated in larger studies, breath sampling is easy for the patient and may have further benefits over swabbing where serial testing of individuals is performed,” said Professor Ross Morgan, a consultant respiratory physician at Beaumont Hospital and the study’s co-senior author.

Vaping chemical creates toxic ketene gas

11 March

A chemical found in some vaping products can produce a highly toxic gas when heated up, according to new research from RCSI University of Medicine and Health Sciences.

Led by researchers at RCSI’s Department of Chemistry, the study is published in the current edition of PNAS: Potential for release of pulmonary toxic ketene from vaping pyrolysis of vitamin E acetate | PNAS

In August 2019, the US Centers for Disease Control and Prevention reported an increasing number of lung injuries following the use of some vaping products, and vitamin E acetate was identified as one possible cause. Though some patient lung biopsies showed signs of chemical burns that vitamin E acetate alone would not be expected to cause.

Vitamin E acetate, primarily found in illegally made THC-based vape liquids, is considered non-toxic in vitamin supplements and skin creams. This new research has now shown that heating up vitamin E acetate through vaping can produce ketene, a highly toxic gas.

Ketene is a colourless gas with a penetrating odour. When inhaled, it can cause serious damage to the lungs up to 24 hours after exposure. It is lethal at high concentrations, and at lower concentrations, it can irritate the eyes and lungs and impair the central nervous system.

The researchers connected a vaping device to a series of glass vessels, which allowed them to collect samples after simulating a person vaping vitamin E acetate from the device.

In addition to chemically trapping the toxic ketene gas, the researchers also found that heating up vitamin E acetate produces other carcinogens that are found in regular tobacco smoke.

“It should be noted, however, that these experiments were designed to determine the vaping effect on a single pure substance at the chemistry molecular level. Determining the exact relevance of these results to the direct cause of lung injury requires further studies due to the diversity in vaping devices, mixtures and their modes of use,” said the study’s lead author and RCSI Professor of Chemistry Donal O’Shea.
While vitamin E acetate is typically found in illicit street-bought vapes, the researchers warned against the potential dangers of the ever-growing number of chemicals found in vaping products.

“The high temperatures created in vaping devices can lead to unforeseen chemical reactions. Therefore, other components of vape mixtures, including flavours and additives, also require investigation as they too may produce toxic and carcinogenic substances when heated,” said Professor O’Shea.

UCC University College Cork, Ireland Coláiste na hOllscoile Corcaigh | School of Chemistry Scoil na Ceimic

Irish University & 3rd Level Chemistry News

Best Poster Award of PhD Student

11 November 2020

27th International Symposium on Electrophoretic and Liquid Phase Separation Techniques.

PhD student Hanan Alatawi came 2nd in the Best Poster Award category at the recent 27th International Symposium on Electrophoretic and Liquid Phase Separation Techniques.

Her poster was entitled *Determination of NSAID drugs using Micellar Electrokinetic Chromatography with UV detection.* Hanan carries out her postgraduate research under the supervision of Dr. Eric Moore.

Prof. Justin Holmes Leads €3.2M Air Quality Project

6 November

€3.2m in Funding for the 'RADICAL' Project from the European Union's Research and Innovation Programme.

A University College Cork-led research project has received €3.2m in European funding to develop a more cost-effective way to measure air pollution.

It is hoped that the research team, drawn from industry and academia and coordinated by UCC, will bring about the creation of low cost electrical sensors for detecting harmful particles in the atmosphere, and that these devices can be subsequently deployed on airplanes, ships and other platforms to monitor air quality.

The team is led by Professor Justin Holmes at University College Cork and comprises partners from academia and industry across five different European countries.

They have been awarded €3.2m in funding for the 'RADICAL' Project from the European Union's research and innovation programme in the hope that their research can overcome some of the challenges associated with measuring air pollution, a lead factor in the cause of over 400,000 premature deaths across the European Union each year.

Only the second of its kind to be coordinated from Ireland, the team has plans to design and build high-tech low-cost instruments that will measure the presence of harmful atmospheric radicals in the air.

"Radicals are reactive species that drive chemical processes in the atmosphere, influencing climate change, the formation of acid rain and driving the production of photochemical smogs, all detrimental to human health and the environment," said Professor Justin Holmes.

Driven by a chemical process that can influence air quality, atmospheric free radicals affect the health of humans, animals and plants in both indoor and outdoor settings.

Despite their significant impact, detecting and measuring harmful radicals such as hydroxyl and nitrate remains technically complex, cumbersome and expensive.

As a result, there are only a small number of research groups capable of performing such tests in a limited number of locations around the globe.

However, Professor Justin Holmes and his team plan to overcome many of these obstacles by developing new methods of detecting harmful radicals.

“Current techniques for measuring radicals, using complex and expensive equipment, are far-from-routine and only a select few research groups can perform them. The aim of our project is to develop a new and cheap technology for measuring radicals in the atmosphere that can be easily implemented and deployed worldwide. We are working with Industry partners to lead the development of highly accurate, mass-produced sensors that could supply real-time data on the distribution and transmission of free radicals in the atmosphere,” said Dr Subhajit Biswas, a UCC researcher on the project.

Professor John Wenger, Director for the Centre of Research on Atmospheric Chemistry at UCC and a partner on the project, believes that the technology goes far beyond the state-of-the-art, and could be deployed at all of the world’s operational air quality and meteorological stations, significantly enhancing scientists’ ability to monitor and control air quality, allowing for more accurate climate predictions and a better quality of life for citizens.

“The project will develop low cost electrical sensors for detecting atmospheric radicals that could be deployed on a multitude of mobile platforms, such as planes, ships, balloons, drones, to address specific environmental questions. This new technology has the potential to revolutionise the whole field of environmental monitoring and atmospheric science and could possibly be extended into other areas, such as electronic health for monitoring chemistry in the human body,” said Professor John Wenger.

The scale and the ambition of the project immediately struck Dr Magdalena Tyndyk – Prime UCC Manager.

Designed to assist UCC researchers and strategic external clients to make successful applications for European or national funding, Prime UCC worked with Professor Holmes and his team to develop the proposal that ultimately secured EU funding.

“I met Prof Holmes and Dr Biswas, while working on another UCC H2020 application. When I saw the idea and science behind RADICAL, I knew it was a breakthrough proposal. During the application stage, PrimeUCC provided the expertise and guidance on how to make the difference between a great idea for research funding and a successfully funded research grant. PrimeUCC helped to strengthen the real impact of the project by merging scientific excellence with professional communication and management,” said Dr Magdalena Tyndyk.

After successfully securing Horizon 2020 funding, the focus of the multidisciplinary research team has turned to developing and manufacturing the technology required to measure harmful radicals with the help of some of Europe’s leading tech SMEs.

Irish University & 3rd Level Chemistry News

MU President leads the government's national Covid-19 modelling team

On March 30th, Professor Philip Nolan, President of Maynooth University, appeared alongside Chief Medical Officer Tony Holohan in his daily press conference in his role as chair of the National Public Health Emergency Team's (NPHET) Irish Epidemiological Modelling Advisory Group (IEMAG), a group of more than 50 experts from across the university and agency sector charged with modelling the virus. He explained the models to date and said the government's recent restrictions on social movement are having an "enormous effect" in reducing the number of new cases of coronavirus.

"We know what an unmitigated epidemic looks like; we are not on that track." Yet, he also warned there was "no room for complacency."

MU Chemistry Researchers use Texas-based Supercomputer to investigate SARS-CoV-2 virus

International cooperation is key to undermine the capabilities of the SARS-CoV-2 virus, the culprit of the COVID-19 Pandemic that still raging in many parts around the world. Carl A. Fogarty and Elisa Fadda of the Department of Chemistry and Hamilton Institute of Maynooth University, Ireland together with a team of researchers from the University of California in San Diego, USA have been using a supercomputer based in Texas, USA to do just that. Using the Frontera's 8,008 compute nodes they have been able to single out one crucial element of the virus, its sugar coating.

Dr Elisa Fadda

Basic research is making a difference in winning the war against the SARS-CoV-2 virus, lead researcher Rommie E. Amaro explained. "The more we know about it, the more of its abilities that we're going to be able to go after and potentially take out".

https://www.hpcwire.com/2020/06/16/researchers-use-frontera-to-investigate-covid-19s-insidious-sugar-coating
https://www.tacc.utexas.edu/-/sugar-coating-locks-and-loads-coronavirus-for-infection

https://www.biorxiv.org/content/10.1101/2020.06.11.146522v2.full.pdf

Queen's scientists unlock secrets of the past with new international carbon dating standard

13 AUGUST, 2020

An international team of scientists, led by Queen's University Belfast, have improved the technique for assessing the age of historical objects with a new international carbon dating standard.

Radiocarbon dating is vital to fields such as archaeology and geoscience to date everything from the oldest modern human bones to historic climate patterns. Archaeologists can use that knowledge to restore historic monuments or study the demise of the Neanderthals, while geoscientists on the Intergovernmental Panel on Climate Change (IPCC), rely upon the curves to find out about what the climate was like in the past to better understand and prepare for future changes.

The seven-year project, which is led by Queen's University, includes researchers from the Universities of Sheffield, Bristol, Glasgow, Oxford, St Andrews and Historic England, plus international colleagues. The team used measurements from almost 15,000 samples from objects dating back as far as 60,000 years ago to create new international radiocarbon calibration (IntCal) curves, which are fundamental across the scientific spectrum for accurately dating artefacts and making predictions about the future.

Professor Paula Reimer, Director of the Centre for Climate, the Environment and Chronology (14CHRONO) at the School of Natural and Built Environment from Queen's University Belfast, and Head of the IntCal project said:"Radiocarbon dating has revolutionised the field of archaeology and environmental science. As we improve the calibration curve, we learn more about our history. The IntCal calibration curves are key to helping answer big questions about the environment and our place within it."

The team has developed three curves dependent upon where the object to be dated is found. The new curves, to be published in Radiocarbon, are IntCal20 for the Northern Hemisphere, SHCal20 for the Southern Hemisphere, and Marine20 for the world's oceans.

Dr Tim Heaton, from the University of Sheffield's School of Mathematics and Statistics and lead author on the Marine20 curve, said: "This is a very exciting time to be working in radiocarbon. Developments in the field have really made it possible to advance our understanding. I look forward to seeing what new insights into our past these recalculated radiocarbon timescales provide."

The previous radiocarbon calibration curves developed over the past 50 years were heavily reliant upon measurements taken from chunks of wood covering 10 to 20 years, so they were big enough to be tested for radiocarbon.

Advances in radiocarbon testing mean the updated curves instead use tiny samples, such as tree-rings covering just single years that provide previously impossible precision and detail in the new calibration curves. Additionally, improvements in understanding of the carbon cycle have meant the curves have now been extended all the way to the limit of the radiocarbon technique 55,000 years ago.

Radiocarbon dating is the most frequently used approach for dating the last 55,000 years and underpins archaeological and environmental science. It was first developed in 1949. It depends upon two isotopes of carbon called stable 12C and radioactive 14C.

While a plant or animal is alive it takes in new carbon, so has the same ratio of these isotopes as the atmosphere at the time. Once an organism dies it stops taking in new carbon, the stable 12C remains but the 14C decays at a known rate. By measuring the ratio of 14C to 12C left in an object the date of its death can be estimated.

If the level of atmospheric 14C were constant, this would be easy. However, it has fluctuated significantly throughout history. In order to date organisms precisely scientists need a reliable historical record of its variation to accurately transform 14C measurements into calendar ages. The new IntCal curves provide this link.

The curves are created based on collecting a huge number of archives which store past radiocarbon but can also be dated using another method. Such archives include tree-rings from up to 14,000 years ago, stalagmites found in caves, corals from the sea and cores drilled from lake and ocean sediments. In total, the new curves were based upon almost 15,000 measurements of radiocarbon taken from objects as old as 60,000 years.

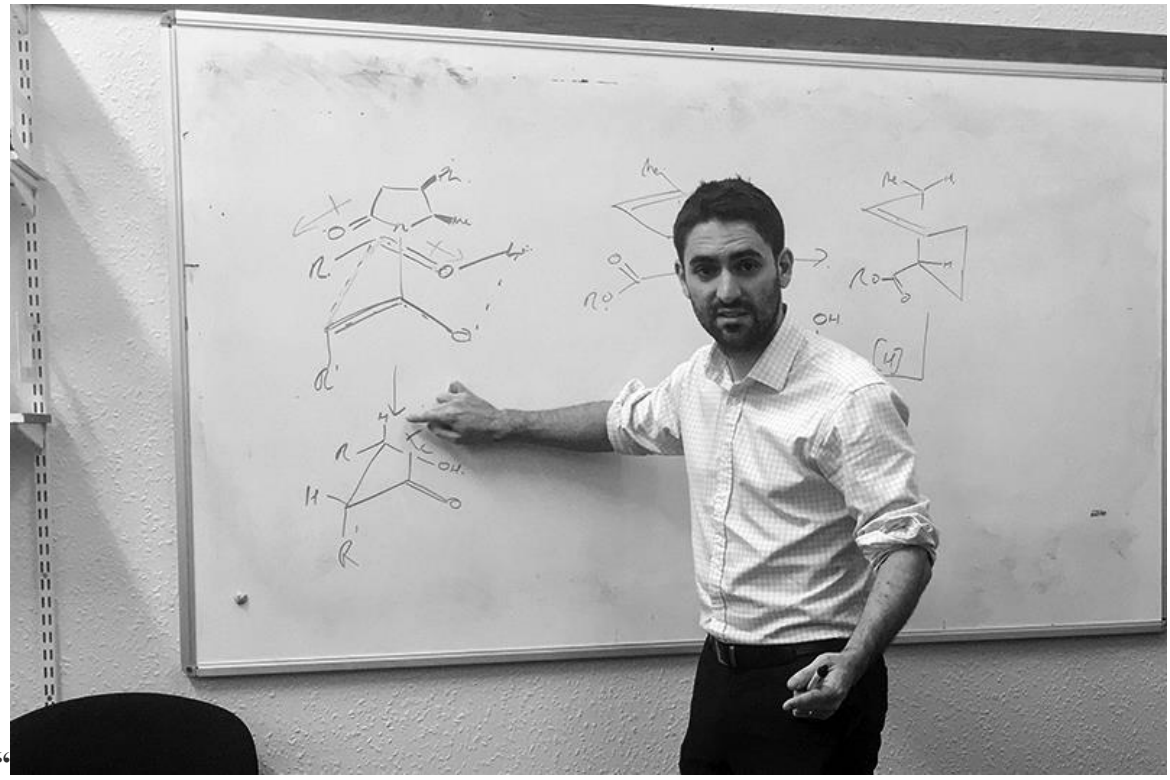
Alex Bayliss, Head of Scientific Dating at Historic England, said: "Accurate and high-precision radiocarbon dating underpins the public's enjoyment of the historic environment and enables better preservation and protection. The new curves have internationally important implications for archaeological methodology, and for practices in conservation and understanding of wooden built heritage."

Darrell Kaufman of the IPCC said: "The IntCal series of curves are critical for providing a perspective on past climate which is essential for our understanding of the climate system, and a baseline for modelling future changes."

The IntCal papers were recently published in the journal Radiocarbon and are available here: https://www.cambridge.org/core/journals/radiocarbon/calibrations. The calibration curves are available here: http://intcal.org/

FOCUS ON

DR PETER KNIPE *@knipelab*



“We are an organic chemistry research lab seeking to: (i) discover new catalysts and catalytic reactions; and (ii) use synthetic and supramolecular chemistry to develop new strategies to disrupt protein-protein interactions, which are implicated in many human diseases”.

Peter moved to Downing College, Cambridge in 2004 to study Natural Sciences, where he undertook a Master's project under the supervision of Professor Martin D. Smith investigating cascade approaches to bicyclic alkaloid natural products. In 2008, Peter moved to Oxford with Professor Smith to commence a DPhil, developing chiral counter-ion directed asymmetric electrocyclic reactions. His postdoctoral studies were also in Oxford, where he joined the lab of Professor Andrew D. Hamilton FRS. His work for Professor Hamilton included developing novel molecular switches, and the synthesis of α-helix and β-sheet secondary structural mimics as therapeutic agents to intercept protein-protein interactions. At the same time Peter was appointed as a Stipendiary Lecturer in Organic Chemistry in University College, Oxford.

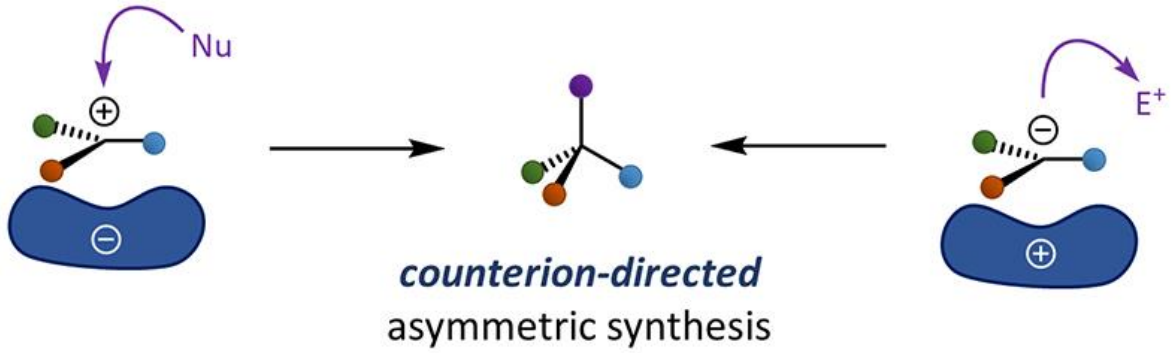
In August 2016 Peter was appointed to the faculty at Queen's University, Belfast.

Research

Catalysts for Enantioselective Synthesis

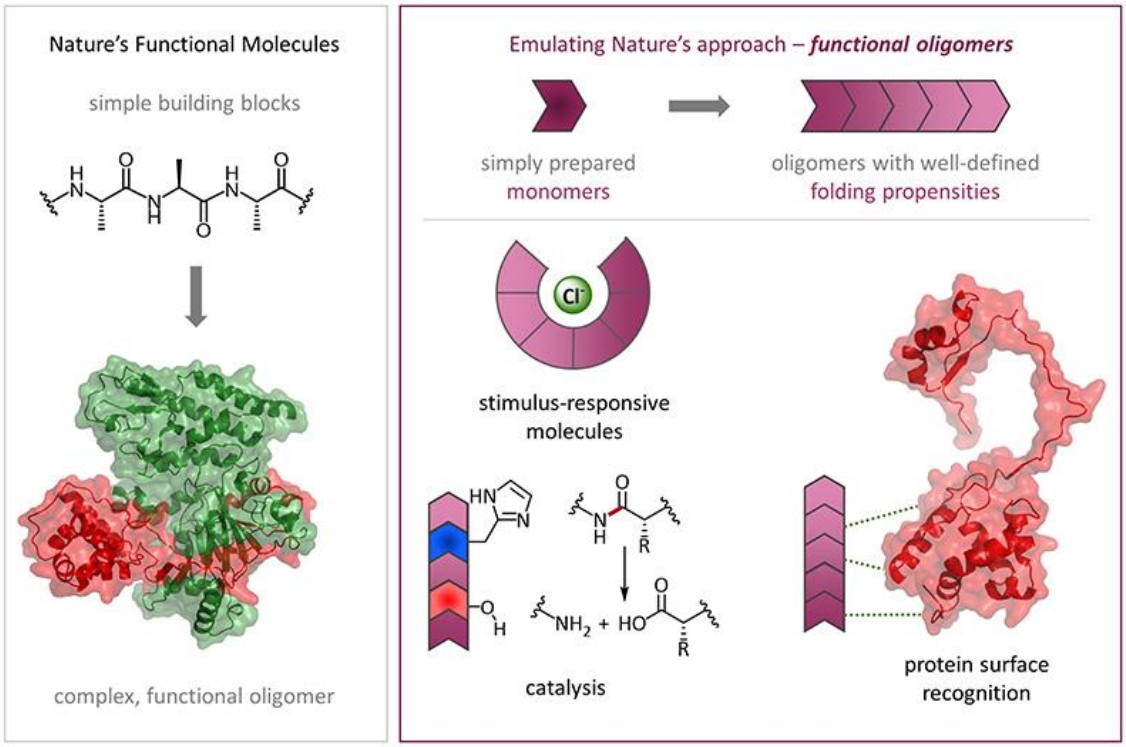
Selective, catalytic synthesis is vitally import to society, reducing the waste and energy requirements for the production of complex molecules and intermediates.

In general, asymmetric synthesis requires the formation of diastereomeric transition states that differ in energy sufficiently to give a bias towards a single enantiomeric product. One strategy to achieve this is by exploiting ion-pairing interactions between a charged, prochiral reaction intermediate and a homochiral catalyst ion bearing a complementary charge. The catalyst thus directs facial selectivity in the subsequent reaction, leading to enantioselectivity in the process overall. However, despite decades of research in this area, the range of available catalysts is limited. In the Knipe lab we are interested in developing new chiral scaffolds that will direct asymmetry in such processes, and in discovering new catalytic reactions that are amenable to this strategic approach.



Functional Oligomers

Nature achieves its exquisite levels of selectivity and efficiency through a modular approach to synthesis: with just a few key building blocks (amino acids, nucleic acids and carbohydrates) it achieves a range of function that spans all of biology. In the context of proteins, this reactivity is made possible by the flexibility of these oligomers to adopt an almost infinite number of three-dimensional structures. In combination with evolutionary pressure and a timescale of aeons this leads to high levels of activity, despite the relatively limited 'alphabet' of catalytically-active proteinogenic amino acids.



Why crystals will save the world

It started with a dream 30 years ago. The dream was of crystal engineering, that material science would become like architecture and allow intervention in nature to design new materials.

Professor Michael Zaworotko is standing in a lab at the Bernal Institute at University of Limerick. He is holding a jar of powdered green material in one hand and a thinly rolled stack of green paper in another.

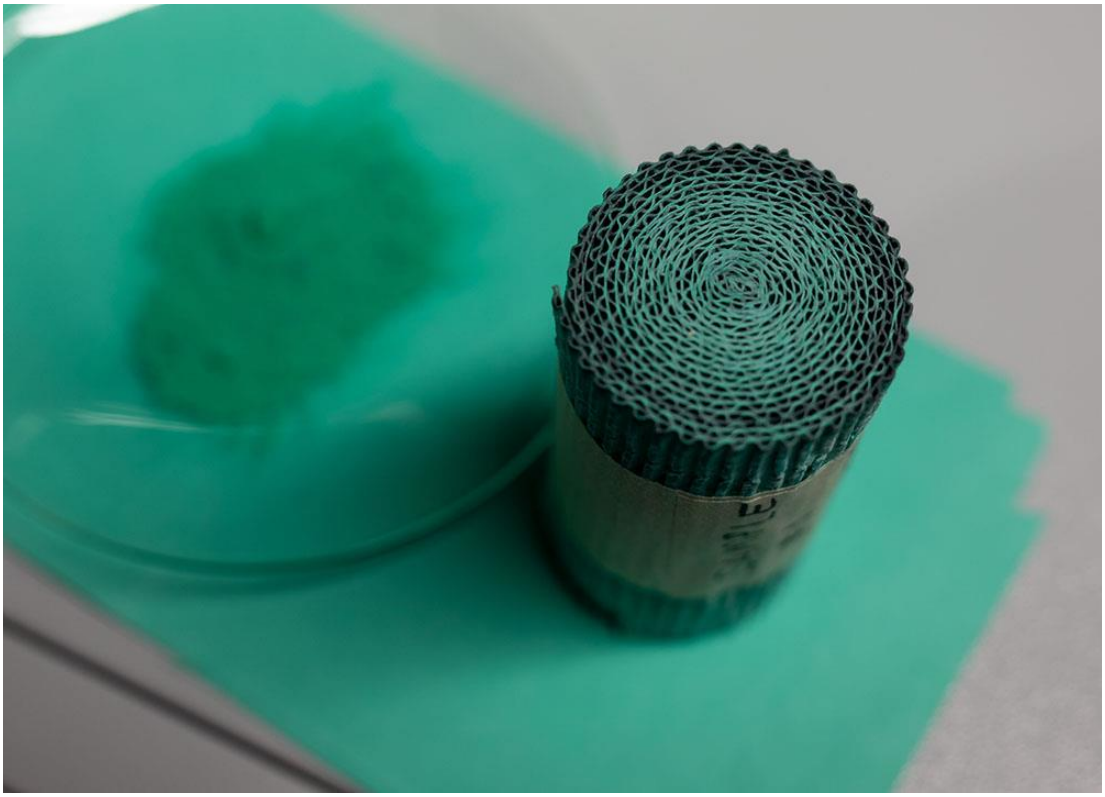
“This,” he smiles, indicating to the green powder, “is the secret sauce”.

“And this,” he nods at the wrap of paper, “is the end product”.

This unassuming scientist, ‘Mike Z’, is discussing how he and his team at the Bernal have made major discoveries to affect global energy consumption. The discovery of a revolutionary new material could help solve the global water crisis by producing water from air, even in the most remote of locations.

The dream, made reality.

Prof Zaworotko’s lab has developed a crystalline material after decades of research that has favourable properties for absorbing and releasing water from the atmosphere that could revolutionise dehumidification systems in buildings and the availability of water in regions of drought.
The green material is ROS-037 and it has been developed as a commercially viable nanomaterial by Molecule RND LTD, an international think tank, research group and incubator fund that has located in UL to work in collaboration with Prof Zaworotko and his team.



The secret sauce

The idea is that the water capture material – a low energy desiccant – would replace the silica traditionally used in dehumidification systems in buildings.

It could also be used to "wick water from the air", with potentially incredible ramifications for arid, water starved regions. The end product that can be installed in existing dehumidifiers is the wrap of paper Zaworotko holds in his other hand.

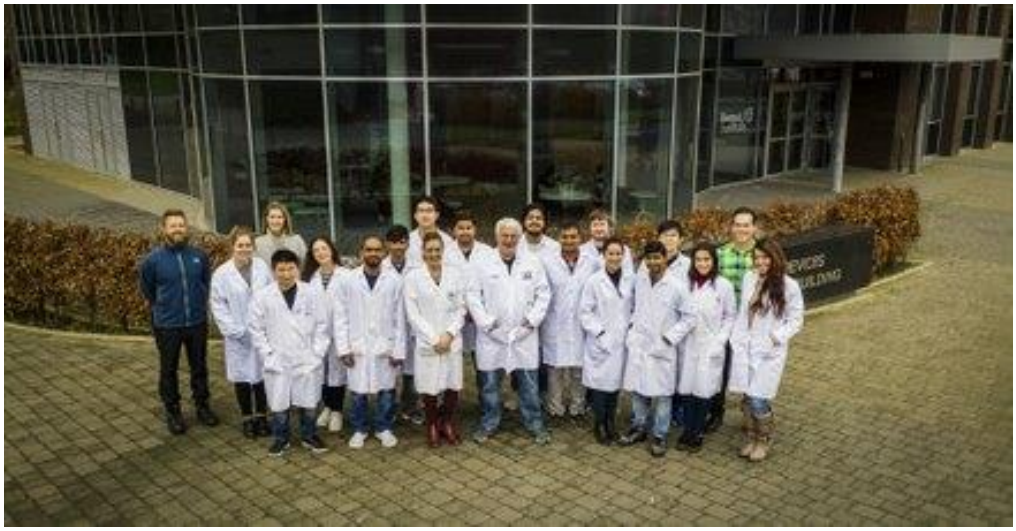
"The potential is that it's one of the biggest inventions in history," says Prof Zaworotko with the air of someone not given lightly to exaggeration.

"Clean water at will is something that is game changing. It is even more tangible to many people's everyday lives. The beauty is there is a market, there is an urgent need here that is not being filled by the current technologies.

"But it goes further than this, it goes to cleaning up agriculture, producing medical grade water in hospitals – it has a huge variety of potential applications," he adds.

The application of this new material is not limited to water. Prof Zaworotko, along with Kai-Jie Chen, Amrit Kumar, David G. Madden and Soumya Mukherjee, recently wrote a paper for the highly prestigious journal Science about the energy efficient purification of ethylene. Another dream on its way to becoming reality.
Mike Zaworotko is the Bernal Chair of Crystal Engineering and Science Foundation of Ireland Research Professor and co-director of the Synthesis and Solid-State Pharmaceutical Centre, to give him his full title, and a rock star of the research world.

He was recently named among the world's most influential researchers by the Web of Science group and in April of last year was awarded almost €1m in ground-breaking research funding to study a new class of materials aimed at solving global challenges related to commodity purification.



In October, he was admitted to the Royal Irish Academy, considered the highest academic honour in Ireland.

Today, he is keen to tell the "story of the long journey of how we started with a dream 30 years ago and ended up today with something much more than pretty structures and papers – which is properties that are relevant to real world applications.

"The dream was that material science would become like architecture. That we could be like architects and make materials by design, that a chemist could create a material with the right structure and the right properties – as opposed to nature being what it is, that a person could intervene and design new classes of materials.

"The dream is a lot older than the early 1990s that is just when I started my involvement in the area.

"What it boils down to – it is all about energy. How much energy does it cost – because that is the real cost of everything.

"How much energy do you have to spend to produce and purify ethylene? How much energy do you have to spend to produce water? They can all be done, but they cost a lot of energy. And so desiccants are everywhere; water capture is easy. You can dry things up, but dehumidifiers use a lot of energy.

"It is all about the recycling – it is not the capture, it is the combined capture and release cycle. If you get the right sweet spot, then you dramatically change everything. The economics, the energetics – everything just changes."

Molecule have companies and countries queuing up to test and apply the commercialisation of the material, all of the research for which was carried out at the Bernal Institute, where Mike and his team of 20-plus researchers are based.
"Well, the easiest part of the story – in one sentence, what the application is and how it will affect the world: We will make clean water available to anybody in the world, by pressing a button, with very low

energy footprint. That is only one application – that is the most exciting, valuable thing you could do, I think, right now, the lowest lying fruit," explains Prof Zaworotko.
"Being without water is something that is affecting billions of people already. There is no Plan B for water," he adds.

The next step, the Bernal researcher says, has massive potential implications for climate change.
"CO2 is another goal, but it is not so tangible. Things are getting worse in terms of CO2 levels, but it doesn't have an immediate effect – it might be 50 years before the tip over point happens, which people are talking about, when it will be almost irreversible," Mike explains.

"CO2 is, I would say, the second lowest lying fruit. And it is a very juicy one too, because there are immediate industrial applications – but there is also competing technology. So it can be done. You can't make pure water in the desert at the moment, but you can capture CO2 in industrial processes – but it is energy intensive.

"If we can cut that cost, and we are not talking one or two percent, we are talking 50-90% reduction in the energy footprint – that will then have an effect on CO2 emissions and the global CO2 level.

"We are going after CO2," he adds, smiling at the prospect of another dream that is about to be realised.

- Alan Owens

Irish University & 3rd Level Chemistry News

10 November 2020

Missing Evidence on Human Impact

Glyphosate is the most common weed-killer in the world. It was introduced by Monsanto Company under the commercial name Roundup in 1974. Glyphosate is reported to have excellent properties of rapid sorption in soil, biodegradation and lower toxicity to nontarget organisms. However, in 2015 glyphosate was classified as 'probably carcinogenic' under Group 2A by the International Agency for Research on Cancer (IARC). Group 2A relates to the second highest class in terms of risk .

Glyphosate has been linked in studies to endocrine-disruption, celiac disease, autism, effect on erythrocytes, leaky-gut syndrome, among others. There have been calls for a ban or restricted use of this chemical.

The long-time use of this chemical with very little evidence of harm to farmers indicate that there is no link to the chemical and a cancer threat in humans. Some studies have shown that the surfactant,

polyethoxylated amine (POEA), part of the formulations of glyphosate like Roundup, is responsible for adverse effects on human and ecological health. Some crops have become resistant to the herbicide and therefore this has led to a ban in some countries.

Some studies suggest that inclusion of safer surfactants in commercial formulations may reduce the toxicity of the overall glyphosate formulation.

In recent years regulatory agencies have concluded that it is not a carcinogen based on reviews of the published reports and literature. The European Chemicals Agency (ECHA) has said that there isn't enough scientific evidence currently available to prove that glyphosate causes cancer. However, scientific studies to assess risk are reported to be lacking in rigour and do not measure the relevant biological responses. Some reports suggest that the producer has conducted research studies which has helped avoid a ban.

With growing use of herbicides it has never been more important to ensure human and ecosystem safety. Once on the market it is difficult to remove chemicals that have proven value in crop management. However, overuse, misuse and lack of sufficient risk assessment leave much scope for study and consideration of alternative products or practices for at least some applications.

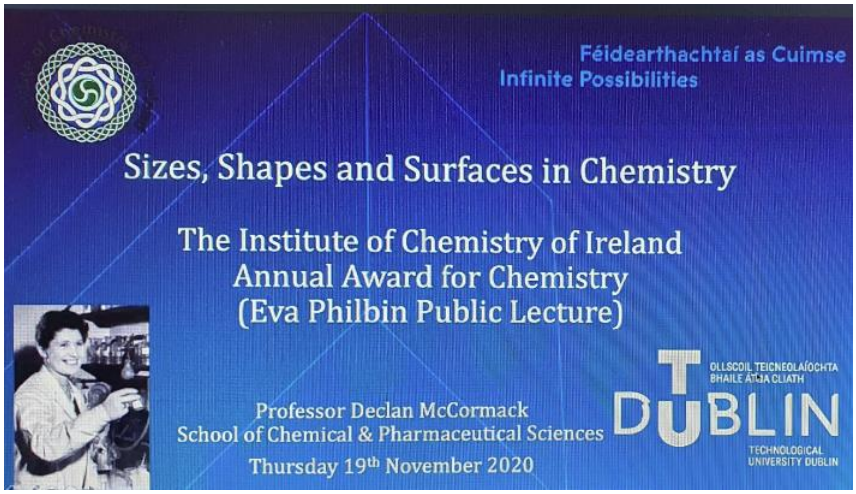
Without a doubt, the growing use of glyphosate-based chemicals is leading to greater human exposure. These herbicides are the most heavily applied in the world. They contaminate drinking water via rainwater, surface runoff and leaching into groundwater, therefore drinking water, bathing, and washing water are possible exposure pathways. The legacy of health effects due to chemicals in environment, highlighted first by Rachel Carson in her book Silent Spring, should provide adequate evidence and direction on how herbicides and pesticides can be used. There is a need to carry out appropriate scientific studies on glyphosate related chemicals to assess true effects on humans and ecosystem health.

Professor Declan McCormack Receives Institute of Chemistry of Ireland Annual Award

11 November 2020

Professor Declan McCormack, Head of the School of Chemical & Pharmaceutical Sciences at TU Dublin, has received the **Institute of Chemistry of Ireland Annual Award for Chemistry** - one of Ireland's foremost accolades for professionals working in the industry.

The 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 effectively and lucidly. Professor McCormack joins an impressive roll-call of eminent chemistry researchers, academics and practitioners, including Professor Anita Maguire, Professor Herbert W. Roeskey and Professor Martyn Poliakoff.



Professor McCormack received his award at the ICI Annual Award Ceremony on Thursday, 19 November at 4 pm during an on-line Zoom conference. He delivered an excellent **Eva Philbin Public Lecture** on ***Sizes, Shapes and Surfaces in Chemistry*** with good humour and questions during the interactive

event. The late Professor Eva Philbin was formerly head of the Chemistry Department in University College Dublin and also a former President of the Institute of Chemistry of Ireland.

Professor Declan McCormack is Head of the School of Chemical & Pharmaceutical Sciences at the Dublin Institute of Technology. Declan was appointed Head of School in 2005 and is responsible for all aspects of the operation and strategic direction of the School. He also serves as Academic Director of the Centre for Research in Engineering Surface Technology (CREST), an ISO 9001 accredited Research and Development Facility, incorporating the Enterprise Ireland funded Technology Gateway, based in DIT.

He is a Fellow of the Royal Society of Chemistry and a Fellow of the Institute of Chemistry in Ireland and is Vice-Chair of the Physical, Chemical & Mathematical Sciences Committee of the Royal Irish Academy.

Declan is active in both undergraduate and postgraduate teaching and his research interests include: Surface coatings, photocatalysis, environmental remediation, controlled particle growth.

Professor Aidan McDonald Elected to College Fellowship

Congratulations to Professor Aidan McDonald who was elected to College Fellowship on Trinity Monday!

Aidan is an Associate Professor of Inorganic Chemistry. Aidan received a B.A. in Chemistry from TCD in 2002 and completed Ph.D. studies at the University of Utrecht in 2008. Following that he performed postdoctoral research at the University of Minnesota. Aidan returned to TCD in 2012 as an Assistant Professor.

Aidan was previously a NIH Ruth L. Kirschstein fellow and a Marie Curie fellow, and currently holds both an ERC Starting Grant and a Royal Society University Research Fellowship. He was recently honoured with the award of the Royal Society of Chemistry Sir Edward Frankland Fellowship and was awarded the EuroBIC medal for 2020.

Aidan's research group focuses on the field of Biological Inorganic Chemistry, a field that explores the roles metals play in Biology. His group investigates the role of manganese in DNA synthesis and repair as well as the potential of biomimetic iron, nickel, and copper systems for the design of new man-made catalysts.

Prof. Max Garcia-Melchor wins Spanish Royal Society of Chemistry Award for Young Researchers

We are delighted to announce that the Organometallic Chemistry Group of the Spanish Royal Society of Chemistry award for young researchers 2020 has been awarded to Prof. Max Garcia-Melchor for '*his contributions to organometallic chemistry from the perspective of the computational modelling of various types of catalysis with metals'.*

Max García-Melchor was born in Barcelona (Spain) in 1982. He obtained his BSc in Chemistry, MSc in Theoretical Chemistry, and PhD in Chemistry from the Universitat Autònoma de Barcelona. His master and doctoral studies focused on the modelling of the reaction mechanisms of several Pd-catalyzed C– C cross-coupling processes under the supervision of Prof. Agustí Lledós and Prof. Gregori Ujaque.

After his PhD (2012), Max joined the group of Prof. Nuria López at the Institute of Chemical Research of Catalonia (ICIQ) as a postdoctoral researcher, where he contributed to foundational insights into the mechanisms and factors that govern several catalytic processes on metal oxides surfaces.

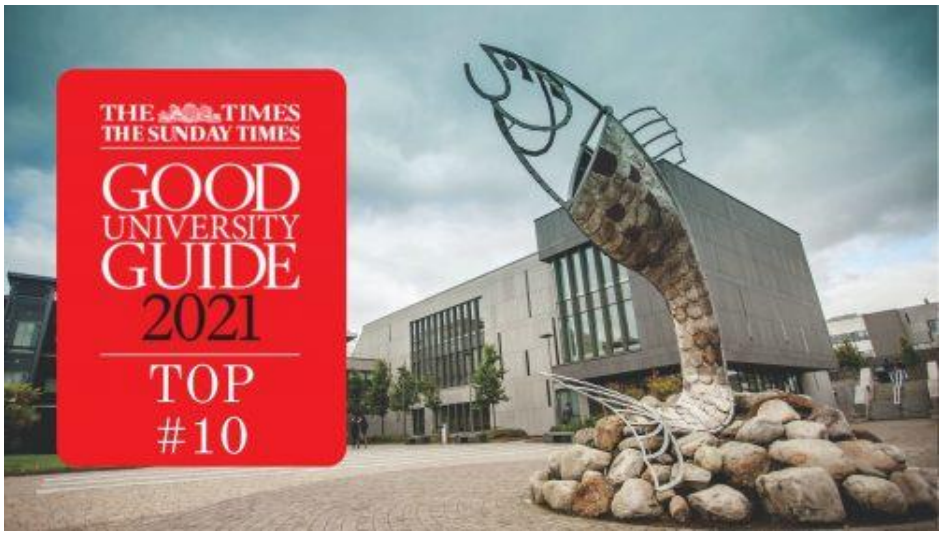
In 2014, Max was awarded a Beatriu de Pinós Postdoctoral Fellowship to join the group of Prof. Jens Nørskov at Stanford University (US), where he contributed to deepening the understanding of the electrochemical water splitting and to guide the design of more efficient electrocatalysts.

Since 2016, Max is an **Ussher Assistant Professor in Chemical Energy Systems in the School of Chemistry of Trinity College Dublin (Ireland)**, where he leads the Computational Catalysis and Energy Materials (CCEM) Group. His research group strives to use state-of-the-art computational methods to shed light on the underlying mechanisms of homogeneously and heterogeneously catalyzed reactions relevant to sustainable energy.

His group also aims to leverage this knowledge together with machine learning algorithms to ultimately impel the accelerated rational design of more efficient and cost- effective catalysts. Throughout his career, Max has received several national and international awards, including the Springer Theses Award and the Sant Jordi Award from the Catalan Chemical Society. Max has co-authored over 40 publications, 1 book and 2 book chapters. Some of his research has been featured by Thomson Reuters as 'Hot Papers' for being top 0.1% of their academic fields, in various journal front covers and in a number of international media.

Irish University & 3rd Level Chemistry News

IT Sligo Makes Top Ten Ranking in Good University Guide



IT Sligo has made top ten in the Sunday Times Good University Guide released yesterday (Sunday 1st of November). The guide contains Ireland's only league table that measures the performance of all 19 multi-faculty third-level institutions.
The Times University Guide uses a range of measures, including student satisfaction with teaching, spend per student and graduate employment prospects, to rank institutions across the country.

President of IT Sligo, Dr Brendan McCormack welcomed the result:

"We are delighted to be in top 10 in the 2021 Good University Guide. The ranking reflects our focus on ensuring the highest quality learning experience for our students and our ambitions to become a Technological University with our Connacht-Ulster Alliance partners."

Dr Brendan McCormack added: "The guide is used by students across the country to help choose which third-level they should consider. The high ranking is down to the commitment and dedication of the incredible team we have here in IT Sligo who always go beyond the call of duty to ensure our students get the best possible experience."

IT Sligo was highly commended by the Sunday Times guide for its ability to quickly move learning remotely during the pandemic crisis and was ranked number one for most flexible learning. The Institute was also recognised for its increase in First class and 2.1 degrees last year.

This is the second highest ranking achievement by the Institute who celebrate 50 years in operation. During the summer, IT Sligo was ranked 4th best performing university in Ireland by U-Multirank, the largest global university ranking experts.

Listen back to Dr Brendan McCormack on Ocean Fm here.

Major Capital investment announced for IT Sligo under Project Ireland 2040

IT Sligo has been successful in its application of funding for the development and upgrade of the K&L Block on the north campus. The €13.7m capital investment was announced this morning by The Minister for Education and Skills Joe McHugh T.D. and the Minister of State for Higher Education Mary Mitchell O'Connor T.D and will be provided through the Higher Education Authority. This funding will facilitate the consolidation on campus of the recently established Yeats Academy of Arts, Design and Architecture and form a North-Campus Creative Hub in IT Sligo.

Minister Joe McHugh T.D. added funding would help IT Sligo and the Connacht Ulster Alliance towards their ambitions in becoming a Technological University:

"The funding will also support IT Sligo as a member of the Connacht Ulster Alliance in working towards Technological University status. Significant new buildings for the other members of the Alliance, Letterkenny IT and GMIT, are currently being advanced as part of the Higher Education Public Private Partnership Programme. Together these capital investments will greatly enhance the role of the planned TU as a driver of economic and social development in the West and North West".

This creative hub will allow art, design and architecture students to optimise the commonalities of the various disciplines in a fit for purpose, collaborative environment. This significant development is an integral part of the master plan of IT Sligo to grow to 10,000 students.

Minister Mitchell O'Connor said:

"Lifelong learning is one of the key objectives of Ireland's National Skills Strategy 2025. IT Sligo has been, and continues to be, a leader in the areas of online and blended learning. I am pleased that this investment will support the Institute to further expand opportunities in this area."

President of IT Sligo, Dr. Brendan McCormack welcomed the announcement and hopes it will become a focal point for the creative sector in the Northwest:

"IT Sligo would like to sincerely thank The Minister for Education and Skills Joe McHugh T.D. and the Minister of State for Higher Education Mary Mitchell O'Connor T.D for announcing this funding today. We also acknowledge the work of Tony McLoughlin, TD in supporting our proposal.

The funding will facilitate a significant upgrade of the existing north campus in IT Sligo, bringing together architecture, creative design, fine art, interior architecture & design, performing arts and writing & literature programmes into a creative hub on campus. The upgraded facilities will encourage engagement with the creative industry and community and will act as a focal point for creative sector in the region.

I would like to congratulate all our colleagues for their support in this application as this is a reflection of the high esteem this institute is held within the Government and the HEA. I would especially like to thank Elizabeth McCabe, Una Parsons, Emmet Doherty and Ed Millar for their hard work and dedication in making this successful application."

The funding is being provided under Project Ireland 2040 which commits to exchequer investments of €2.2 billion in Ireland's higher education infrastructure over the coming decade. Together with other infrastructural development funding received by county Sligo under Project Ireland 2040, this funding received by IT Sligo is a further indicator of the commitment by the Government to develop Sligo as a regional centre. Dr. McCormack added: "We will be making other applications for on-campus developments over the coming months to ensure that IT Sligo has the necessary infrastructure to transition into a technological university for the North-West of Ireland."

Tony McLoughlin, TD also welcomed the announcement as another growth indicator for the region: , "Today's positive announcement for Sligo comes on the back of over €160 Million investment in upgrading our key roads this year, the 1450 new jobs announced here since January 2018 and the continued focus on helping Sligo to grow to reach its potential."

Work on the development will be start once a tendering process is complete.

WIT NAMED THE SUNDAY TIMES INSTITUTE OF TECHNOLOGY OF THE YEAR FOR THE THIRD TIME

Award acknowledges WIT's contribution to date as an institute of technology and is a vote of confidence in its ambitious plans for the future

Waterford Institute of Technology (WIT) has been named *The Sunday Times* Institute of Technology of the Year for the third time in The Sunday Times Good University Guide 2021 after coming second in the Institute of Technology rankings once again.

The guide contains Ireland's only league table that measures the performance of all 19 multi-faculty third-level institutions. The full rankings will be revealed in a special 16-page supplement which will be published free with *The Sunday Times* this Sunday, November 1, with a fully searchable website and extended institutional profiles at **thesundaytimes.ie/gooduniversityguide** for subscribers to The Times and The Sunday Times.

"Big third level player"

WIT won the award previously in 2005 and 2009, and was runner-up last year.

Alastair McCall, editor of **The Sunday Times Good University Guide**, said "WIT has celebrated its 50th birthday this year by driving forward with plans that will eventually see its name disappear, emerging as a technological university that will have a big impact on the southeast region and far beyond. That can only be good news for the regional economy and for the students who are lucky enough to study here. WIT is already a big third level player and its future development as a TU will only fuel that further. "WIT has long been among the most dynamic of the institutes of technology, synchronised with the needs of business and providing academic and sporting facilities that stand with the best. Our award acknowledges its contribution to date and is a vote of confidence in its ambitious plans for the future."

"Validation"

Prof Willie Donnelly, President of WIT said: "We are honoured that the institute has been awarded this prestigious accolade as we mark our 50th anniversary. Over the last 50 years we have created opportunities for students to study at higher certificate right through to PhD and post-doctorate level, an enviable research eco-system, and are strongly connected into our community, regionally, nationally and internationally.

"The title Institute of Technology of the Year 2021 is a validation of our commitment to the south east region and our unique innovation culture which sets us apart and makes us the successful institute we are today. It is also fitting that we are now in the advanced stages of establishing a technological university with our partners IT Carlow."

While the full detail which led to WIT's title of *The Sunday Times* Institute of Technology of the Year 2021 will be revealed on Sunday, 1 November, some of the following items were highlighted by the editor of **The Sunday Times Good University Guide**.

- WIT has seen a dramatic increase in research funding in the past year to stand at €16.4m – higher than any other Institute of Technology and more than TU Dublin – attracting more money from the key European Horizon 2020 research fund than any other Institute of Technology in Ireland in 2019. It is the only Institute of Technology to host three national technology gateway centres, spanning advanced engineering, mobile service technology and pharmacology.
- It plays a key role in the regional economy of the Southeast, exemplified by its ArcLabs Research and Innovation Centre. The business incubator provides links between research, academia and local industries. Today, 45% of the 300 ICT businesses in the southeast have connections with ArcLabs.
- WIT is the most popular destination among students in the five counties in the Southeast, with 1,600 of the 5,000 school-leavers from the region who went on to third level last year electing to go there. Nearly three-quarters of graduates hail from the Southeast, but WIT also recruits from across the whole of Ireland, with 8% of students coming from overseas.

Additional awards

Letterkenny Institute of Technology is named runner-up in the Institute of Technology of the Year award. Meanwhile Dublin City University has been named The Sunday Times University of the Year and NUI Galway is the runner-up in **The Sunday Times Good University Guide 2021**.

Focus on impact of pandemic

This year's Good University Guide also reports on the dramatic changes on campus since the advent of the pandemic and assesses how much college life might have been changed forever with a move towards greater online delivery of courses that might not be reversed when the pandemic is over.

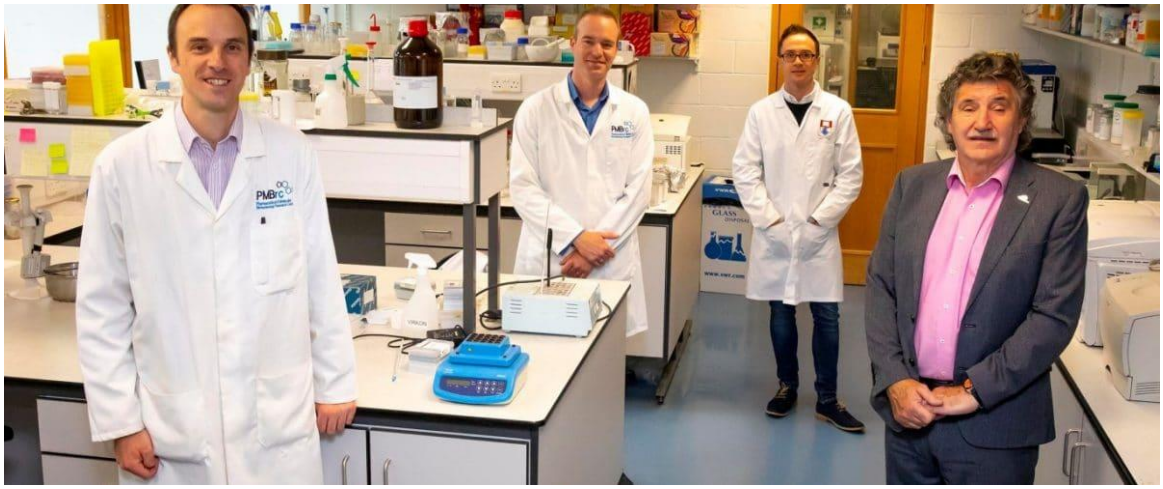
Alastair McCall, editor of The Sunday Times Good University Guide, said: "The genie is now out of the bottle as far as online delivery of courses is concerned. While institutions have been delivering courses flexibly for a number of years to a greater or lesser extent, we can now expect to see this become the norm going forward. While the social side of student life will return to something approximating to the traditional college experience in future years, the pandemic is likely to change the way students learn for good."

PMBrc
Pharmaceutical & Molecular Biotechnology Research Centre

Waterford Institute *of* Technology
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Minister Halligan visits PMBRC/EIRC laboratories at heart of COVID-19 testing research

12 June



12/06/2020 - Minister for Training, Skills, Innovation, Research & Development, John Halligan visited labs at the PMBRC where scientists are developing methods to increase the speed of Covid-19 testing.

Minister Halligan: 'I want to congratulate Dr Lee Coffey on leading the project here in WIT along with colleagues in UHW and BIOENZ – This project has a broad range of molecular expertise that will help optimise and improve turnaround rates for COVID-19 testing.'

Minister for Training, Skills, Innovation, Research & Development, John Halligan today (12 June 2020) visited PMBRC laboratories at Waterford Institute of Technology (WIT) where scientists are developing a way to increase the speed of Covid-19 testing.

Funding of €118,000 has been made available for the 'Expanding Laboratory Tests for the COVID-19 Virus' project through the joint Science Foundation Ireland, Enterprise Ireland and IDA initiative to tackle the scientific challenges posed by COVID-19.

The announcement was made as part of an investment of €1.4 million in 11 projects under the SFI-coordinated research and innovation response to the COVID-19 pandemic.

Team Effort

The 'Expanding Laboratory Tests for the COVID-19 Virus' project team of scientists from WIT's Pharmaceutical and Molecular Biotechnology Research Centre (PMBRC) and Eco-Innovation Research Centre (EIRC) have teamed up with University Hospital Waterford (UHW) and WIT-spin out company BioEnz Technologies Ltd. to improve the speed of COVID-19 testing.

The team will be led by Dr Lee Coffey, a lead scientist in the PMBRC and founder of BioEnz Technologies, a biological solutions company.

Innovative Response

Minister Halligan said: 'It is a tremendous indication of the calibre of work and research that is taking place in Waterford IT that it could play a role in helping to develop an innovative response to the COVID-19 pandemic.'

'I want to congratulate Dr Lee Coffey on leading the project here in WIT along with colleagues in UHW and BIOENZ – This project has a broad range of molecular expertise that will help optimise and improve turnaround rates for COVID-19 testing.'

World-Class Research

President of WIT, Prof Willie Donnelly also praised the work of the researchers 'The WIT investment in the development of world class research in key areas biopharma, ICT and Advance Manufacturing has been key to the region's economic development. I am immensely proud of the research community's ability to apply their expertise to address Covid-19. This award is a validation not only of the academic research and innovation leadership but our commitment to supporting and protecting our community.'

Dr Mark White, Vice President of Research at WIT added: 'We are so proud to have such wide and varied research interests in WIT and that they are all making impactful contributions to this international Pandemic. The PMBRC's successful proposal epitomises the engaging, creative and innovative approach we foster amongst our research community here in WIT. We thrive on the demands of finding novel solutions to societal, ecological and economical challenges with our regional and national enterprise partners. The PMBRC and the WIT research community will continue to tackle the many Covid-19 pandemic challenges using this collaborative approach'.

CIT and IT Tralee set to become Munster Technological University

26 May

Today (Tuesday 26th May 2020) An Taoiseach Leo Varadkar TD, Minister for Education and Skills Joe McHugh TD and Minister of State for Higher Education Mary Mitchell O'Connor have announced that the consortium of Cork Institute of Technology (CIT) and Institute of Technology Tralee (ITT) is set to become a Technological University. Munster Technological University (MTU) will be established officially in early 2021 and will be Ireland's newest Technological University.

MTU will see the merging of Cork Institute of Technology (CIT) and the Institute of Technology Tralee (IT Tralee) and will be a multi-campus technological university, contributing to the region through the provision of academic programmes that support student development and opportunities, education, and research. MTU will have an extensive footprint with six campuses across the South-West region.

MTU will play a leadership role in the strategic development of the region, and, in so doing, will adopt a global outlook and a civic centric value system.

STUDYING AT MTU WILL HAVE MANY BENEFITS FOR STUDENTS, INCLUDING THE FOLLOWING:

- The range and quality of services and supports available to students will be enriched;
- Students will have a greater range of options available to them in relation to course choice, progression opportunities, research and industry placement;
- Graduates will be able to avail of a greater selection of options nationally, and internationally, for further study and participation in research;
- Graduates will experience enhanced employability both in Ireland and internationally as MTU graduates.

For further information please visit www.mtu.ie

Ireland's third Technological University on course for September 1, as AIT-LIT Consortium application goes to Government

23 November

Combined Economic Impact of LIT and AIT found to be close to €420 million

A new Technological University for the Midlands and Mid-West is on course for September 1, 2021, following confirmation that the AIT-LIT Consortium has formally submitted its application to Government.

The institution is expected to comprise a student population of up to 15,000 and a staff complement of approximately 1,200 people across six campuses in Athlone, Clonmel, Ennis, Limerick (2) and Thurles.

An economic impact study commissioned by the consortium has found that the combined impact of the two institutions on the Irish economy is close to €420 million euros in economic output, while they support more than 800 jobs in addition to their own staff complement.

The consortium – which formally commenced in October of 2019 – has targeted a date of September 1 next year for the new university to open, and is today (Monday) also embarking on a broad consultation process to name the new Technological University.

Academic unions in both LIT and AIT have voted overwhelmingly in favour of measures contained in the Technological University project plan.

Commenting on the application, President of LIT, Professor Vincent Cunnane said, "We are on a pathway to deliver a unique new Technological University that will cross regions and transcend geography. While

this will be an institution of scale, it will retain the familiarity of local campuses across two significant regions. This enables us to act as a regional development powerhouse into the future, delivering education and research that will benefit students, educators, communities, business and industry in a strategic way. Our approach is based on partnership and consensus, and is indeed underpinned by consultation with staff, students and other stakeholders. The consortium has a strong set of shared values and a shared ethic that provides a firm foundation to deliver on our future strategy."

President of AIT, Professor Ciaran Ó Catháin said, "This is a transformational development for the

Midlands, and once it comes to fruition, it will provide significant social and economic benefit to communities across the region and beyond. Becoming a TU will broaden access to higher education and create opportunities in areas that have previously been underserved with respect to apprenticeships right through to PhD. I am immensely proud of the progress that have been made since the formation of the AIT – LIT Consortium a little over a year ago and of our staff, who have worked together in the spirit of common purpose to share knowledge and expertise. This has culminated in us reaching and surpassing the substantive TU metrics set out by Government and increasing our research capacity. Our commitment to our technological mission is resolute and will result in a talent pipeline of professionally and technically skilled graduates capable of propelling regional and national growth."

Professor Tom Collins, AIT-LIT TU Consortium Project Facilitator congratulated the "management, staff and students of both institutes, who in a short time and through all the challenges of the current year, have re-imagined the future of the two institutions around a compelling vision for a new Technological University in the Irish Midlands and Mid-West."

Top of the Class: AIT Remains Ireland's Top-Ranked Institute of Technology

AIT previously won The Sunday Times Institute of Technology of the Year in 2020 and 2018 and came runner-up in 2017.

AIT has retained its position as Ireland's top-ranked institute of technology in The Sunday Times Good University Guide 2021, the official league table benchmarking the country's 19 higher education institutions.

This is the second consecutive year that AIT has finished top of its class, having previously won The Sunday Times Institute of Technology of the Year in 2020. The third-level institute also held the prestigious title in 2018 and came runner-up in 2017.

Finishing in seventh place, ahead of all other institutes of technology, AIT has outpaced this year's winner, WIT, by eight points. The institute's inclusive campus culture and student-centred ethos are among the reasons for its success.

Student experience scores play a critical role in influencing The Sunday Times rankings for third-level institutes. Introduced into the adjudication criteria in 2018, student experience has the heaviest weighting, giving students direct input into where their college ranks.

AIT has continually elicited the highest participation rates of any third-level provider in StudentSurvey.ie, a national survey which considers the holistic student experience, since its inception seven years ago; its students repeatedly report the highest levels of satisfaction with their third-level experience nationally.

Welcoming the news, AIT President Professor Ciarán Ó Catháin said: "I am delighted that AIT has once again topped the national higher education rankings and in so doing, further demonstrated that it is a leader in the delivery of technological higher education. I have no doubt that our exceptional performance in this year's league table will stand us in good stead as we look ahead to making our debut as Ireland's newest technological university in future rankings."

According to Alastair McCall, editor of The Sunday Times Good University Guide, the advent of TUs represents "the most radical shake up of higher education in a generation." He added that he expects the new TU for Ireland's Midlands and Mid-West, formed from AIT and LIT, to vie for the top spot among universities in future guides.

The new TU, which will span six campuses across four counties, is on track to open its doors in September 2021.

Now in its 19th year, The Sunday Times Good University Guide provides the definitive rankings for Irish universities and institutes and is the most comprehensive overview of higher education in the country.

Athlone Institute of Technology is a research-led third level institute with an applied, industry-focussed offering, world-class research and development capabilities, and state-of-the-art facilities. Winner of The Sunday Times Institute of the Year 2020 and 2018, AIT is Ireland's top-ranked institute and is on track to open its doors as the country's next technological university in September 2021. AIT tops Ireland's official league table for research and was listed in U-Multirank's Top 25 Performing Universities in the World for Interdisciplinary Research in 2018 and 2019. For information relating to the institute's undergraduate and postgraduate programmes, visit www.ait.ie.

Cambridge Fellow Delivers Guest Lecture to Pharmaceutical Science Students

Dr Coyne is world renowned for his use of fragment-based drug discovery for the treatment of infectious disease.

A Cambridge fellow and alumnus of **Athlone Institute of Technology (AIT)** returned to his alma mater today to deliver the first in a series of exciting guest lectures to final-year pharmaceutical science students.

Dr Anthony Coyne, who graduated from AIT in 1996 with a degree in analytical chemistry, covered the intricacies of green, sustainable chemistry and the use of water in organic chemical reaction.

The guest lecture, delivered via Zoom Education, detailed the pros and cons of using water as a solvent and the benefit to industry in terms of cost, environmental issues, safety issues, and scale up.

Dr Coyne is a Fellow of Christ's College at the University of Cambridge and a senior research associate focussed on drug discovery.

Upon graduating from AIT, Dr Coyne went on to complete a PhD in synthetic organic chemistry at NUI Galway before working in industry and then embarking on an exciting career in academia.

"Anthony is world renowned for his work on the use of fragment-based drug discovery seeking treatment for infectious diseases," explained Jim Roche, lecturer in pharmaceutical sciences at AIT.

Every year, AIT invites speakers who have gone on to achieve a positive impact within the pharmaceutical industry to participate in an annual seminar series for the module Contemporary Issues in Pharmaceutical Sciences.

“These seminars represent the ultimate inspiration for current students,” Mr Roche said. “They get to witness first-hand (and get to question) graduates who themselves are always appreciative of the framework of cross-sectional theoretical and practical knowledge they were grounded within while studying at AIT.”

“It is absolutely superb to see a former student reach such lofty heights in his career. Both lecturers and students benefited hugely from Dr Coyne's lecture on synthetic organic chemistry," remarked Dr Noreen Morris, an organic chemistry lecturer in AIT. "It was really interesting to be the student and not the lecturer for a change!" she added.

The Contemporary Issues in Pharmaceutical Sciences module aims to match students’ transferable skills with current demand in the jobs market and within the research community in AIT and beyond, principally through guest lectures from industry experts, regulatory specialists and those with advanced academic attainments.

Professor Tom Moody, the vice president of technology development and commercialisation at global pharmaceutical company ALMAC, will be giving a guest lecture as part of the seminar series later this semester.

Previous speakers include Dr Barbara Cooper of Jazz Pharmaceuticals, Dr Helen Hamilton from Abbot Longford, Gráinne Ryan of Alexion, and Aaron McKeown (formerly of the Marine Institute).

GMIT
INSTITIÚID TEICNEOLAÍOCHTA NA GAILLIMHE-MAIGH EO
GALWAY-MAYO INSTITUTE OF TECHNOLOGY

Irish University & 3rd Level Chemistry News

SCIENCE STUDENT WINS TOP AWARD AT SURE CONFERENCE FOR RESEARCH ON SAFETY OF DAILY USE COSMETICS

Mayo student one of 60 undergraduates presenting her findings to a virtual audience

2 November

Tamara Jordan from Bohola, Co Mayo, a final year student on the B.Sc (Hons) degree in Chemical and Pharmaceutical Science at GMIT who was awarded the SURE Network Award for "Best Oral Presentation" in the Analytical, Environmental and Pharmaceutical Science category.

GMIT Science student Tamara Jordan has won a prestigious national award at this year's Science Undergraduate Research Experience (SURE) Network Awards for her research project examining the safety of daily use cosmetics and for her communication skills in delivering her findings to a large virtual audience.

Tamara's presentation, titled "Chemical characterisation of finished cosmetic products using spectrophotometric methods and analytical techniques", examines the 'make-up' of the products to determine the relative composition of the compounds, their importance in creating the desired aesthetic appearance, while also ensuring safety and quality of the products. This project aimed to educate

consumers around the major components present in their daily use cosmetics, to assess the safety of products available on the Irish market, and to raise awareness on the potential of harmful impurities.

Ten products were examined including lipstick, eyeshadow, and blush and bronzing powders. Safe ingredients such as polymeric compounds, metal oxide pigments and wax and oil components were identified in abundance through the various analytical methods chosen. The major safety concerns surrounding cosmetics involve the potential contamination with heavy metal compounds, as a result of poor manufacturing practices. This is of ongoing importance, as cosmetic products, unlike foods and medicines, are not subject to FDA approval prior to market release. Fortunately, the samples selected from the Irish market were deemed safe for use with no traces of heavy metal elements found. An important note made from this research was the harmful correlation found between counterfeit cosmetics and their inclusion of heavy metal contaminants, and thus, the necessity for consumers to purchase their cosmetics from a reliable source, to ensure safety and compliance with cosmetic industry safeguarding processes.

Tamara from Bohola, Co Mayo, completed her final year B. Sc. (Hons) in Chemical and Pharmaceutical Science in GMIT this year and will graduate in November. She was one of 60 students from nine Higher Education institutes to present their research projects to a virtual audience of over 600 final year students and academic research supervisors.

Dr Éadaoin Tyrrell, GMIT Dept of Natural Sciences, who supervised Tamara's research project, says: "Tamara's achievement in winning this award is due recognition of the complexity and depth of research and development of her project. Presenting to a 'Virtual Audience' due to the unique circumstances of these challenging times, she succinctly conveyed the complexity and depth of her research and its application to everyday life. Her enthusiasm for and application to her subject is an inspiration to us all."

Commenting on her award, Tamara says "From conducting my research project, I learned to really appreciate the words 'Science is more than a body of knowledge. It is a way of thinking'. Going forward in my career I aim to apply the same doctrine."

This was the seventh annual SURE Network Awards event and the first to have been hosted fully online, led this year by GMIT, CIT and TU Dublin. Minister for Further and Higher Education, Research, Innovation and Science Simon Harris, TD, delivered an address at the conference opening. At the awards ceremony on 16 October, GMIT President Dr Orla Flynn was joined by TU Dublin President Professor David Fitzpatrick and CIT President Dr Barry O'Connor.

Dr Orla Flynn spoke of the importance of communication for scientists and how their science studies prepare them for a lifelong journey. "The world needs scientists now more than ever. We need to believe in science, we need to believe in evidence and the process by which we arrive at findings and results. The work that you have been doing throughout your undergraduate programme has helped prepare you for that lifelong journey."

Minister Harris said "The SURE conference is an opportunity to celebrate the success of students, and to mark the development of students, which is a key focus of the Irish Higher Education system. It is an opportunity to bring your research work to a national audience, and allows graduates to inspire current students, and I really want to thank you for your generosity in that regard, because it is your work that will inspire the next generation. Successful societies and successful economies will be those that invest in and embrace talent, scientific research, creativity and knowledge."

Dr Cormac Quigley, GMIT lecturer and Co-Chair of the National Conference Committee, congratulated the students and research staff for their work in hosting the event including Dr Orla Slattery, Dr John Healy and Dr Ian O'Connor from GMIT."

Chemistry and related Science around the World

The importance of aromaticity to describe the interactions of organic matter with carbonaceous materials depends on molecular weight and sorbent geometry

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https://www.sciencenews.org/article/mars-water-molecules-upper-atmosphere-chemical-reactions?utm_source=Editors_Picks&utm_medium=email&utm_campaign=editorspicks111520

Interactive virtual reality emerges as a new tool for drug design against COVID-19
12 November
https://www.bristol.ac.uk/news/2020/november/vr-covid-19.html

Tough New Bioinspired Material to Replace Petroleum-Based Plastics
15 November
https://scitechdaily.com/tough-new-bioinspired-material-to-replace-petroleum-based-plastics

Science Made Simple: What Is Superconductivity?
14 November
https://scitechdaily.com/science-made-simple-what-is-superconductivity

Mysterious Yet Highly Effective in Superconducting at High Temperatures: How Electrons Supertransport Current in "Bad Metals"

14 November
https://scitechdaily.com/mysterious-yet-highly-effective-in-superconducting-at-high-temperatures-how-electrons-supertransport-current-in-bad-metals

Party Pairs: No Matter the Size of a Nuclear Party, Some Protons and Neutrons Will Always Pair up and Dance

14 November
https://scitechdaily.com/party-pairs-no-matter-the-size-of-a-nuclear-party-some-protons-and-neutrons-will-always-pair-up-and-dance

TU Gratz Christian Doppler Laboratory for Solid-State Batteries Launched

11 November
https://www.tugraz.at/en/tu-graz/services/news-stories/media-service/singleview/article/tu-graz-startet-christian-doppler-labor-fuer-festkoerperbatterien0

New Lightweight Molecule-Based Magnet Exhibits Unprecedented Magnetic Properties

15 November
https://scitechdaily.com/new-lightweight-molecule-based-magnet-exhibits-unprecedented-magnetic-properties

Lighting the Way to Selective Membrane Imaging

4 November
https://www.kanazawa-u.ac.jp/latest-research/86256

Building Blocks of Life Can Be Forged by 'Dark Chemistry' Far From Stars or Planets

17 November
https://www.sciencealert.com/dark-chemistry-could-forge-the-building-blocks-of-life-in-space-no-stars-required
and **Building blocks of life can form long before stars**
16 November
https://phys.org/news/2020-11-blocks-life-stars.html

New Technology Allows More Precise View of the Smallest Nanoparticles

16 November
https://uh.edu/news-events/stories/2020/november-2020/shih-gold-nanodiscs-panorama.php

Tight and specific lanthanide binding in a de novo TIM barrel with a large internal cavity designed by symmetric domain fusion

17 November
https://www.pnas.org/content/early/2020/11/13/2008535117 and pdf available at:
https://www.pnas.org/content/pnas/early/2020/11/13/2008535117.full.pdf

Yeast Engineering with Twist Genes to Build a Microbial Drug Factory (commercial)

2 November
https://www.twistbioscience.com/blog/science/yeast-engineering-twist-genes-build-microbial-drug-factory?utm_source=marketo&utm_medium=email&utm_campaign=MU-GLBL-FY21-1658-MULTI-Blog%20re-launch%20email%20and%20new%20post%20emails&utm_content=blog&utm_term=relaunch&mkt_tok=eyJpIjoiTlRsbFpUZGpOR013TnpJMyIsInQiOiJHZjFSOXA1Y3ZyeFFJeWNKdUpVVnhsdjh0ZzhQZjB0TW5CNDVRXC

9Qbitsc3dEN0dSTm5kdVdWRjZBaUhLMmpHZ2NCM1RueVg0dkIyMnc0Z0lVVVd4K28rRXhPVkxXZ2ErbXlWSUtxU3dzRE5hdmNSMXgreFhyZjNQMFNSaEt6V1EifQ%3D%3D

Looking Beyond PCR: Isothermal Amplification (Webinar free – sign in)

November
https://go.technologynetworks.com/looking-beyond-pcr-isothermal-amplification?utm_campaign=TN%203rd%20Party%20Landing%20Pages&utm_medium=email&_hsmi=100136268&_hsenc=p2ANqtz-_P_vYUy2DJ6MjVg09HpuVq2RLK1VDuc_QIH1OrY3iIJr5W17f__qI0QoOv2AAwKlkRWHmaqUqI3C9iEyu0Vh1RTDmzNQ&utm_content=100114249&utm_source=hs_email

Talking Techniques | DNA vaccines: combating cancer and COVID-19

6 July (Link to broadcast)
https://www.biotechniques.com/podcasts/talking-techniques-dna-vaccines-combating-cancer-and-covid-19/?utm_campaign=BioTechniques&utm_medium=email&_hsmi=100143133&_hsenc=p2ANqtz--byvA2wIU-tPvVpxA_nDq94tzOVVxiIjzmcogSYhsEpw_1eXKjGZ_KjBRLNqtspNqdbmlEhIPIFha-c37Z6eQGAST9Tw&utm_content=100132392&utm_source=hs_email

Researchers have created a pearl spectrometer for biomedical and military applications

17 November
Researchers have created a pearl spectrometer for biomedical and military applications (innovationnewsnetwork.com)

Martin Gouterman: the gay man behind the four-orbital model

18 November
https://www.chemistryworld.com/culture/martin-gouterman-the-gay-man-behind-the-four-orbital-model/4012388.article?utm_source=Nature+Briefing&utm_campaign=89f409502e-briefing-dy-20201118&utm_medium=email&utm_term=0_c9dfd39373-89f409502e-45372434

Chromosomes Don't Look The Way You Think. We Now Have a 3D Image of The Real Thing

19 November
https://www.sciencealert.com/chromosomes-don-t-look-the-way-you-think-here-s-a-3d-image-of-the-real-thing
and
https://www.cell.com/cell/fulltext/S0092-8674(20)30940-5?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0092867420309405%3Fshowall%3Dtrue

New Pfizer results show its COVID-19 vaccine is nearly 95% effective

18 November
https://www.sciencenews.org/article/coronavirus-covid19-vaccine-pfizer-biontech-final-results?utm_source=email&utm_medium=email&utm_campaign=latest-newsletter-v2&utm_source=Latest_Headlines&utm_medium=email&utm_campaign=Latest_Headlines

Single-particle chemical force microscopy to characterize virus surface chemistry

1 October
https://www.future-science.com/doi/10.2144/btn-2020-0085?utm_campaign=BioTechniques&utm_medium=email&_hsmi=100270745&_hsenc=p2ANqtz--eaYWWQnYv7LVAYWPmfCCxjMW5dHxle0AO5VajtbmZdNbMEg-6ttuLdv4uAZYOdQ7CMWlUC5HQ-56NMYwTt3vLxfLKpA&utm_content=99986606&utm_source=hs_email

Which Types of Particulate Air Pollution Are Most Harmful to Health?

19 November
https://www.technologynetworks.com/applied-sciences/news/which-types-of-particulate-air-pollution-are-most-harmful-to-health-342987?utm_campaign=NEWSLETTER_TN_Breaking%20Science%20News&utm_medium=email&_hsmi=100349926&_hsenc=p2ANqtz--bYXHnaiqfRBVKxp6p1Ah1nQXbWnFAk5f9QspOsZeeRuztUK8rSFCX8iL9muByXJijxAGVCNR2KNxRtT1OTuuWzxWylQ&utm_content=100349926&utm_source=hs_email

CRISPR-Cas9 genome editing using targeted lipid nanoparticles for cancer therapy

18 November
https://advances.sciencemag.org/content/6/47/eabc9450.full

Decades Old Mystery Solved: A "New Kind of Electrons"

19 November
https://scitechdaily.com/decades-old-mystery-solved-a-new-kind-of-electrons

The Physics of Materials at Minus 80 Degrees Celsius

19 November
https://www.wired.com/story/physics-of-materials-minus-80-degrees-celsius

Trinity College Dublin submits planning for 'innovation district' - Independent.ie

20 November
https://www.independent.ie/business/trinity-college-dublin-submits-planning-for-innovation-district-39768641.html

Twisted graphene could power a new generation of superconducting electronics

19 November
https://www.sciencemag.org/news/2020/11/twisted-graphene-could-power-new-generation-superconducting-electronics

Diamonds created at room temperature in minutes

20 November
https://edition.cnn.com/2020/11/19/world/diamonds-room-temperature-scli-intl-scn/index.html and

https://www.sciencealert.com/for-the-first-time-ever-scientists-create-diamonds-in-the-lab-without-heat

New technique seamlessly converts ammonia to green hydrogen

18 November
https://news.northwestern.edu/stories/2020/11/ammonia-to-green-hydrogen
https://www.labmanager.com/news/new-technique-seamlessly-converts-ammonia-to-green-hydrogen-24406

Scientists Discover a Beautiful New Mineral – And It Looks Promising for Producing Batteries

19 November
https://scitechdaily.com/scientists-discover-a-beautiful-new-mineral-and-it-looks-promising-for-producing-batteries

New Recycling Process Could Cut Down on Millions of Tons of Plastic Waste

20 November
New Recycling Process Could Cut Down on Millions of Tons of Plastic Waste (scitechdaily.com)

Supercooled water has been caught morphing between two forms

19 November
Supercooled water has been caught morphing between two forms | Science News and

Experimental observation of the liquid-liquid transition in bulk supercooled water under pressure | Science (sciencemag.org)

Clonmel pharmaceutical company making progress despite Covid-19

22 November
Clonmel pharmaceutical company making progress despite Covid-19 - Tipperary Live

New insights can foster development of natural and safer fungicides

13 November
New insights can foster development of natural and safer fungicides (apsnet.org) and
Isothiocyanate Derivatives of Glucosinolates as Efficient Natural Fungicides | PhytoFrontiers™ (apsnet.org)

Leading Lab Safety in the COVID-19 Era

March 2020
Leading Lab Safety in the COVID-19 Era | Big Picture | Lab Manager

A Chance Discovery Leads to a Simple Process That Can Control Perovskite Oxynitride Properties

23 November
A Chance Discovery Leads to a Simple Process That Can Control Perovskite Oxynitride Properties (scitechdaily.com)

Saving the shrinking pipeline for antibiotics

16 November
Saving the shrinking pipeline for antibiotics (pharmamanufacturing.com)

Confused about COVID? Here's how to read a research paper

24 November
Confused about COVID? Here's how to read a research paper (theconversation.com)

How to shift into COVID-19 research

20 November
How to shift into COVID-19 research (nature.com)

Covid antibodies: FDA clears test designed to tell how well someone is protected

25 November
https://www.cnbc.com/2020/11/25/fda-clears-a-new-generation-of-covid-antibody-test-designed-to-tell-how-well-someone-is-protected-against-the-virus.html

Less than a year to develop a COVID vaccine – here's why you shouldn't be alarmed

25 November
Less than a year to develop a COVID vaccine – here's why you shouldn't be alarmed (theconversation.com)

COVID-19: four ways to respond to vaccine sceptics – and maybe even convince them

25 November
COVID-19: four ways to respond to vaccine sceptics – and maybe even convince them (theconversation.com)

Here's why COVID-19 vaccines like Pfizer's need to be kept so cold

20 November
Here's why COVID-19 vaccines like Pfizer's need to be kept so cold | Science News

The AstraZeneca Covid Vaccine Data Isn't Up to Snuff

25 November
The AstraZeneca Covid Vaccine Data Isn't Up to Snuff | WIRED

Time to Rethink COVID Predictions? Pandemic Infection Rates Are Deterministic but Cannot Be Modelled

25 November
Time to Rethink COVID Predictions? Pandemic Infection Rates Are Deterministic but Cannot Be Modelled (scitechdaily.com) and
DOI: 10.1063/5.0015303

Periodic table: scientists propose new way of ordering the elements

26 November
Scientists Propose a Brand New Periodic Table, And It's a Trip (sciencealert.com)
Periodic table: scientists propose new way of ordering the elements (theconversation.com) and
https://pubs.acs.org/doi/abs/10.1021/acs.jpcc.0c07857 and

New tool to combat terrorism

19 November
New tool to combat terrorism – News (flinders.edu.au)
Due for publication January 2021
Massively parallel sequencing is unlocking the potential of environmental trace evidence - ScienceDirect

A Wearable Virus Detector?

27 November
A Wearable Virus Detector? | Technology Networks

Neutrinos give insights into the workings of the Sun’s core (CNO Cycle)

25 November
Neutrinos give insights into the workings of the Sun’s core (nature.com)

Science Foundation Ireland 2020 Science Awards recognise key leaders in the Irish Research Community

Thursday 5th November 2020:

The winners of the prestigious **2020 Science Foundation Ireland (SFI) Awards** were revealed today by Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris TD, at the annual SFI Science Summit.

In advance of Science Week, this year the Summit has transferred to a virtual platform allowing members of Ireland's research community to come together online to discuss the challenges and celebrate the significant contributions made over the past year to research and innovation in Ireland.

Professor Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland congratulated the award winners, saying: "I am delighted to congratulate this year's award winners on their inspiring success and dedication. The Science Foundation Ireland Awards recognise the expansive contribution that scientists make to our society and economy through innovative breakthroughs, industry collaborations, entrepreneurship, public engagement, and mentorship of the next generation. This year has been an eventful and challenging one for our research community. I would particularly like to congratulate Prof Kingston Mills as our 2020 SFI Researcher of the Year. Well done to all, working closely together, the Irish research community continues to be impactful, inspirational and world-leading."

This year there are eight categories in total, two categories with double awards and one joint award.

SFI Researcher of the Year 2020

The SFI Researcher of the Year Award recognises the accomplishments of a researcher who has contributed significantly to the Irish research community in the year of the award and/or throughout their career. The successful researcher has achieved exceptional scientific and engineering research outputs combined with a clear demonstration of the ability to communicate their research.

Recipient: Professor Kingston Mills, Professor of Experimental Immunology and Director Trinity Biomedical Sciences Institute, Trinity College Dublin (TCD)

Kingston Mills is a graduate of TCD and trained at as a Postdoctoral Fellow at University College London and the National Institute for Medical Research, London (now the Crick Institute). From 1987-1992, he was the Scientific Staff at NIBSC, the research arm of the UK's Medicines and Healthcare Products Regulatory Agency. He returned to Ireland in 1993 to take up an academic position at Maynooth University, where he was Dean of the Science Faculty from 1997-2000.

He was appointed to a Personal Chair at TCD in 2001 and was Head of the School of Biochemistry and Immunology from 2008-2011. He is currently Leader of The Immunology, Inflammation and Infection research Theme at Trinity and co-leads the COVID-19 research Hub funded by SFI with additional co-funding from Allied Irish Bank through the Trinity Foundation.

He has won continuous Principal and individual Research grants from SFI since its foundation in 2001 and was lead PI on a SFI strategic research Cluster and two Strategic Research Partnerships with Industry. He has co-founded 3 Biotech start-up companies, Opsona Therapeutics, TriMod Therapeutics, and Parvalis Tx.

Kingston heads an active research team focusing on T cells in infection and autoimmunity and has published over 300 peer-reviewed papers and book chapters that have been cited over 31,000 times (h-index: 96). He is an editorial board member of several Immunology journals and was section Editor of the Journal of Immunology for 4 years. He is a member of a number of international scientific advisory panels on Immunotherapeutics and vaccines, including two at the World Health Organization and is a member of the ERC advanced grant panel on Infection and Immunity.

Commenting on receiving the Award Professor Kingston Mills stated: "I am absolutely delighted to receive this prestigious award from Science Foundation Ireland (SFI). I have been committed to the fascinating field of Immunology for nearly 40 years, but my research achievements would not have been possible without the financial support from SFI, the commitment and dedication of my research team and the support of colleagues, especially those at Trinity College Dublin."

SFI Early Career Researcher of the Year 2020

Recognises outstanding early career research talent and in recognition of the high calibre of nominations in 2020, there are two individual recipients of the Early Career Researcher of the Year Award:

Recipient: Dr Matthew Campbell, Neurovascular Genetics laboratory, Trinity College Dublin

Dr Matthew Campbell graduated from University College Dublin (UCD) in 2006 with a PhD in Biochemistry followed by post-doctoral research in TCD in Human Molecular Genetics (2006-2012). He established the Neurovascular Genetics unit in the Smurfit Institute of Genetics at TCD in 2013.

Matthew is an international leader in the field of neurovascular barrier biology. He has published and continues to publish in the world's leading biomedical journals including Nature Medicine (2012, 2014), Science Translational Medicine (2014) and Nature Neuroscience (2017). He has made seminal contributions to our understanding of the role of the endothelial tight junction complexes in both health and diseased states and his lab has active projects exploring the role of the inner retinal vasculature in a range of ophthalmological conditions.

Matthew has received numerous awards for his research including the SFI President of Ireland Young Researcher Award (2013), the ARVO/Genentech Award (2014) in recognition of his research in Age related Macular Degeneration (AMD), the Irish Research Council (IRC) laureate award (2018) and more recently the European Research Council (ERC) consolidator award (2020). He has raised over €5.7million in research funding and his work has led to the development of multiple intellectual property portfolios, some of which have been licensed to TCD based campus companies and multinational companies.

Recipient: Dr Lorna Lopez, Lecturer and Assistant Professor, Department of Biology, National University of Ireland Maynooth

Dr Lorna Lopez is a Lecturer and Assistant Professor in Maynooth University. Lorna graduated from Trinity College Dublin with a BA (Genetics) Natural Sciences in 2002, and The University of Edinburgh with a PhD (Psychiatric Genetics) in 2008. She leads human health research on discovering the genomic basis of neurodevelopmental disorders and her research expertise ranges from genomic to molecular and proteomic approaches in family and population-based studies, and always with a focus on understanding the genetic basis of mental illness and other brain- and medical-related traits. She is also a recent recipient of a prestigious ERC Starting Investigator Award.

SFI Industry Partnership Award 2020

The SFI Industry Partnership Award celebrates a collaboration between an academic research group and industry.

Recipient: Professor Fergal O'Brien, RCSI University of Medicine and Health Sciences, AMBER SFI Research Centre and Integra LifeSciences

Fergal O'Brien is a Professor of Bioengineering & Regenerative Medicine, Director for Research & Innovation, and Head of Tissue Engineering Research Group in RCSI. He has brought his extensive experience to bear in leading this longstanding SFI AMBER partnership in collaboration with Integra LifeSciences. It provides an excellent example of how partnerships between academia and industry can lead to a highly productive research programme with key commercialisation outcomes. Integra's longstanding engagement with RCSI began in 2005 as a collaborator on a SFI President of Ireland Young Researcher Award received by Fergal. Integra supplied his group with type-1 collagen which has subsequently formed the basis of over 60 high impact publications with more than 40 PhD students and postdoctoral researchers benefitting from the partnership - developing and characterizing biomaterials for a myriad of applications. An engagement in the area of peripheral nerve repair began in 2015 with Integra fully funding an exploratory study coordinated through the SFI Centre for Advanced Materials and Bioengineering Research (AMBER) focused on the development of a new regenerative biomaterial. Since 2017, the collaboration has grown to a > €1million AMBER co-funded spoke project led by Prof Fergal O'Brien (RCSI) and Prof Conor Buckley (TCD) as PIs. This SFI AMBER project has successfully developed two unique peripheral nerve repair technologies, both of which have proven highly effective in repairing damaged nerves in pre-clinical trials. These technologies have been protected by three patent filings and transferred to the company under appropriate commercialisation agreements. The AMBER researchers and business development team, supported by the Innovation Team in RCSI and Technology Transfer Office at TCD has worked to rapidly accelerate the development and translation of these biomaterials, helping Integra remain at the cutting edge of nerve repair treatments for the benefit of patients and society.

SFI Best International Engagement Award 2020

This award recognises the accomplishments of a researcher/group specifically in the context of their international activities.

Recipient: Professor Brian O'Gallachoir, Chair of Energy Engineering, University College Cork, Director of MaREI, SFI Centre for Energy, Climate and Marine.

Brian Ó Gallachóir is Professor of Energy Engineering in University College Cork (UCC) and Director of MaREI, the SFI centre for energy, climate and marine. As Centre Director, he oversaw MaREI successfully securing €17m from EU programmes in the past three years. Brian has established new research capacity in Ireland in the area of integrated energy systems modelling. His research has underpinned significant policy developments including Ireland's Climate Action and Low Carbon Development Act 2015, Energy White Paper 2015, Government negotiations with the EU regarding 2030 climate targets, and recent changes to the public spending code in 2019. Brian's collaborative research with the International Renewable Energy Agency (IRENA) also underpinned the EU decision in 2018 to increase its target share of energy from renewable resources by 2030 from 27% to 32%. Brian is elected Chair of the International Energy Agency - Energy Technology Systems Analysis Programme (IEA-ETSAP) since 2011. He has significantly consolidated cross-border research by co-establishing the All-Island Climate and Biodiversity Network and by leading the US-Ireland CREDENCE project on decentralisation and electrification of energy systems. He has showcased this research to the US Department of Energy and US State Department at SFI St. Patricks Day events. Brian expanded MaREI relationships with University College London and Loughborough University to jointly lead the Energy Resilience in the Built Environment Centre for Doctoral Training. He provides expert advice to the International Energy Agency and presented at UN Climate conference (COP 21) in Paris and COP 23 in Bonn.

SFI Entrepreneurship Award 2020

The SFI Entrepreneurship Award celebrates an entrepreneurial achievement of researchers. This year there are joint recipients.

Recipient: Professor Fergal Mc Caffery, Department of Computing and Mathematics, Dundalk Institute of Technology, Director of the Regulated Software Research Centre

Fergal Mc Caffery is founder and director of the Regulated Software Research Centre, and a Professor of Computing Science in Dundalk Institute of Technology (DkIT). He is the Medical Device Software Engineering competency area leader in Lero and is a co-founder of Nova Leah (a spin out company from the Regulated Software Research Centre). Over the past few years, he has taken a part time career break to work with Nova Leah and also as Chief Scientific Officer for STATSports. He has been awarded over €16 million in research funding through highly competitive national and European funding calls to research the area of medical device software, including SFI awards of Stokes, Principal Investigator and a Lero Co-PI.

He has published over 200 peer-reviewed conference and journal papers and is on the editorial board/programme committee for a number of leading software engineering conferences and journals. Fergal has won numerous awards including the DkIT Established Researcher of the Year Award in 2017; the Lero Prize for Innovation and Entrepreneurship in 2019. He was a finalist for the Irish Software Association/IBEC Outstanding Academic of the year Award in 2015 & 2019. He is internationally recognised for his contributions to medical device software engineering. Fergal's research team have led the development of 5 International Standards/Technical reports for medical device software. He was the Leader for the development of IEC/TR 80002-3 for medical device software processes in collaboration

with the ISO/IEC 62304 development team. He also was appointed to the Health Products Regulatory Authority Advisory Committee for Medical Devices.

Recipient: Dr Anita Finnegan, CEO and Founder of Nova Leah

Dr Anita Finnegan is the Founder and CEO of Nova Leah, a world leader in the provision of cybersecurity risk management solutions for connected medical devices. She is an internationally recognised expert in the field of medical device cybersecurity risk management and is an active member of a number of International Standards Communities. Her PhD research focused on medical device cybersecurity through the use of security assurance cases. In addition to many peer reviewed journals and a number of book chapters, Anita authored, and was the international project leader for two technical reports (IEC/TR 80001-2-8 and IEC/TR 80001-2-9).

In 2016, Anita spun-out Nova Leah from the research work she conducted in The Regulated Software Research Centre at Dundalk Institute of Technology. Through her work with Nova Leah, she has won multiple awards for innovation, security and technological impact. Nova Leah was named Emerging Company of Year at the 2019 Technology Ireland Awards in association with Ibec, KTI Spinout Company of the Year 2019 and was runner-up by DIGITALEUROPE for the European 'Future Unicorn Award' in 2020. Most recently, she was named as a finalist in the EU Women Innovator Prize. Nova Leah was featured in WIRED Magazine as one of 'Europe's 100 Hottest Startups' and Anita was listed in ‘50 Female Entrepreneurs Everyone Should Know’ by Crunchbase. As a global cybersecurity authority, Anita acts as an advisor to a number of key decision/policy maker groups.

SFI Outstanding Contribution to STEM Communication Award 2020

This award recognises an outstanding contribution to the popularisation of science and recognises an individual who raises public awareness of the value of science to human progress.

Recipient: Professor Luke O’Neill, School of Biochemistry and Immunology, Trinity College Dublin

Professor Luke O’Neill is a world expert on innate immunity and inflammation. He is listed by Thompson Reuters/ Clarivates in the top 1% of immunologists in the world, based on citations per paper. He is co-founder of Sitryx, which aims to develop new medicines for inflammatory diseases. Another company he co-founded, Inflazome was recently acquired by Roche. Both companies were built from his SFI-funded research programmes.

Luke has won numerous awards for his research including the Royal Dublin Society / Irish Times Boyle Medal for scientific excellence, the Royal Irish Academy Gold Medal for Life Sciences, The Society for Leukocyte Biology (SLB) Dolph O. Adams award, the European Federation of Immunology Societies Medal, the Milstein Award of the International Cytokine and Interferon Society, the Lansteiner Award from the Austrian Academy of Sciences and the Marsh Award from the Feinstein Institutes of Health, New York. He is a member of the Royal Irish Academy, EMBO (European Molecular Biology Organisation) and a Fellow of the Royal Society.

Luke also has a passion for communicating science to the public. He has a weekly radio slot on the Pat Kenny show on Newstalk. In 2018 he published with Gill the best-selling ‘Humanology: a scientist’s guide to our amazing existence’ and in 2019 Gill published ‘The Great Irish Science Book’, a Science book for 10-12 year olds. His latest book, also published by Gill is called ‘Never Mind the B#ll*cks Here’s the Science’

SFI Mentorship Award 2020

This award recognises outstanding mentorship provided by a researcher funded by Science Foundation Ireland. This year we have two awardees.

Recipient: Professor Pat Guiry, Full Professor of Synthetic Organic Chemistry, Director of the Centre for Synthesis and Chemical Biology, School of Chemistry, University College Dublin

Pat Guiry was born in County Tipperary and studied at UCD, BSc 1986 and PhD 1990, with Professor Dervilla Donnelly as his PhD supervisor. During his PhD he was awarded a French Government Scholarship to work with Dr Jean-Pierre Finet (Marseille) and a Fulbright Scholarship to work with Nobel laureate, Professor Sir Derek Barton (Texas A&M). He carried out postdoctoral research with Professor John Brown FRS (Oxford University) and held Tutorial Fellowships at Wadham College and St. Hugh's College Oxford (1990-93). He joined UCD in 1993 and is the Director of the Centre for Synthesis and Chemical Biology (2002-present) and Full Professor of Synthetic Organic Chemistry since 2006. His research interests include the design, synthesis and application of novel ligands in asymmetric catalysis, natural product synthesis and medicinal chemistry. He has supervised 55 PhD and 3 MSc students to graduation to date and has worked with over 20 postdoctoral researchers. His group has published over 140 papers, review articles, book chapters and patents with over 7,000 citations. Pat was elected a Member of the Royal Irish Academy in 2013, is an elected member of the UCD Governing Authority and of the Senate of the National University of Ireland. He was the Science Secretary of the Royal Irish Academy 2016-2020 and is the Vice-President of the Institute of Chemistry in Ireland 2019-present. Pat was also selected to represent Ireland in 2020 in the Austria Cup (ITF World Team Tennis Competition) in Florida which was unfortunately cancelled due to Covid19.

Recipient: Professor Patricia Maguire, Professor of Biomedical Science, UCD College of Science and Director of the UCD Institute for Discovery

Professor Patricia Maguire is an interdisciplinary scientist interested in the intersection of Artificial Intelligence with Biomedical Science. She is professor in the UCD School of Biomolecular & Biomedical Science and Principal Investigator at the UCD Conway Institute, where she directs the translational ConwaySPHERE group together with Prof Fionnuala Ní Áinle and Dr Barry Kevane. Together they use unique tools to diagnose and understand a host of inflammatory-based diseases, including Early-onset Preeclampsia, Multiple Sclerosis, Venous ThromboEmbolism and COVID-19. She has demonstrated strong & outstanding leadership in research supervision leading a vibrant and successful research team in terms of both quality & scale, with 12 graduate research students to date having completed their theses under her direction.

Patricia is also currently Director of the UCD Institute for Discovery, which facilitates interdisciplinary connections in emerging areas of interdisciplinary research through for example its Visiting Professor or Rising Star Programmes.

SFI Research Image of the Year Award 2020

The Research Image competition celebrates images captured by Science Foundation Ireland funded

researchers during the course of their research. This research was undertaken as part of a project funded under the Covid-19 Rapid Response Research & Innovation Programme.

Recipient: Dr Niall Smith, Head of Research at Cork Institute of Technology / Head of Blackrock Castle Observatory

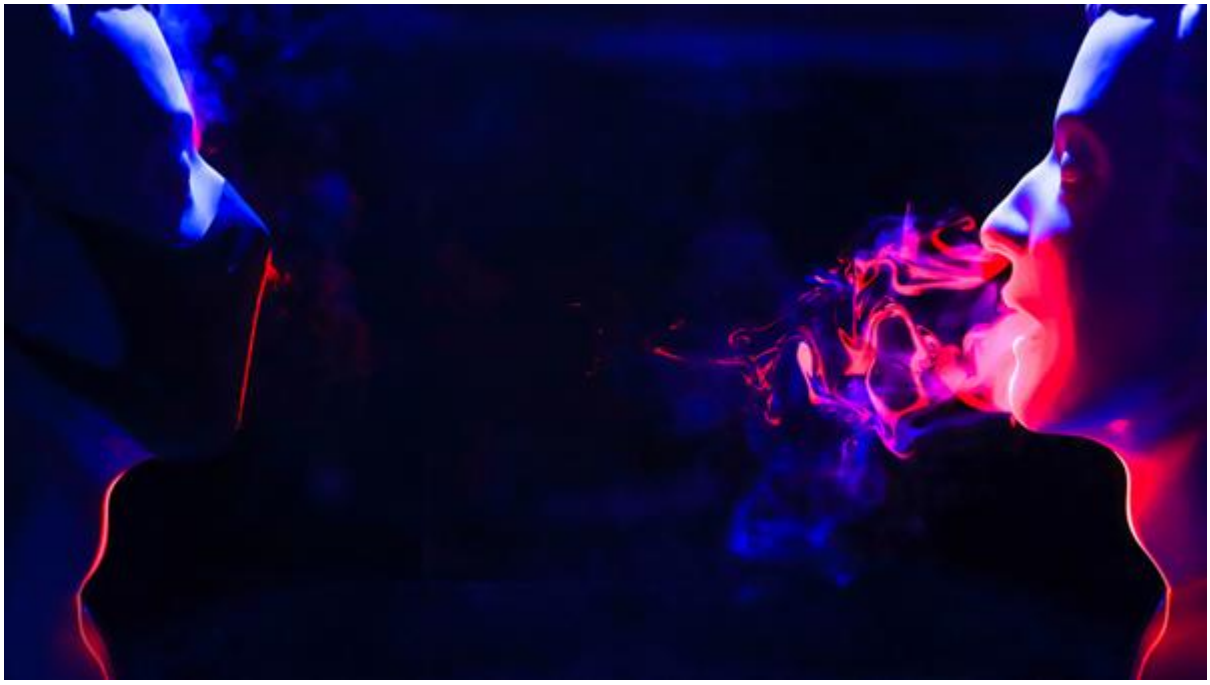

Image title: Talking Heads

Description: Laser-based imaging shows the stark contrast between a masked and unmasked medical dummy head arranged as if in conversation. Particles emitted from the nose and mouth are clearly evident from the unmasked head in both the volume and initial projected distance. Particles from the masked dummy head show significantly reduced forward emissions, but do reveal some vertical leakage, emphasising the importance of properly fitted masks. The image underscores in a simple visual way why mask wearing in social interactions is a key strategy for suppressing SARS-Cov-2.

Image credited to Dr Steven Darby (CAPPA Research Centre), Dr. Krishnakumar Chullipalliyalil (CAPPA Research Centre), Danielle Wilcox (Blackrock Castle Observatory)

Minister Harris announces 71 research grants through the SFI Frontiers for the Future Programme valued at €53 million

The research supported will impact areas such as spinal cord injury, novel materials, climate change, biodiversity in food production and waste, smart manufacturing, social connectivity, computer graphics, horse breeding, pharmaceutical manufacturing, and information security.

2 November 2020: Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD, has today announced 71 grants valued at €53 million to support frontiers research across 12 Higher Education Institutions through Science Foundation Ireland.

Commenting on the programme, Minister Harris said: "Congratulations to all the researchers who have received funding today as part of the SFI Frontiers for the Future Programme. I am delighted to support this programme which funds individual-led research, with an emphasis on areas of high-risk, high-reward, which will help us build a better future for Ireland through discovery, innovation, and impact."

"I am pleased to see the successful outcome of the new gender initiative that sees 45% of the research grants announced today led by female researchers. The funding will support researchers who are already carrying out excellent work in Ireland, as well as those in the early stages of their research careers who hold incredible potential. It is through investment like this that Ireland will become an innovation leader and provide solutions and opportunities for our society and economy."

Professor Mark Ferguson, Director General of SFI and Chief Scientific Adviser to the Government of Ireland said: "This was a highly competitive process and I'm delighted that we are able to fund 71 new research grants through the SFI Frontiers for the Future programme. These are highly skilled, talented, and dedicated researchers and it is crucial that we invest in their excellent ideas and research, to maintain and build on Ireland's global standing in research, innovation, and discovery. I would like to thank the Higher Education Institutions for their support in delivering this new programme."

Working across 12 Higher Education Institutes, 231 research positions will be funded including 95 Postdoctoral scientists, 101 PhD students and 35 Research Assistants/others across a variety of different areas.

The programme also sought to provide opportunities to address gender imbalance in line with SFI's Gender Strategy, 45% of the research grants supported will be led by female researchers.

The programme was run in collaboration with the Geological Survey Ireland (GSI) and the Environmental Protection Agency (EPA). 38 industrial collaborators are engaging in the research programmes.

The **SFI Frontiers for the Future** programme comprises two funding streams:

Projects – 45 high-risk, high-reward research projects will receive €25 million to facilitate highly innovative and novel approaches to research.

Awards - 26 larger scale innovative, collaborative excellent research programmes that have the potential to deliver economic and societal impact will receive €28m in funding.

Examples of SFI Frontiers for the Future Awards

- A project led by Professor Tia Keyes at Dublin City University will develop probes that highlight specific stretches of DNA inside living cells, which will have applications in assessing cell damage during screening of new drug candidates.
- Dr Aideen Ryan at NUI Galway will seek to understand how the sugars that naturally coat cancer cells affect how the cancer cells grow and interact with their surroundings. If successful, the project could point to a new way to treat cancer.
- Professor Luke O'Neill at Trinity College Dublin has discovered an off-switch for inflammation in the body called itaconate. This project will look at itaconate more deeply, with a view to developing potential new treatments for inflammatory diseases, a class that includes rheumatoid arthritis, Alzheimer's Disease and Crohn's disease.
- An award led by Professor Vincent O'Flaherty at NUI Galway will develop new additives for animal feed and manure, to reduce agricultural greenhouse-gas emissions and get more value from manure.
- Prof Emma Sokell and Prof Fergal O'Reilly of University College Dublin will develop a laboratory scale x-ray source that will be sufficiently low cost and simple to deploy that it will make x-ray technology, currently only available in large scale research facilities outside of Ireland, available to a broad range of industrial and scientific applications.
- Dr Olive Lennon at University College Dublin is exploring how to improve robotic devices designed to help people re-learn how to stand and walk after a stroke, by sensing when a person intends to walk.
- Professor Leonie Young and Prof Arnold Hill at the Royal College of Surgeons will look at how potentially reversible genetic changes and activities are involved in the spread of breast cancer to the brain, with a view to informing new treatments and better outcomes for patients.
- Personal Voice Assistants (PVAs) such as Amazon Echo, Siri or Google Home are commonplace. Professor Utz Roedig at University College Cork will lead a project to develop methods that let us use PVAs securely, and in a way that respects our privacy concerns.
- Bats have mastered the art of ageing healthily. Professor Emma Teeling at University College Dublin is leading the LongHealth project looking at 'anti-ageing' molecular mechanisms in wild bats. The research will identify bat anti-ageing processes that could protect human health as we age.

Examples of SFI Frontiers for the Future Projects

Exercise builds your bones, but how? Professor David Hoey at Trinity College Dublin will lead research on how bones respond to exercise by releasing tiny vesicles or sacs of material that encourage the body to build more bone. They hope to explore these vesicles for new therapies for osteoporosis and bone defects.

At Teagasc, Dr Olivia McAuliffe, aims to transform waste products from food production to valuable products using bacteria in a process called fermentation.

Dr Sarah Hudson, at University of Limerick, aims to design innovative systems to convert novel antibiotic power into stable therapies for treatment of bacterial infections.

Dr Shane Donohue, at University College Dublin, with support from GSI and EPA, aims to develop way of monitoring the impact of floods and extreme weather on the condition of man-made slopes (e.g. embankments, dams), so that repairs can be targeted, and failures avoided.

Professor Ronan Sulpice at NUI Galway will carry out research on how sea lettuce could be grown in coastal regions to 'depollute' wastewater and estuaries.

At University College Cork, Professor Michael Prentice will explore how to help bacteria build 'microcompartments' to be used as natural chemical factories and storage in anti-cancer treatments.

People with dementia are seldom involved in the design of technology to support their care. Dr Dympna O'Sullivan at TU Dublin and Dr Julie Doyle at Dundalk Institute of Technology are working with people with dementia to co-design a computerized toolkit that enables self-care for people with dementia, to help them remain healthy and independent at home for longer.

At Maynooth University, Dr Arman Farhang is developing new data transmission and receiving technologies to improve links for applications such as vehicles in future wireless networks, contributing towards a safer, smarter and highly connected society.

The research will be undertaken in the following Higher Education Institutions - Dublin City University (DCU); Dundalk Institute of Technology (DkIT); Maynooth University; National University of Ireland, Galway (NUIG); RCSI, University of Medicine and Health Sciences; Teagasc; Technological University Dublin (TU Dublin); Trinity College Dublin (TCD); Tyndall National Institute (TNI); University College Cork (UCC); University College Dublin (UCD) and University of Limerick (UL).

Key data

View full list of Projects and Awards

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APC Microbiome Ireland partners with Kraft Heinz in developing novel cultures for food use.

Professor Paul Ross, Director of APC Microbiome Ireland and leader of the new research collaboration

27 October 2020: APC Microbiome Ireland and the Kraft Heinz Company (KHC) have announced a new collaboration aimed at developing new natural cultures for food fermentations. Fermented foods are created using controlled microbial growth, facilitated by microorganisms or microbial communities, usually in the form of starter cultures, adjuncts or probiotics. The fermentation process helps prolong shelf-life, improve food safety and quality and increase the palatability of foods. It may also enhance the nutritional and functional properties of foods due to the transformation of substrates to bioactive end-products. This collaboration plans to focus on a variety of these bioactive end-products and their applications in food systems.

APC Microbiome Ireland is a leading Science Foundation Ireland Research Centre based in University College Cork and Teagasc Food Research Centre and is the largest and oldest microbiome research institute in the world. APC Microbiome Ireland has developed a large programme on fermentation end products, including anti-microbials, over the past 20 years. Some of these can substitute for chemical preservatives in food or antibiotics used in agriculture or medical applications. These include Thuricin CD, Formicin (previously featured on an Irish stamp), Lacticin, and Nisin J, a new antimicrobial produced from staphylococcal bacteria found on human skin. In 2018, the APC was ranked first in the world in the area of antimicrobials by CWTS in Leiden as measured by publication citations.

KHC is the 5th largest food and beverage company in the world employing over 40,000 people around the globe with net sales of approximately $25bn in more than 200 countries. The APC-KHC collaborative project will initially run for 12 months and employ a team of 4 researchers led by APC Principal Investigators Professors Paul Ross, Colin Hill and Catherine Stanton.

"We are very excited to partner with Kraft Heinz for this research collaboration" said **Professor Paul Ross, Director of APC Microbiome Ireland** and leader of the new research collaboration. "Research on fermented foods and culture metabolites forms part of the APC's overall strategy to manipulate the microbiome of food for quality, safety and human health associated improvement. APC's research feeds into industries such as human health, animal welfare, nutrition, infectious disease, infant formula and sustainability. APC is currently working on research projects with more than 30 companies, from multinational food and nutrition corporations to indigenous SMEs."

Commenting on the collaboration between Kraft Heinz and APC Microbiome Ireland, **Hennie Myburgh, Head of R&D, Global Growth & Technology at Kraft Heinz** said, "Partnering with APC Microbiome Ireland aligns with our new global technology strategy. As a company with a long history in fermented products, we are very excited by this collaboration with APC Microbiome Ireland as this partnership will further strengthen our research platforms, enabling the next generation of fermented products and ingredients. The technologies that will be developed together will align with the growing consumer demand for cleaner products. As a consumer-obsessed company, the output of this partnership will allow us to continue delivering novel, clean-label innovations."

Prof Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, said "Science Foundation Ireland strongly welcomes this collaboration between Kraft Heinz and APC Microbiome Ireland SFI Research Centre. APC Microbiome Ireland is a global leader in microbiome science and antimicrobials, and SFI Research Centres such as APC Microbiome Ireland are making innovative scientific advances, creating a pool of talented researchers carrying out excellent research that has economic and societal impact and relevance."

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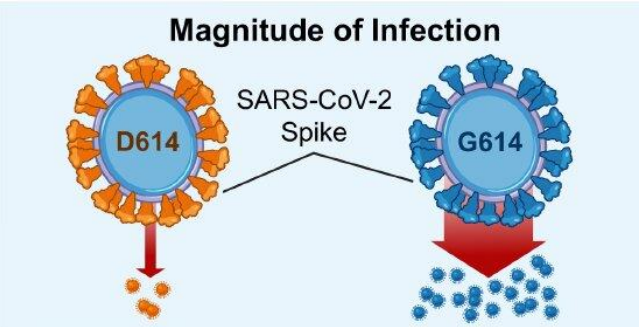
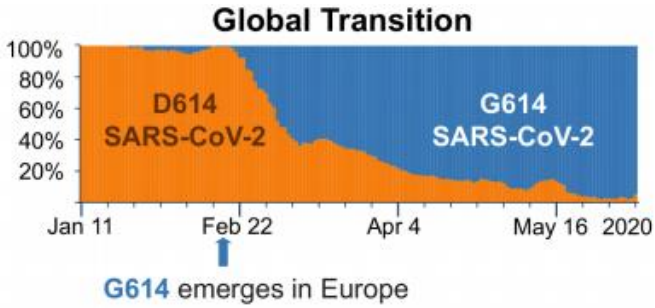
Website: http://www.gpescientific.ie

Company Information:

GPE Scientific Ltd was established in 1962 and is a leading distributor and manufacturer of laboratory equipment, glass blowing products and specialised glass components for the industrial, laboratory and research markets. There are many reasons to choose GPE Scientific above our competitors; we pride ourselves in stocking thousands of products from leading suppliers providing you with the best selection of laboratory equipment on the market. This includes being the exclusive distributors for Chemglass Life Sciences and Chemical Reactors, Norell NMR Tubes and Accessories and the portable Nanalysis NMReady Benchtop Spectrometer.

SARS CoV-2 Virus Updates and Developments





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The six strains of SARS-CoV-2

4 August

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Image credit: United Nations.

How SARS-CoV-2 causes disease and death in covid-19

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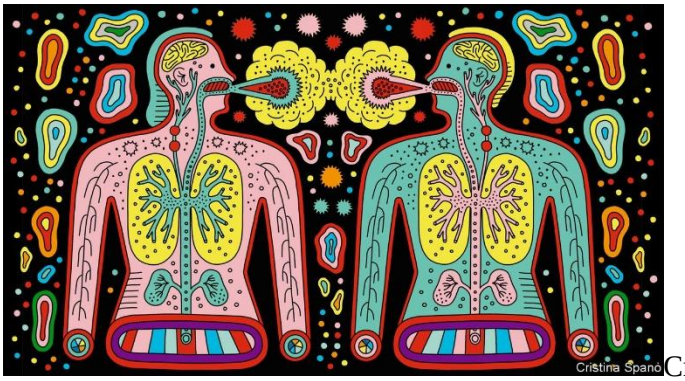

Cristina Spanco

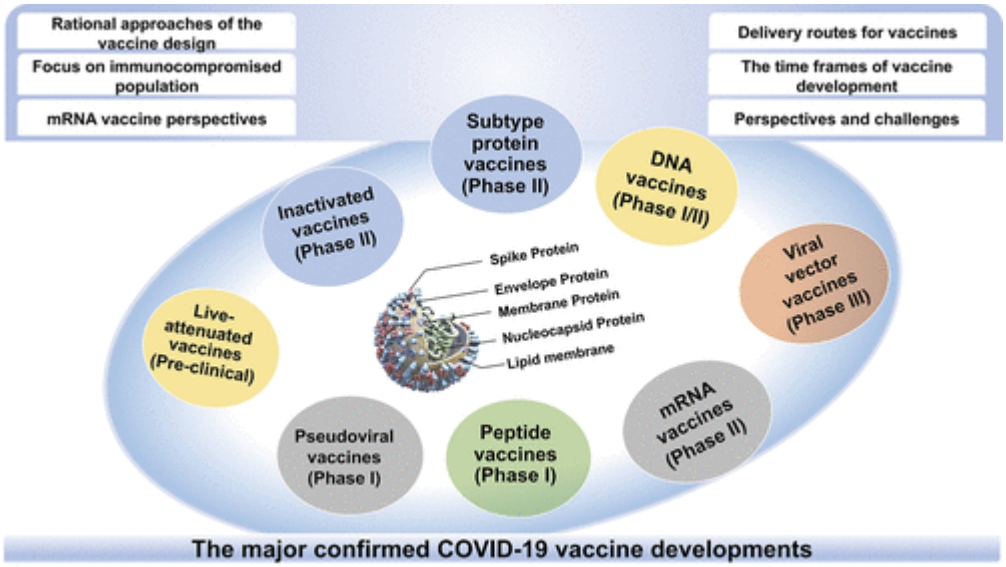

Illustration showing the various types of vaccine approaches currently under development for COVID-19 disease.
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Face Shields and Masks With Valves Don't Effectively Block Droplets, Experiment Shows

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Evolution of the COVID-19 vaccine development landscape

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Nigerian scientists have identified seven lineages of SARS-CoV-2: why it matters

6 September

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Medical research is broken: here's how we can fix it

7 September
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The coronavirus is mutating — does it matter?

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AstraZeneca Pauses Phase III COVID-19 Vaccine Trial, Citing "Potentially Unexplained Illness"

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The underdog coronavirus vaccines that the world will need if front runners stumble

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A Big Step Closer to a Universal Antibody Test for COVID-19

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Lab Tests Show Minibinder Proteins Are as Effective as Antibodies at Blocking SARS-CoV-2

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COVID-19 May Devastate Lungs by Prompting Excessive Release of Sticky DNA Webs

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COVAXX looks beyond the Spike protein as it combats SARS-CoV-2 by targeting multiple epitopes

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Researchers highlight ‘questionable’ data in Russian coronavirus vaccine trial results

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Sweden sticks with 'sustainable' strategy
Anders Tegnell and the Swedish Covid 19 Experiment
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By FT Visual & Data Journalism team

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WARMING UP TO FROZEN DISTRIBUTION

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Patricia Fitzpatrick Full Professor of Epidemiology & Biomedical Statistics, University College Dublin
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Digression: Supplementary material to Red above:

"Researchers at The Scripps Research Institute have found that the strains spreading so quickly in Europe and the U.S. have a mutated S "spike" protein that makes it about 10 times more infectious than the strain that originally was identified in Asia. The research was published online on bioRxiv and has yet to be peer-reviewed.

The mutation does not appear to make the virus any more deadly than it already is, but it does appear to make it significantly more contagious. The original strain in China is dubbed D614, while the one found in the UK, Italy and North America by May is dubbed G614.

The S "spike" protein is found on the surface of the virus and is used to gain entry to cells, something like a key in a lock. But the original strain, D614, often broke off when it was attempting to bind to ACE2 receptors in people's airways. The mutated version, G614, is less likely to break off, allowing it to more easily make its way into cells." Read this article dated |June 30th at:

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IDA IRELAND'S COVID-19 RESPONSE PLAN

IDA Ireland is firmly committed to supporting our client companies during this turbulent period. For queries on how we can assist, please do not hesitate to contact your IDA Ireland account manager. Alternatively, contact us directly via email **idaireland@ida.ie** or via phone +353 1 603 4000 and we will put you in touch with the right person who can help.

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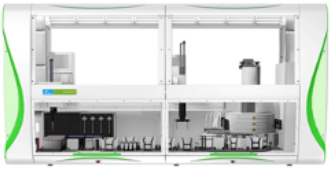

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ALS Loughrea celebrates 40 years of business

02 OCT 2020

ALS Loughrea (formerly OMAC) is proud to announce its 40th year of providing geochemical analyses of samples generated by the mineral exploration and mining industries in Loughrea, Co Galway. ALS is a major employer in Loughrea with about 200 employees and also has life sciences laboratories in Ireland including Portadown, Co Armagh; Little Island, Co Cork; Portlaoise, Co Laois; and Clonmel, Co Tipperary.

The history of the laboratory can be traced back to 1957 when Pat Hughes began a five-year exploration programme in Ireland. By 1959, Tara Exploration and Irish Base Metals had active exploration projects in the Galway and Clare regions. Newly developed mineral exploration techniques such as soil geochemistry and geophysical techniques were introduced into Ireland by Irish Base Metals.
The lab was originally located in the old Loughrea boy's school on Piggot Street which was also the office of Irish Base Metals. The lab was managed by Jackie McHugh in the latter part of the 1970s with consultancy input from Michael O'Neill, the chief chemist at Tynagh.

The lab was taken over by O'Neill-McHugh Laboratories, with OMAC subsequently being officially founded on 7 July 1980. Equipment was updated and the client base expanded to include clients in Europe and the companies in the Northgate group.
In the mid 1980s, the old Hohner Harmonica facility at Athenry Road was acquired, leading to a substantial increase in capacity. Further services were added and client base expanded to include Africa and Scandinavia.

Labs in Ghana and Tanzania

By this stage, Finbarr O'Shea had joined as a director having directed the business affairs of the company from the start. Satellite labs were set up in Ghana and Tanzania to assist our clients in those areas.

At that time there were four other competitor laboratories based in the UK. Despite this competition, OMAC built a first-class reputation and became the preferred laboratory for several major mining companies for their work in Europe, Africa and the Middle East.

In 1999, competitor laboratories in Canada and Australia began to consolidate into three major groups, while the local UK laboratories ceased operations in the exploration field. Faced with stiff competition from this consolidation, OMAC joined Alex Stewart Assayers as its principal exploration laboratory. The worldwide network of laboratories and offices of the ASA Group gave ASA/OMAC greater exposure on the larger exploration stage.

Gaining accreditation

In 2007 the company achieved the significant milestone of gaining ISO:17025 accreditation and has successfully maintained it throughout the years.

OMAC joined Australian listed ALS in 2011 as its principal geochemical laboratory (Hub Lab) in Europe which serves Europe, North Africa and central Asia. ALS Loughrea now operates a state-of-the-art laboratory from a 3,000 sq metre premises on Dublin Road. It's the largest and best equipped such laboratory outside of the Americas and Australia and is well known for its very high quality.

Most of ALS's laboratory personnel are qualified in analytical chemistry and have substantial experience working with the company. Some staff also hold postgraduate degrees and are responsible for the management and quality control. The laboratory has room and the infrastructure required to allow installation of additional equipment on a 'plug and play' basis, facilitating an increase in analytical capacity at any given time.

The lab is fully equipped with the latest technologies available in the market to provide our valued customers with a wide range of analytical services such as:

- Core Cutting Service
- Sample Preparation (Pulverising rocks, sieving soil samples)
- Fire Assay (Melting down samples to test for precious metals)
- ICP-MS/ICP-OES/AAS (Technique used to determine ultra-low concentrations of elements)
- XRF (Used to test Iron Ore & Bauxite samples for their elemental composition)
- Carbon & Sulphur Analysis

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MSD and Takeda conclude acquisition of Dunboyne manufacturing site

21 SEP 2020

Dunboyne Co. Meath, Ireland, September 21, 2020 - MSD has concluded the acquisition of the Dunboyne manufacturing facility of Takeda Dunboyne Biologics Limited, a subsidiary of Takeda Pharmaceutical Company Limited (TSE:4502/NYSE:TAK) ("Takeda"), it was announced today. The state-of-the-art, flexible manufacturing facility, which will now be known as MSD Dunboyne Biologics, has been acquired as a going concern and the 200 employees associated with the site have concluded the consultation process and will now join MSD Ireland's existing 2,500 strong workforce. The divestment agreement was first announced in August 2020.

Thomas Wozniewski, Takeda Global Manufacturing & Supply Officer, commented: "We are pleased that we can announce the conclusion of the divestment of the Dunboyne Biologics plant. Both teams have done tremendous work in delivering the necessary work in a short time. With MSD, we believe we have found a company that is most suitable for the Dunboyne facility and we expect a great future for the Dunboyne team. We wish the departing Dunboyne team every success within the MSD network."

Sanat Chattopadhyay, Executive Vice President & President, Manufacturing Division, MSD, commented: "We are delighted to welcome the Dunboyne site to the MSD network and we look forward to working with the site leadership team and all of the existing employees to collectively realise the full potential of the facility. The Dunboyne facility will play an important role in MSD's existing manufacturing network, both in Ireland and globally, helping to make the medicines of tomorrow that will positively impact patients globally. The addition of this state-of-the-art facility will further expand our significant manufacturing presence across Ireland and will complement the work already underway across our five sites here. Our existing Irish sites play a pivotal role in manufacturing some of our company's most significant medicines and vaccines and I look forward to enhancing our operations even further with the addition of this new facility and its talented team to our network."

Commenting on the announcement **An Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar T.D,** said "This is good news for Meath. Today's decision gives staff security after what has been an undoubtedly stressful time and paves the way for future development of the site. I wish MSD the very best with the venture."

CEO of IDA Ireland, Martin Shanahan said: "I would like to congratulate both parties on the conclusion of the acquisition of the Dunboyne manufacturing facility. This acquisition allows MSD to further develop the site and secures the employment of the 200 staff onsite. MSD is a leading global pharmaceutical company with a long track record of successful operations in Ireland. The company is a substantial and valued employer whose commitment to Ireland is evidenced by the significant capital investment it has made over the years in its different sites here."

NOTES TO EDITORS:
In January 2020, Takeda announced its intention to divest of its Dunboyne Biologics facility. The divestment decision followed a strategic review of the Takeda global biologics manufacturing network, initiated following the acquisition of Shire, which identified that production capacity at Dunboyne would no longer be required. Takeda immediately commenced a divestment process to seek the most suitable

buyer for the facility, as a going concern. Following an intensive sales process over the past months, Takeda has reached agreement with MSD to acquire the facility.

About Takeda

Takeda Pharmaceutical Company Limited, a global, values-based, R&D-driven biopharmaceutical leader committed to bringing better health and a brighter future to patients by translating science into life-changing medicines, has been established in Ireland since 1997. Across Ireland, Takeda has commercial operations, corporate services and two manufacturing facilities in Bray and Grange Castle.
www.takeda.com/en-ie

About MSD

MSD (tradename of Merck & Co., Inc., Kenilworth, N.J., USA (NYSE: MRK), is one of Ireland's leading healthcare companies, currently employing over 2,500 people across its existing five sites. MSD's operations in Ireland play a significant role in the company's global network, exporting to more than 60 countries worldwide. For more than 125 years, MSD has been inventing for life, bringing forward medicines and vaccines for many of the world's most challenging diseases in pursuit of our mission to save and improve lives.
www.msd-ireland.com

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WuXi Biologics making Dundalk a world leader in biologics manufacturing

29 OCT 2020

The Dundalk WuXi facility under construction in 2019. Image: Ken Finegan/Newspics Photography

WuXi Biologics, mainland China's leading end-to-end biologics solutions provider, has chosen Dundalk for its first manufacturing facility outside its native country. This isn't the only milestone marked by the project as it is also WuXi Biologics' largest single investment outside of China.

At 48,000 sq metres in size, the new facility will be the world's largest single-use biologics manufacturing plant, involving a €325m investment. Headquartered in Wuxi in Jiangsu province with three manufacturing sites located in Wuxi, Shanghai and Suzhou, WuXi Biologics is the main player in China's biologics services market. The company also holds leading market positions globally and is quoted on the Hong Kong Stock Exchange.

The Dundalk facility will be a state-of-the-art 'factory of the future' built upon the novel approach WuXi Biologics has pioneered in the commercial biomanufacturing of biologics-based medicines. Biologics is at the forefront of a new wave of innovative diagnostics and therapies which are changing how diseases are prevented and treated, helping millions of people worldwide.

Next-gen manufacturing

They offer patients more and better healthcare choices. The pharmaceutical industry has traditionally manufactured synthesised small molecule drugs, while biotechnology has provided a new class of drug called biologics. Cells, not chemicals, are used in their manufacture.

WuXi Biologics will be implementing a next-generation manufacturing technology at its Dundalk facility. This technology utilises single-use bioreactors to manufacture biologics drug substances on a continuous round-the-clock basis with the ability to quickly switch product lines in response to customer requirements.

Speaking at the announcement of the investment early in 2018, Dr Ge Li, chair of WuXi Biologics, said: "We had been engaging IDA Ireland before finalising this exciting investment in this community. These ventures showcase how competitive Ireland is for global enterprise and investment, and weare grateful for all the support local agencies and the talented people here have provided for us."

Brendan McGrath, WuXi Biologics Ireland site head and VP for manufacturing, added: "Ireland is home to nine of the world's top 10 pharma firms and many of them are our customers.
"The country boasts the youngest population in Europe and the environment is very attractive for the biologics industry with the skilled workforce and being the only English-speaking country in the Eurozone."

Great location

He continued: "Ireland offers very good access to Europe and North America from a time zone point of view. Mainland China is seven hours ahead and the US is five hours behind so it's nice and central. The environment in Ireland is very conducive to doing business and the Government and IDA Ireland are always looking for ways to interface better with business and reduce red tape."

A key factor in securing the investment was the existence of an IDA owned site on the outskirts of Dundalk with planning permission already in place for a biotechnology campus. This was part of IDA Ireland's visionary strategy of preparing Dundalk for a major biologics investment of this nature.

"We were very lucky that way," McGrath said. "Having a site with some permissions already in place meant we could hit the ground quicker. If we had to look for our own site it would have taken 12 months or more."

Site works commenced in early 2019, followed by steelworks in the first half of 2019. Construction is well underway and is 70pc completed. Commercial production is expected to commence in November 2021.

WuXi Biologics will employ a total of 400 staff in Dundalk when it enters full production. Currently, WuXi has 170 full-time staff and more than 1,000 construction and sub-supply employed indirectly.

'Once-in-a-lifetime opportunity'

"A greenfield biologics campus presents a once-in-a-lifetime opportunity for great talent to join us to develop a full-scale integrated capability to produce of some of the world's most innovative biologics medicines," McGrath said.

"We are inviting experienced local and international talent to consider if the WuXi Biologics operations in Dundalk, or indeed in mainland China, might provide the exciting career opportunities and challenges they are seeking at the leading edge of biopharma innovation and production."

In November 2019, WuXi announced a $240m investment in a new, greenfield vaccine manufacturing facility adjacent to the WuXi Biologics facility in Dundalk, bringing 200 additional new jobs to the town over five years.

WuXi Vaccines is a joint venture between WuXi Biologics and Hile Bio-pharmaceutical. The company has entered into the strategic partnership with a global vaccine leader under which WuXi Vaccines will build a dedicated facility to supply a commercial product for the global market.

WuXi Vaccines plans to build an integrated vaccine manufacturing facility, including drug substance manufacturing, drug product manufacturing and quality control labs. Recruitment is already underway, and it currently employs 45 people. Phase 1 manufacturing of the drug product is expected to commence in 2024.

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Regeneron Announces 400 New Jobs in Limerick

27 August

Limerick, Ireland (August 27, 2020) -- Regeneron Pharmaceuticals, Inc., (NASDAQ: **REGN**) a leading, science-driven biopharmaceutical company, today announced that it will add more than 400 new jobs, bringing total headcount to over 1,400 at its Industrial Operations and Product Supply (IOPS) campus in the Limerick area.

The new jobs will support the production of Regeneron's existing life-changing medicines. The company is maximizing manufacturing capacity at its New York facility for REGN-COV2, Regeneron's investigational two-antibody combination being developed for the potential treatment and prevention of COVID-19 infection.

The creation of more than 400 new jobs is part of Regeneron's long-term commitment to Ireland and the Limerick community. Since 2014, Regeneron has invested over $1 billion to build the largest bulk biologics production facility in the country, with over 1,000 employees, more than 300 contingent workers and close to 500 construction personnel currently working on site. Recruitment is underway to hire full-time, high-end specialist jobs in commercial manufacturing, process sciences, quality assurance/control, supply chain and various support functions for scientists, chemists and technicians.

Dan Van Plew, Executive Vice President & General Manager of IOPS at Regeneron said, "As this pandemic hit, we needed to quickly change how we do things and where we make our products. In order to make space in our New York facilities to accommodate our COVID-19 efforts, we needed to ramp-up capacity here in Limerick. Despite ramping up commercial production sooner than planned, my team hasn't missed a beat. You can only perform like this if you have good people, and Ireland has lots of good people, so we are excited to be hiring 400 more."

Niall O'Leary, Vice President & Site Head, IOPS Limerick said, "Just six years ago, we hired our first employee in Limerick. Today, we have more than 1,000 full-time employees at our Limerick campus and with this latest announcement we are adding an additional 400 people to our world-class team. This demonstrates not only Regeneron's incredibly strong pipeline but our commitment to Ireland and the Mid-West region. I am very proud of what our team has achieved and continue to be impressed with the calibre of talent here."

An Taoiseach Micheál Martin said, "This significant jobs announcement by Regeneron is a further vote of confidence in the skills and talent of our workforce and provides a welcome boost to our economy. Ireland continues to resonate with leading global companies for investment. The government's mission over the coming months and years is to rebuild our society and economy in the post- COVID world. We need to get people back to work and to protect and create sustainable jobs. This announcement is an important and welcome step in that journey."

An Tánaiste and Minister for Enterprise, Trade and Employment Leo Varadkar said, "Since choosing Limerick as their home, Regeneron has gone from strength to strength. Today's announcement comes as a welcome boost for Ireland and the Mid-West at a very tough time. It's a big

vote of confidence in the future of the Irish economy. It will create an additional 400 well-paid jobs, bringing their total workforce here to 1,400. Ireland has the skills and talent to make it the perfect country for companies creating the jobs of the future."

Mary Buckley, Executive Director, IDA Ireland said, "The addition of 400 highly skilled roles by Regeneron at its Limerick campus is a huge boost for Ireland and the Mid-West region. The company has expanded rapidly since it first chose to locate in Limerick. This significant job announcement by Regeneron in a regional location is very welcome and points to Ireland's reputation as a global location of excellence for biopharmaceuticals. I wish the team continued success as they welcome 400 new colleagues to the site in the coming months."

Visit www.regeneron.ie to learn more and see a current list of job openings in Ireland.

About Regeneron Limerick
Regeneron's 64,000 square-metre, state-of-the-art Industrial Operations and Product Supply (IOPS) facility on approximately 20 hectares in the Raheen Business Park is the largest-scale bulk biologics production facility in Ireland. The facility became operational in 2015 and now employs more than 1,000 people.

IOPS is responsible for the production, packaging, labelling and supply of Regeneron medicines. IOPS manufactures a broad range of biopharmaceuticals for patients worldwide, including therapeutic proteins approved for marketing.

Recruitment is underway to bring on additional high-end specialist jobs in commercial manufacturing, process sciences, quality assurance/control and various support functions for scientists, chemists and technicians.

About Regeneron
Regeneron (NASDAQ: REGN) is a leading biotechnology company that invents life-transforming medicines for people with serious diseases. Founded and led for over 30 years by physician-scientists, our unique ability to repeatedly and consistently translate science into medicine has led to seven FDA-approved treatments and numerous product candidates in development, all of which were homegrown in our laboratories. Our medicines and pipeline are designed to help patients with eye diseases, allergic and inflammatory diseases, cancer, cardiovascular and metabolic diseases, pain, infectious diseases and rare diseases.

Regeneron is accelerating and improving the traditional drug development process through our proprietary *VelociSuite*® technologies, such as *VelocImmune*® which uses unique genetically-humanized mice to produce optimized fully-human antibodies and bispecific antibodies, and through ambitious research initiatives such as the Regeneron Genetics Center®, which is conducting one of the largest genetics sequencing efforts in the world. For additional information about the company, please visit www.regeneron.com or follow @Regeneron on Twitter.

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https://www.idaireland.com

IDA Ireland Welcome Statement - MSD acquisition of Takeda's Dunboyne Biologics facility

July 7th 2020 IDA Ireland welcomes the announcement that MSD has acquired the Takeda biologics facility in Dunboyne, Co. Meath.

IDA Ireland assisted Takeda and its representatives in marketing the Dunboyne facility since the company announced its intention to sell in January of this year.

Merck & Co., Inc. (MSD) is a global pharmaceutical company with five different facilities in Ireland; in Bandon, Cork, in Carlow, Ballydine in Tipperary, Swords & Leopardstown Shared Services.

CEO of IDA Ireland, Martin Shanahan *said: "This is very welcome news indeed. MSD is a leading global pharmaceutical company with a long track record of successful operations in Ireland. The company is a substantial and valued employer whose commitment to Ireland is evidenced by the significant capital investment it has made over the years in its different sites here. This acquisition will allow MSD to further develop the site and secure the employment of Takeda's existing staff. It is an excellent outcome."*

https://www.idaireland.com

IDA Ireland welcomes MeiraGTx announcement of major expansion of Shannon facility

SHANNON, IRELAND August 6, 2020 – IDA Ireland welcomes the announcement by MeiraGTx Holdings plc (Nasdaq: MGTX), a vertically integrated, clinical-stage gene therapy company, of a multi-million euro expansion in its Shannon facility.

MeiraGTx has selected Shannon as the site of its second current good manufacturing practices, or cGMP viral vector manufacturing facility and cGMP plasmid production facility. These facilities will be designed for the manufacture of commercial-grade gene therapies in a fully integrated manner supported by MeiraGTx's global quality assurance organisation.

MeiraGTx expects the Irish facilities, to provide additional flexibility as well as further large-scale capacity for clinical and commercial supply of its gene therapy product candidates from pre-clinical stages through clinical trials and potential commercialisation. This project is supported by the Irish Government through IDA Ireland.

The plasmid production facility is expected to be operational by year-end 2020, while the viral vector manufacturing facility is expected to be operational by year-end 2021.

The facility at Shannon Freezone Business Park, Co. Clare comprising 8,300^{m2} in two separate buildings will be designed to meet global regulatory requirements, including the cGMP, required by the U.S. Food and Drug Administration (FDA). The unit at Shannon will be used for the manufacture of MeiraGTx viral vectors for gene therapies and the plasmid DNA that is one of the starting materials in viral vector production.

Executive Director of IDA Ireland Mary Buckley *said "Today's announcement by MeiraGTx is closely aligned with IDA Ireland's strategy for the Life Sciences sector and indeed in winning jobs and investment in regional locations. This investment is an emergent area within Biopharma, and strongly endorses the Midwest's and Ireland's reputation as a key location for the next generation of biopharmaceutical manufacture."*

The MeiraGTx project in Shannon will create new highly skilled biopharma jobs in the region with a team to include bio-process scientists, engineers and technicians for manufacturing, engineering, technical and quality roles. For more info, please contact info@meiragtx.com

https://enterprise-ireland.com/en

NUI Galway spin-out Galenband wins “One to Watch” Award at Enterprise Ireland’s Big Ideas 2020

25th November 2020

Stephen Creaner, Executive Director, Enterprise Ireland (right) virtually presents the Big Ideas 2020 “One to Watch” and “Viewers’ Choice” Awards to Eddie McDaid from NUI Galway spin-out Galenband

This afternoon, Eddie McDaid of NUI Galway spin-out Galenband, was presented with the “One to Watch” Award at Enterprise Ireland’s Big Ideas 2020.

Galenband was one of 12 investor-ready start-up companies to pitch their new technology solutions to investors at Enterprise Ireland’s annual showcase of start-up innovation emerging from higher education institutes.

The award was presented to Eddie McDaid, for the outstanding pitch of the day. Galenband, which is an Enterprise Ireland Commercialisation Fund supported spin-out, has developed a revolutionary heart monitoring system capable of increasing detection rates of ‘Silent Atrial Fibrillation’ from the 1.3% associated with current standard monitoring methods to 85%.

The Galenband solution features an unobtrusive wrist worn device which records heart activity continuously for up to 90 days. Results are analysed on the Galenband AI cloud platform in order to identify heart rhythm irregularities for clinicians.

A “Viewers’ Choice” Award was also presented to Galenband.

Each of the 12 start-ups had just three minutes to promote their innovations and business propositions to an online audience made up of the Irish research and business communities.

Other Big Ideas at this year's event included a wearable sensor to manage vertigo and dizzinesss, a sperm sorting technology to revolutionise fertility care and technology that combines psychology and Artificial Intelligence to empower people to be their best selves at work.

Full details on the event are available at www.bigideas.ie

ENDS

Notes to editor:

About Galenband:

Galenband's unobtrusive wrist-worn device records heart activity continuously for up to 90 days, offering reliable detection of heart rhythm abnormalities. Eddie McDaid leads the Galenband team of medtech and software engineering experts, partnered with co-founder Oisin McGrath, who invented Galenband at **NUI Galway**. Eddie has led the creation of multiple software platform businesses which have achieved over €50M in sales. Promoter: **Eddie McDaid**

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Irish projects using space technology now deployed to respond to Covid-19

22nd November, 2020

European Space Agency (ESA)

Two Irish projects win European Space Agency contracts

Irish companies are deploying their expertise in space technology to help in the fight against Covid-19.

Skytek and PMD Solutions (in partnership with Beaumont Hospital) were recently awarded contracts by the European Space Agency (ESA) for cutting edge-projects. The successful projects comprise a virtual command and control centre, which will streamline and support effective emergency response, and wearable technology that will support remote monitoring of patient health using satellite technology.

These novel projects are supported through the Irish Government's investment in the European Space Agency's (ESA) programme in advanced communications satellite technologies and systems (ARTES).

Welcoming the announcement, Minister of State for Business, Employment and Retail, Damien English TD said: "I am very pleased to see further examples of Irish technology companies leading the way in developing innovative technologies to help mitigate the effects of the Covid-19 pandemic. It shows how Ireland's investment in ESA is supporting Irish companies to develop solutions that make a real difference to our lives. These projects also clearly demonstrate how space technology can deliver tangible solutions to current and emerging challenges, including our global fight against the pandemic."

Tom Kelly, Divisional Manager Enterprise Ireland, stated that "it is very encouraging to see client companies leading the way in Europe in research and innovation and in adapting space technologies to address real and immediate needs. Space technology pushes boundaries and the solutions associated with this innovation have application in a variety of settings, including tackling the world-wide Covid-19 pandemic. We expect to see further innovations from Irish companies in the coming months supported through the Governments investment in ESA."

REACT 2

Skytek's React 2 is a satellite-enabled platform to support 'Virtual Command and Control Centres'. This includes secure information exchange, distributed working of key personnel, provision of pandemic current situational awareness and supporting automated workflows of common tasks.

React2 is designed to streamline and coordinate the response to the ongoing Covid-19 pandemic, linking into Ireland's Computerised Infectious Disease Reporting (CIDR) system to generate alerts when numbers of suspected cases go beyond a defined figure.

Dublin-based Skytek is a leader in space technology, developing software used on the International Space Station as well as satellite and predictive analytics solutions for a range of complex and demanding industries and sectors including marine insurance and the emergency services.

Skytek leads a high-profile European consortium that includes the Italian infectious diseases authority-Spallanzani, the Italian Navy and Rome's largest hospital group Gemelli. In Ireland, the HSE and the Irish Centre for Emergency Management will assist with the design and testing of the system.

Building on Skytek's expertise in insurance and emergency response systems called React (Resource for Emergency Services to Access Command and control data using satellite and hybrid Technologies), React 2 will also link into acute hospital monitoring systems, allowing decision makers to understand the nature of an outbreak.

Streamlined reporting and communication, all fully encrypted, and with support for audio, video, text, document sharing, shared whiteboards and geographical information systems (GIS) will allow for rapid response, all accessible over multiple communications media including cellular telephony and satellite even in areas or weather conditions where communication typically proves difficult.

The principle users will include acute hospitals, Ireland's public health authorities, the community health sector, the National Ambulance Service, general practitioners and contract pharmacies, care settings such as elder care facilities, direct provision centres, facilities for people with an intellectual disability and public health supply contractors.

CORONA- RS – RespiraSense wearable solution

PMD Solutions Ltd, in partnership with Beaumont Hospital, Dublin, is undertaking a space-enabled medical solution "CORONA-RS" - to scale community monitoring of respiratory compromised patients in the community due to Covid-19 and other respiratory compromised patient cohorts.

Covid-19 has transformed the way we care and treat respiratory-compromised patients both in the hospital and now in the community. For healthcare systems to operate effectively it is essential that they either build more facilities or empower patients in the community. The latter is where most healthcare systems are placing their beds.

One of the biggest challenges for community monitoring is the level of technology required to get information from the patient to healthcare provider. Current solutions include 'middle ware' devices to send information from devices to clinicians using devices such as mobile phones, tablet computers, patient WiFi, etc. This is significantly slowing down the rate of adoption. It is far too cumbersome and, often, the ageing demographic are not in a position to be both patient and IT support for such systems. In addition, patients require the ability to leave their home to visit family, buy groceries, or to simply go for a walk. This presents an additional challenge for 'middle wear' systems to ensure emergency services get to the right location as quickly as possible.

CORONA-RS is a collaboration between PMD Solutions, European Space Agency, and Beaumont Hospital to develop a world's first patient wearable using 5G technology to eliminate the need for any unnecessary middle ware that has up to now impeded the scaled adoption of community patient monitoring systems. It is intended to support a 'virtual ward' where patients in the community will remain under the care of a hospital's experienced respiratory teams in partnership with community medical teams.

RespiraSense is a body-worn respiratory rate monitor with the advantage of superior position tracking using the European Space Agency's Galileo satellite system. If a patient becomes unstable, the only intervention is prolonged hospitalisation and possible ventilation in an Intensive Care Unit. Time to intervene is critical in preventing such escalations of care that are currently placing a huge strain on healthcare systems once again in Europe.

In a clinical trial in Beaumont hospital earlier this year, RespiraSense was implemented in the hospital Covid-19 ward. It demonstrated an ability to identify which patients would experience respiratory failure 12 hours earlier than the standard of care. Piloting this innovation in the community as an easy to use and seamless telemetry solution will help prioritise resources and support clinical decision-making processes.

Beaumont Hospital will be the clinical lead for the design of this solution. RespiraSense plans to be able to send critical patient physiological data direct from the wearable device, including patient position using the European Space Agency's Galileo Global Navigation Satellite System (GNSS), to healthcare providers so the right patients get the right care at the right time.

In both cases the technologies will be trialed in a number of other member states, including Italy and Ireland.

Both of these activities are being supported through the Irish Government's investment in ESA programme in advanced communications satellite technologies and systems (ARTES).

About Skytek

www.skytek.com

Founded by Dr Sarah Bourke and Paul Kiernan, both significant award laureates, Skytek has partnered with both ESA, NASA, Airbus and Aon in developing a range of technology solutions and applications for the commercial space and space related markets.

About PMD Solutions

www.pmd-solutions.com

A Cork-based medical device company which designs, develops, and manufacturers RespiraSense. The company's vision is to improve patient outcomes by making every breath count. RespiraSense is a wearable continuous respiratory rate monitor. Its patented approach measures the mechanics of breathing to produce industry leading accuracy in mobile and alert patients.

About Beaumont Hospital

Beaumont Hospital is a large academic teaching hospital 5km north of Dublin City centre. It provides emergency and acute care services across 54 medical specialties to a local community of some 290,000 people. The hospital employs approximately 3,000 staff and has 820 beds. Beaumont is the principal teaching hospital for the Royal College of Surgeons in Ireland. It also enjoys close links with Dublin City University, especially in the area of nurse training, and with other academic institutions in respect of training and research. The Beaumont Hospital Respiratory Lab is focused on digital research in areas such as treating Covid-19 and other respiratory issues.

About the European Space Agency

The European Space Agency (ESA) is Europe's gateway to space. ESA is an intergovernmental organisation, created in 1975, with the mission to shape the development of Europe's space capability and ensure that investment in space delivers benefits to the citizens of Europe and the world. ESA develops the launchers, spacecraft and ground facilities needed to keep Europe at the forefront of global space activities. Today it launches satellites for Earth observation, navigation, telecommunications and astronomy, sends probes to the far reaches of the Solar System and cooperates in the human exploration of space.

The purpose of Ireland's membership of ESA is to participate in European space programmes with a focus on facilitating innovative Irish operations to develop leading-edge space technologies and to commercially exploit their ESA participation in global space and non-space markets, leading to increased export sales and employment. Irish membership of ESA is funded through an annual subscription that allows Irish companies and researchers to competitively bid for ESA tenders. The value of the resulting contracts is commensurate with Ireland's contribution to the overall ESA budget. Enterprise Ireland co-ordinates Ireland's industrial and research participation in the programmes of ESA in collaboration with the Department of Enterprise, Trade and Employment.

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PlasmaBound seals €1.1 million Investment Round

24th June 2020

Pictured (l-r) at University College Dublin are PlasmaBound co-founders, Alan Barry, CEO and James Nicholas Barry, Technical Director. (Nick Bradshaw, Fotonic)

PlasmaBound, a University College Dublin (UCD) spin-out, which has developed a novel surface treatment technology to enable global manufacturing industries to reduce product weight and meet fuel efficiency and carbon emissions requirements, has today announced the closing of a €1.1 million investment round.

The investment round was led by the Atlantic Bridge University Fund, with Enterprise Ireland, and a number of private investors. Legal counsel was provided by Flynn O'Driscoll.

PlasmaBound's patented technology, called controlled polymer ablation (CPA), uses a repeatable and high-speed one-step process, involving the structural adhesive joining of lightweight materials, namely carbon and glass fibre reinforced composites.

The technology enables global players in the automotive, aerospace/space and wind turbine industries to achieve lightweighting goals with simplified and fully automated workstreams. Such workstreams generate significantly less manufacturing waste, dramatically reduces product weight and also assists industry players to achieve stringent carbon emission and fuel efficiency goals.

PlasmaBound, headquartered at NovaUCD, the Centre for New Ventures and Entrepreneurs, was co-founded in 2017 by Dr James Nicholas Barry, Alan Barry and Xavier Montibert as a spin-out from the UCD College of Engineering and Architecture, following the completion of Enterprise Ireland Commercialisation Funding.

The company is also an Enterprise Ireland High-Potential Start-Up.

Alan Barry, CEO, PlasmaBound, said, *"Our CPA technology supports the accelerated adoption of lightweight composite materials into multi-material structural assemblies, by enabling reliable adhesive joining. This will allow international enterprises, who are aggressively pursuing light weighting opportunities, to meet current and future carbon emissions and fuel efficiency requirements, with no waste production, reduced reliance on metal fasteners and lower production cost through in-line operation simplification."*

He added, *"We are delighted to have closed this investment round led by Atlantic Bridge University Fund which will enable us to further develop our first-generation product offering and support PlasmaBound as we scale globally."*

He concluded, *"Our technology took over 5-years to develop at UCD, so today's announcement is a significant milestone for the company".*

Brendan Cremen will join the PlasmaBound Board of Directors on behalf of Atlantic Bridge.

Dr Helen McBreen, Investment Director at Atlantic Bridge University Fund said, *"I am very pleased to welcome UCD spin-out company PlasmaBound to the Atlantic Bridge University Fund portfolio. The company's ground-breaking technology, which has the potential to support significant reduction in carbon emissions, is an excellent example of the world-class, commercially-focused research underway at UCD and through this investment Atlantic Bridge University Fund is looking forward to helping to scale this early-stage company internationally."*

Julie Sinnamon, CEO, Enterprise Ireland, said, *"We are delighted to support PlasmaBound and to be part of this investment round. With more and more emphasis on reducing carbon footprint, Plasmabound is developing innovative solutions to enable manufacturers across industries to meet their current and future targets in cutting carbon emissions and generating fuel efficiency. NovaUCD continues to elevate companies such as Plasmabound that are driving advanced solutions to streamline and simplify processes in manufacturing. I wish the team luck with the project and congratulate the company on its success to date."*

PlasmaBound was previously awarded €50k through the ESA Business Incubation Programme and secured an additional €40k through the competitive ESA Technology Transfer Demonstrator Fund.

Ends

Editor's Notes

PlasmaBound is helping industries lose weight and reduce their Carbon footprint globally. www.plasmabound.com

Atlantic Bridge has €950 million assets under management and invests in high growth technology companies globally and accelerates the scale up of companies by applying its proprietary Bridge Model into the US and Chinese markets. The firm has investment teams, offices and extensive networks in Dublin, London, Palo Alto, Munich, Paris and Beijing.

Atlantic Bridge's €60 million University Fund is focused on accelerating the commercialisation of ground-breaking research and the scaling of global businesses from University College Dublin, Trinity College Dublin and all third level research institutions. The Fund was initiated in a joint leadership

collaboration between UCD and Trinity in 2015, with further support from European Investment Fund, Enterprise Ireland, Bank of Ireland and AIB. www.abven.com.

At **NovaUCD**, the hub for new ventures and entrepreneurs at University College Dublin, we nurture and support new high-tech companies as part of UCD's mission. At NovaUCD we provide purpose-built, state-of-the-art incubation facilities alongside a comprehensive business support programme for client companies such as PlasmaBound. NovaUCD has been funded through a unique public-private partnership that includes AIB Bank, Arthur Cox, Deloitte, Enterprise Ireland, Ericsson, Goodbody Stockbrokers, UCD and Xilinx. www.novaucd.ie

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12 new technology solutions pitch for investment at Enterprise Ireland's 'Big Ideas 2020'

25th November 2020

- **Big Ideas include innovations to treat heart conditions, vertigo, improve fertility care and technology to inspire and empower employees**

Twelve investor-ready start-ups will pitch their new technology solutions to investors at Big Ideas 2020 today. The annual Enterprise Ireland showcase of start-up innovation emerging from higher education institutes has moved online this year.

Now in its 12th year, Enterprise Ireland's Big Ideas illustrates the commercialisation potential of Irish academic research. This year, innovations include medtech devices to treat heart conditions, a wearable sensor to manage vertigo and dizziness, a sperm sorting technology to revolutionise fertility care and technology that combines psychology and Artificial Intelligence to empower people to be their best selves at work.

The selected third-level spins-outs with Big Ideas will each have just three minutes to promote their innovations and business propositions to an invited online audience made up of the Irish research and investment communities.

A '**One to Watch Award'** will be presented for the outstanding pitch of the day. Guest speakers at today's event will also include US based board-director, author, advisor and speaker **Dr Anita Sands** who is originally from Co. Louth.

Stephen Creaner, Executive Director, Enterprise Ireland said: *"Enterprise Ireland's annual Big Ideas event offers an exciting snapshot of the future, showcasing investor-ready start-ups with disruptive technologies that will change our world for the better, as well as providing opportunities for keen investors.*

"The 12 individuals promoting their innovations today are demonstrating the results of deep research and the hard work of commercially-focused researchers, combined with significant investment from the state. These are the businesses of the future and they stem from a vibrant and collaborative commercialization ecosystem which will help drive the future of the Irish economy."

Gearoid Mooney, Divisional Manager, Research and Innovation, Enterprise Ireland added: *"Enterprise Ireland's research commercialisation team is working to ensure that research teams with global ambition receive the supports and introductions they need to successfully spin-out to become viable start-up companies. We recognise the vital importance of research and innovation, particularly in driving the growth and scale of Irish companies with novel, proprietary products and services in overseas markets.*

"Supporting the commercialization of research allows us to develop the next generation of innovative High Potential Start-Ups (HPSUs) and last year, 13 HPSUs were successfully generated in partnership with our third level institutions. Enterprise Ireland is delighted to showcase the fantastic innovative work that is being done in our academic institutions and we look forward to working with these spin-out companies to help them grow and scale."

Full details on the event are available at www.bigideas.ie

Notes to editor:

Big Ideas 2020 include:

- **AthenaCX**, a rapid, no-code, adaptive, multi-channel Experience Sampling Platform, has been developed by Prof Tomas Ward´s development team at **DCU** with product guidance from Willie Muehlhausen. Willie is a successful serial intrapreneur with 22 years´ experience in product development and he successfully managed teams who gained international recognition in Patient Experience sampling, virtual clinical trials and real world data science. Promoter: **Willie Muehlhausen**

- Drug safety professionals have to read hundreds of medical articles every week to find the most relevant ones. **biologit's** artificial intelligence diligently finds important articles, saving time and money. The founding team is formed by Nicole Baker, Bruno Ohana and Seán Murphy. Biologit is an ADAPT Centre research team working with Professor Lucy Hederman within **Trinity College Dublin**, School of Computer Sciences & Statistics. Promoter: **Nicole Baker**

- **BioPixS,** a **UCC** spin-out, develops optical phantoms that simulate human organs and will help reduce the exploitation of animals in preclinical trials. Sanathana Konugolu-Venkata-Sekar, co-founder and CEO at BioPixS, is a deep tech scientist and an aspiring entrepreneur with experience as an advisor, director and mentor at various start-ups. The BioPixS team has 30+ years of experience with a unique understanding of the phantom revolution in biophotonics. Promoter: **Sanathana Konugolu-Venkata-Sekar**

- A powerful combination of computational chemistry, quantum physics, high-performance computing and Artificial Intelligence, the **BioSimulytics** solution will allow for smarter, faster and more cost-effective drug development. The founders of the **UCD** spin-out BioSimulytics are Peter Doyle (CEO), Niall English (CTO) and Christian Burnham (Head of Product Development). As a team, they combine a strong mix of the key technical and commercial skills and experience required for growing the business. Promoter: **Peter Doyle**

- **Galenband's** unobtrusive wrist-worn device records heart activity continuously for up to 90 days, offering reliable detection of heart rhythm abnormalities. Eddie McDaid leads the Galenband team of medtech and software engineering experts, partnered with co-founder Oisin McGrath, who invented Galenband at **NUI Galway**. Eddie has led the creation of multiple software platform businesses which have achieved over €50M in sales. Promoter: **Eddie McDaid**

- What if there was technology that kept us connected, empowered and inspired to be good people at work? **inclusio** is combining technology, psychology and AI, to inform, inspire and empower people to be their best selves at work. inclusio was established in 2018 as a technology start-up in **DCU** by Sandra Healy founder and CEO. Sandra, together with her cofounders, Deborah Murphy and Arthur Lubambo, have built a diverse team of experts spanning AI, psychology and data analytics to bring inclusio to the global market. Promoter: **Sandra Healy**

- **Lifelet Medical** is making sustainable heart valve leaflets for patients with heart valve disease, aiming for a solution that lasts a lifetime. Elle Sander and interventional cardiologist Prof. Faisal Sharif are co-founders of Lifelet, based in **NUI Galway**'s Lambe Institute. With a bioengineering and regenerative medicine background, Elle is motivated to realise the commercial ambition of Lifelet Medical. Promoter: **Elle Sander**

- **neoMimix** is revolutionising fertility care worldwide through its novel sperm sorting technology. This innovative solution will improve outcomes and make fertility care more available to the one in six couples requiring fertility treatment. Sean Fair is a Reproductive Biologist and the CSO of the **UL** spin-out neoMimix. The core team also consists of Declan Keane (CEO) a clinical embryologist who established his own fertility group, ReproMed, as well as Eoin White (Design and Regulatory Lead). Promoter: **Sean Fair**

- **Nua Surgical** is innovating in women's health. Its surgical retractor will make caesarean delivery safer and enhance patient recovery. Nua Surgical was developed out of BioInnovate Ireland and is currently based at **NUI Galway**. The founding team of Barry McCann, Padraig Maher and Marie Therese Maher have over 50 years combined industry experience covering commercial, technical and design control requirements. Promoter: **Barry McCann**

- Current microfluidic technologies are not meeting the advanced technical requirements of the pharmaceutical, biomedical and aerospace industries. **Stokes Microfluidics**, a spin-out from the **University of Limerick** founded Dr Eric Dalton and Dr. Valeria Nico, has a solution. Promoter: **Eric Dalton**

- **NUI Galway** spin-out **SymPhysis Medical** has developed a home-based medical device which will help late stage cancer patients suffering from breathlessness due to fluid build-up around the lung. Tim Jones is Co-Founder & CEO. With an engineering and commercial background Tim has worked with his co-founder Michelle Tierney for the last three years. Promoter: **Tim Jones**

- **Vertigenius** is leading the way to better balance. It combines a unique wearable sensor with an app to help treat dizziness, vertigo and imbalance. Dr. Dara Meldrum is the inventor and founder of Vertigenius and is a Senior Research Fellow at **TCD** Academic Unit of Neurology. Promoter: **Dara Meldrum**

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In a culture of silence, Aoibhinn Ní Shúillebháin's harassment speaks volumes

7 September

Dr Aoibhinn Ní Shúilleabháin. Image: Connor McKenna/Silicon Republic

We shouldn't need women such as Dr Aoibhinn Ní Shúilleabháin to step out as heroes, but unfortunately that's what it has taken for Irish universities to face the problems festering in their environment, writes Elaine Burke.

Over the weekend, The Irish Times detailed two years of harassment experienced by Dr Aoibhinn Ní Shúilleabháin while working at University College Dublin (UCD). It makes for a discomforting read as Ní Shúilleabháin describes the intensity with which she was pursued by a colleague, to the point where "she moved into a new home alone, and kept a crowbar close by for safety".

The full article by Elaine Burke is available at the link below:-

Elaine Burke/Siliconrepublic.com editorial@siliconrepublic.com

This article first appeared on www.siliconrepublic.com and can be found at:

https://www.siliconrepublic.com/innovation/aoibhinn-ni-shuilleabhain-ucd-harassment?utm_source=Tech+Trends&utm_campaign=435bc34de3-EMAIL_CAMPAIGN_2020_09_07_09_22&utm_medium=email&utm_term=0_c7ec65939c-435bc34de3-110226594&mc_cid=435bc34de3&mc_eid=9d1576d375

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9 Trinity College Dublin spin-outs and what they're doing now

22 October

Plenty of tech companies have started out in Trinity College Dublin, from a biotech business that was recently sold for €380m to a start-up that enables users to create volumetric holograms.

Trinity College Dublin (TCD) is one of many academic institutions in Ireland serving as a hub for entrepreneurs, innovators and early-stage start-ups.

Earlier this year, we took a look at some of the digital wellness businesses spinning out of TCD's campus. Now we're taking a look at some of the university's most successful spin-outs to date and where those businesses are today.

The list includes Inflazome, which was recently acquired in a €380m deal, as well as SoapBox Labs, which was named as one of 'Europe's hottest start-ups' last year.

The full article by Kelly Early is available at the link below:-

Kelly Earley is a journalist with Siliconrepublic.com
editorial@siliconrepublic.com

https://www.siliconrepublic.com/start-ups/trinity-college-dublin-tcd-spinout-companies-startups

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Here's what you can expect from a graduate programme in pharma

If you're considering a career in pharma after finishing college, Veronica Boomsma of Amgen says a graduate programme can be an 'ideal way' to find your footing.

Before starting the Amgen graduate programme, Veronica Boomsma studied industrial biochemistry at the University of Limerick. Now that she's a year into the programme, she reflects on her time at the company so far.

> ***'We are given just as much responsibility as other employees in similar roles'***
>
> – **VERONICA BOOMSMA**

With this programme, are you now working in your desired industry?

Definitely. Leaving university with a degree in industrial biochemistry meant that a career in the pharmaceutical industry was a suitable choice that the graduate programme has allowed me to pursue. It is an industry that is continuously evolving, with innovation at its core. This allows for some exciting opportunities for students at the culmination of their college degrees.

What drew you to Amgen when you were seeking work as a graduate?

There are a number of criteria that I looked at when searching for work during my final year of university. These included the prospective career growth that I could achieve in a company, the emphasis they place on their patients and expansion in the industry and their reputation in the pharma field. Amgen ticked these boxes for me……..

To read the rest of this interview go to:

https://www.siliconrepublic.com/people/amgen-graduate-programme-veronica-boomsma

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Future Human 2020 Highlights

Watch: Missed out on Future Human 2020? Here are some of the highlights from the two-day science and tech event, which featured speakers and sessions looking at how we will live, work and do business in a post-pandemic world.

Link provided by Siliconrepublic

https://www.youtube.com/watch?v=mHXRshNEIKo&utm_source=Tech+Trends&utm_campaign=8bdfbfd425-EMAIL_CAMPAIGN_2020_11_09_10_07&utm_medium=email&utm_term=0_c7ec65939c-8bdfbfd425-110226594&mc_cid=8bdfbfd425&mc_eid=9d1576d375

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Enterprise Ireland CEO: 'We will never go back to where we were'

6 November

Speaking at Future Human, Enterprise Ireland's Julie Sinnamon talked about how Covid-19 has changed the business landscape and what the future holds.

Since the beginning of the pandemic, SMEs across Ireland have been massively impacted. In March, companies had to suddenly shift to remote working, some had to pivot business models and others had to shut their doors and re-evaluate their situation.

Throughout that time, Enterprise Ireland has been working tirelessly to help SMEs through this situation. Speaking at Future Human 2020, Enterprise Ireland CEO Julie Sinnamon described some of the challenges of the last few months.

The full article by Jenny Darmody is available at the link below:-

Jenny is the Deputy Editor of Siliconrepublic.com

editorial@siliconrepublic.com

This article first appeared on www.siliconrepublic.com and can be found at:

https://www.siliconrepublic.com/future-human/enterprise-ireland-julie-sinnamon?utm_source=Tech+Trends&utm_campaign=8bdfbfd425-EMAIL_CAMPAIGN_2020_11_09_10_07&utm_medium=email&utm_term=0_c7ec65939c-8bdfbfd425-110226594&mc_cid=8bdfbfd425&mc_eid=9d1576d375

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Scientists reveal energy-saving ‘liquid window’ concept

6 October

This week in future tech, scientists in Singapore have revealed a ‘liquid window’ that can block out sunlight while trapping and releasing thermal heat.

Windows of the future could be a lot more than a pane of glass following a new breakthrough made by researchers from the Nanyang Technological University, Singapore (NTU Singapore).

Publishing their findings to Joule, the researchers described a liquid window panel that can simultaneously block the sun to regulate solar transmission, while trapping thermal heat. It can be released through the day and night, helping to reduce energy consumption in buildings.

In simulations, the hydrogel-based liquid within the glass panels was found to reduce energy consumption by up to 45pc compared with traditional windows. The researchers also found the concept to be 30pc more energy efficient than commercial energy-efficient glass, while being cheaper to make.

The full article by Colm Gorey is available at the link below:-

Colm Gorey/Siliconrepublic.com

This article first appeared on www.siliconrepublic.com and can be found at:

https://www.siliconrepublic.com/machines/singapore-liquid-window-concept-drones-5g-iot

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Irish study claims bacteria could improve outcomes for flu patients

A study conducted by Cork-based researchers highlighted the potential role of bacteria in treating viruses.

Researchers in Cork have claimed that a naturally occurring bacterium could help reduce the damage inflicted on the human body by respiratory viruses such as influenza.

The research was conducted by Dr David Groeger and his colleagues at PrecisionBiotics, which is a subsidiary of Novozymes OneHealth, in collaboration with APC Microbiome Ireland.

In their study, researchers said that two different Bifidobacterium longum strains administered through the nose protected mice from lung injury and improved the survival rate from influenza. The two strains tested in the study were Bifidobacterium longum 35624 and Bifidobacterium longum PB-VIR…

The full article by Kelly Earley is available at the link below:-

editorial@siliconrepublic.com

Kelly Earley/Siliconrepublic.com

This article first appeared on www.siliconrepublic.com and can be found at:

https://www.siliconrepublic.com/innovation/cork-study-bacteria-influenza-treatment

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Twww.manufacturing-supply-chain.com

The Largest Gathering of Key Decision Makers in Irish Manufacturing Supply Chain.

National Manufacturing & Supply Chain Conference & Exhibition 27 – 28 January 2021

Join us at the 2021 National Manufacturing Conference & Exhibition on the 27 – 28 of January to hear from an impressive line-up of manufacturing leaders, academics and government agencies who will engage in a stimulating blend of keynote addresses and debates.

Creating an Innovative Manufacturing & Supply chain Ecosystem

Companies invited to attend include:

Johnson & Johnson, Standard Brands, Intel, Dell Products, Pfizer, Smurfit Packaging, Kerry Group, Boston Scientific, Forest Laboratories, Glanbia, Gilead Sciences, Glen Dimplex, Astellas Ireland, Irish Dairy Board, Swords Laboratories, Kellogg Europe, Benex, Aryzta, Dawn Meats, Genzyme Ireland, Irish Food Processors, Abbott Ireland, Atlantic Industries, Pepsi-Cola, Schering Plough, Diageo, Elan, Kepak, Medtronic Vasvular, Glaxosmithkline, Irish Distillers, Eli Lilly, Fyffes, Lakeland Dairies, Green Isle Foods, Allergan, Bausch & Lomb, Baxter Healthcare, Thermo King, KCI Medical Resources, Phardiag, Greencore, Teleflex Medical, Rosderra Meats, Merck Millipore, McDermott Laboratories, GE Healthcare, Cadburys, Connacht Gold, Danone Baby Nutrition, Monaghan Mushrooms, Takeda Ireland, Helsinn Birex, Recordati, Cook Ireland, Teva Pharmaceutical, Henkel Ireland, Fair Oak Foods, Stiefel

Laboratories, C&D Foods, Carbery Milk Products, Leo Pharmaceuticals, Project Management, Shire Pharmaceuticals, Tibotec Pharmaceuticals, Vetpharm International, Renishaw Ireland, Proctor & Gamble, Creganna, FMC International, Donegal Meat Processors, Alltech Ireland, Novartis, Rottapharm, Barclay Chemicals, Cognis Ireland, HJ Heinze, Becton Dickenson, ABB, Bimedia, Mylan, Connaught Electronics, Zimmer Orthopedics, Lake Region Manufacturing, Roche Ireland, Sanofi Aventis Ireland, Pinewood Laboratories, Clonmel Healthcare, Merit Medical and many more….

New approaches and technology have been introduced in recent years that have created significant organisational and process improvements. The aim of the conference is to showcase such innovative approaches and to disseminate the cutting-edge research that underpins them.

The conference will be of interest to senior management, established practicing engineers and researchers together with those that are much earlier in their careers.

Delegates have registered from leading food, pharmaceutical, medical, chemical, electronics and engineering manufacturing sectors.

Manufacturing on this island of Ireland has some of the best people, products, brands and innovation. We deserve nothing less than the best business environment to chart a new economic course to growth. But government needs to set the climate and conditions to allow this to happen.

Manufacturers small and large from across the country will gather to challenge political decision makers to deliver a business environment which manufacturing deserves. Delegates attending the conference will:

– gain industry insights to help their business plan ahead
– share good practice and learn from each other's experience
– connected with senior business leaders to find new business opportunities
– meet with key technology providers in the dedicated exhibition area

Procurement, Lean Manufacturing, Control & Automation, Supply Chain Optimisation, Information Technology Logistics, Energy Management, Facilities Management Sustainability, Project Management, Health & Safety Warehouse Management, Materials Handling & Robotics

To book your FREE place at the event below:
http://www.manufacturingevent.com/delegates

Industry and Business
Promoting Manufacturing Excellence

MANUFACTURING & SUPPLY CHAIN

Kerry Group to Invest $125 Million to Create World-class Food Manufacturing Facility in the US

12 March by Mike

Kerry Group, the leading international taste and nutrition company, has confirmed that it is to invest $125 million in its facility at Rome, Georgia in the US to create a new world-class food manufacturing facility. This is Kerry's largest ever capital expenditure investment and when complete, the 360,000 sq ft facility will be one of the most modern and efficient facilities of its kind in the world with the highest standards of food safety.

The facility will produce integrated taste and nutrition solutions to help customers meet growing consumer demand in the poultry, seafood and alternative protein markets. As part of Kerry's sustainability agenda, the new facility will use 100% renewable electricity and will have a number of other sustainable initiatives including zero waste to landfill, bulk receiving and energy efficient equipment.
Kerry Group has worked closely with the Governor of Georgia's office to deliver this investment which will employ more than 400 people during the construction phase and over 100 full-time positions once the facility is fully operational.

Construction will begin immediately and is expected to be completed by early 2021 which will more than double the production capacity of the existing site within the same footprint. This will significantly increase Kerry's capacity in its largest market to meet the growing demand for holistic food solutions.
Gerry Behan, CEO of Kerry Taste & Nutrition, North America, comments: "North America is our largest market, and as such it is fitting that it is here that we announce our largest ever capital expenditure investment. This new facility will be one of the most advanced and modern food manufacturing facilities in the world which will support our customers as they produce tasty and nutritious food products which will be consumed all across the US and Canada.

"The consumer-led food revolution and the world's environmental challenges are driving accelerated change and reshaping the entire food industry. World-class facilities, such as this one in Georgia, combined with our technology portfolio and our fantastic people allows us to co-create with our customers to produce tasty and nutritious food products that meet changing consumer demand."

Enterprise Ireland is the Irish government agency for the advancement of international business by Irish companies. Commenting on the investment, Sean Davis, Regional Director, North America for Enterprise Ireland, says: "Irish investment into the United States is at an all-time high with strong momentum indicating further partnerships between the Irish and American business communities. We're pleased to see the impact of Kerry Group's investment here in Georgia and we look forward to further collaboration with the state and the regional community."
From humble beginnings as an Irish dairy co-operative, Kerry has grown into a large international food industry leader, with offices in 32 countries, 151 manufacturing facilities and an employer to over 26,000 people globally, including over 1,000 food scientists.

Industry and Business
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MANUFACTURING & SUPPLY CHAIN

Caldor Solar installs a Solar PV system to assist a pharmaceutical plant in Limerick meet its green goals.

June 24 by Admin

With an increasing need to improve green credentials and become more sustainable for many businesses, sustainable energy company Caldor Solar was approached on behalf of a pharmaceutical plant in Limerick to provide a system that would generate renewable electricity from solar panels on the roof of their building. A Solar PV system for businesses like this is a fantastic investment as these systems provide green electricity to offset the purchase from electricity providers. This saves money long-term (on average, a solar PV system can save up to €4,500/kWp installed) whilst also reducing the average unit cost for electricity. Not to mention the fact that these systems are great for the environment and they provide complete peace of mind against rising energy costs. The pharmaceutical company also wanted the system to last a long time, with major system components having up to a 25-year design lifespan.

Caldor Solar completed all of the project aspects from the client's brief, providing a full turnkey system and managing it from concept through to handover. A dedicated project manager was assigned to ensure seamless integration within the clients existing operations from start to finish. The experienced Caldor Solar Team also supplied the client with the initial detailed design and they regularly liaised with the client, consultant engineer, main contractor and various other stakeholders to integrate the design into the overall building without any problems. They also procured the full system, delivered it to the site and installed it. Once the system was fully installed, the renewable energy company tested it thoroughly and certified the system to ensure its total compliance with the required standards.

The finished system was made up of 312 panels in total, had a capacity of 84.24kWp and an expected annual yield of 76,000kWh per year. The installation on the site only took 4 days to provide minimal interruption to the client's day-to-day business. If such an installation were a retrofit, it would be eligible for the SEAI Accelerated Capital Allowance scheme, which would allow the total cost of the system to be written off at the end of the first year.

A Solar PV System like the one installed by Caldor Solar on this project works by converting sunlight into a direct current. It's important to note that Solar Photovoltaic cells work on sunlight rather than heat from the sun, so getting enough solar energy in Ireland isn't a problem – Ireland actually has the same annual irradiation levels (solar radiation) as many parts of central Europe. This makes the photovoltaic panels used in the project the most appropriate solar panels. The final stage is the use of a solar inverter to turn the solar radiation into usable renewable electricity (AC power) for the client.

With over 15 years of professional experience and expertise, Caldor Solar offers a wide choice of sustainable energy choices for Ireland. We will assess the energy usage on the premises & make proposals to reduce the company's energy spend.

Caldor Solar has multiple funding options available. The opportunity for the systems to be purchased outright is there, however there are also some funding options that means there will be absolutely no up-front capital cost with guaranteed reductions in energy spend.

Call today to find out how you can start saving on your energy spend with Caldor Solar on 01 25 333 49, email at info@caldorsolar.ie or visit the website at www.caldorsolar.ie.

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MANUFACTURING & SUPPLY CHAIN

€3.7m investment and 40 jobs to be created in Manorhamilton

June 22 by Admin

North Leitrim and wider North West region are set to benefit from an investment of €3.7m in a new innovation, research and development and education centre to be opened in the W8 complex in Manorhamilton.

€2.94m in grant funding has been sourced through the BEDF Fund with Enterprise Ireland with a further €740,000 invested from regional industry partners.

This project is a collaboration between the W8 Centre, Enterprise Ireland, Sligo IT, South West College Enniskillen, Irish Manufacturing Centre Mullingar, Irish Concrete Federation, Irish Construction federation, Leitrim County Council and 40 Industry companies that supports 10,000 jobs in the Border region. It is expected to create 40 full time jobs over the next three years with a further 200 jobs indirectly created through inward industry company development and 20 additional full-time construction jobs created at the W8 complex in Manorhamilton.

As part of the development, the W8 Innovation brand, will develop the Quarry and Construction industries under Industry 4.0 with a focus on robotics and cobotics, artificial intelligence and smart data, software development, virtual reality, augmented reality, 3D industry printing and workplace of the future.

W8 Innovation will become a National innovation organisation and Robotic Centre of Excellence for the Irish aggregates, concrete products and construction industry which plays a pivotal role in the development of Ireland’s building environment.

Barry Kennedy, CEO Irish Manufacturing Research, said: "I would like to congratulate the W8 team on successfully winning funding for this important project in North Leitrim. IMR are delighted to be a strategic partner to help support the growing needs of the rapidly changing landscape of the quarry and construction industry, who face unprecedented challenges with COVID19, and Brexit. IMR look forward to working with the W8 Innovation team and the construction industry to help Demystify, Derisk and Delivery emerging technologies to support this industry to grow in Ireland."

Shane Kerrigan, W8 Complex added: "I see this as a huge vote of confidence in W8 Innovation and our team of dedicated workers. It is also a great success story for the region and its people. I would like to thank everyone involved in bringing this application to fruition for all their hard work, guidance support. We look forward to the future and want to focus on creating opportunities for generations to come."

While JJ O'Hara, Project Manager noted: "This was a team effort between Quarry and Construction Industry, Sligo IT, South West College Enniskillen, Irish Manufacturing Research Centre and Leitrim County Council. While it was interesting project to develop, now the real work will start to make it happen. We will be open for business in 2021. This project will bring unique technologies, Education and innovation to the Border region that will create numerous jobs on this island and into both industries. I would like to thank all the teams of each agency and our Industry partners. The most of all I would like to thank is Enterprise Ireland Team in Sligo and Border region, Incredible professional team."

Representatives of Leitrim County Council also added their support with Cathaoirleach of Leitrim County Council, Cllr Enda McGloin thanking Minister Heather Humphreys on behalf of the council and his party colleagues for the funding observing "this type of funding makes a real difference to the region of North Leitrim and beyond to ensure a much needed financial and technological investment for the future generation of people living in this part of our Island".

Cllr Padraig Fallon also added his good wishes: "I wish to offer my congratulations to the W8 Management, Project Manager and Everyone involved on their success. This is excellent news for North Leitrim, Leitrim and the Border Region. It is well deserved and a testament to the hard work, efforts, enthusiasm, and dedication of all involved."

Reference: leitrimobserver.ie

Industry and Business
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MANUFACTURING & SUPPLY CHAIN

MULLINGAR-BASED MANUFACTURING RESEARCH CENTRE PLAYING LEAD ROLE IN 2 INTERNATIONAL VENTILATOR INITIATIVES

June 25 by Admin

Irish Manufacturing Research (IMR), a Mullingar-based manufacturing research centre, are working on innovative responses to the global demand for life-saving ventilators. Having started work on their COVID-19 initiatives at the very start of the pandemic, IMR are helping research and develop two new ventilator systems resulting in more effective patient outcomes with leading European and US-based organisations. IMR, in collaboration with US multinational Artesyn Biosolutions, local Irish company Airpower and one of the top global experts in ventilators, Steve Tunnell, based in San Diego, have now completed the first unit ready for shipment for testing in the US this week. This system is intended to be a 'battlefield' Ventilator called EirVent.

EirVent is portable with no moving parts and minimal power requirements making it ideal for use 'in the field'. The rapid build ventilator is based on a dual supply of compressed air and oxygen delivered at a specified mix, flow and pressure.

It can also be produced at a lower cost making it affordable for COVID-19 response teams and healthcare organisations in emerging or developing markets which are now becoming epicentres for COVID-19. These markets will be a key target for the delivery of the EirVent. IMR also developed the hardware and software for the controls and GUI using the IMR IIOT platform.

Once approval for use is granted, the team will work with manufacturing partners to scale production to meet the needs especially in developing regions of the world.

The second system, which IMR is developing in partnership with Massachusetts Institute of Technology (MIT) and Malone Group, works on the principle of compressing an AMBU bag in a controlled manner directly to a patient requiring ventilation.

The AMBU bag ventilator was developed over the past 12 weeks, led by Tim Noone, Group Projects Director, Malone Group the team worked to design-build a device that can deliver the basic clinical requirements of ventilation.

IMR also focussed on breathing assist modes to help with the essential task of weaning patients off full ventilation. The team worked directly with MIT to share ideas and improvements and the AMBU bag ventilator is based on an open-source platform provided by MIT. The design intent is for the device to be low cost, simple and built from readily available components. A version of this was requested in the New York Emergency.

Ireland has a unique capability in that it already produces a significant portion of the world's high-end ventilators already from leading international companies so there is an active program to work with local medical device manufacturers in Ireland to produce these systems here.

Barry Kennedy, CEO of Irish Manufacturing Research, said: "Thanks to the innovative work carried out by our teams in Dublin and Mullingar, including our team of 70 researchers in the midlands, and in partnership with globally recognised research institutes and companies, IMR is delivering solutions that can have a scalable and global reach.

"As we all know, the COVID-19 pandemic has created a global demand for ventilators and modern life support ventilators are scarce so Ireland, through IMR playing a leading role, is helping address this demand, both right now and in the future for the expected 'Second Wave' of this pandemic.

"We are targeting to bring these new innovative systems to market for between €5,000 to €10,000, which is significantly below the cost of high-end systems normally used in hospitals. We have also developed sophisticated, but readily repeatable and affordable, electronic controls and user interfaces for the caregiver to use."

Speaking about their partnership with IMR, Jonathan Downey, Operations Director at ARTeSYN Biosolutions said: I would just like to commend IMR on how quickly they pivoted to begin research on ventilator systems given their foresight for the global demand for such systems in the wake of the COVID-19 pandemic.

This crucial research would not have started if it were not for the fantastic team within IMR and I'm proud to be part of an international network of organisations, working towards solutions that could hopefully save lives."

Stephen Malone, CEO of Malone Group said "The strong working relationship with IMR on robotics research allowed the teams to mobilise without delay. With access to expertise from MIT, as well as IMR, progress was made quickly and we are proud to be part of this extended group who diverted resources at a time of national crisis."

Reference: Irishtechnews.ie

Industry and Business
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MANUFACTURING & SUPPLY CHAIN

Manufacturing resilience during the coronavirus pandemic

June 12

HOW DO YOU KEEP A FACTORY RUNNING DURING THE COVID-19 CRISIS?

The main problem isn't social distancing necessarily, but keeping workers motivated during the slowdown. That's according to new research by money.co.uk, which spoke to 25 business leaders from the manufacturing industry to gain insights into how coronavirus has affected them.

Like many UK industries, manufacturing has been hard hit by the ripple effect of COVID-19. Uncertainty breeds caution, with many businesses forced to pause their operations. The knock-on effect for manufacturers has been profound. A staggering 91% of the manufacturers interviewed reported a dip in output since lockdown restrictions were put in place, according to money.co.uk's research.

Perhaps unsurprisingly, given the slump in output and general air of uncertainty, two thirds of the manufacturers admitted that staff productivity has been badly affected by the crisis. These sobering statistics go a long way to explaining why 75% of the manufacturers interviewed had used the government furlough scheme to protect the livelihoods of their personnel in the longer term.

Changing work practices keep industry rolling

As well as this quantitative data, money.co.uk also gathered qualitative data from a sample group of UK manufacturers to find out how they continue to operate whilst still protecting their staff from the threat of COVID-19. The responses from the manufacturing community were as varied as they were illuminating.

At one end of the spectrum, a food manufacturing plant boss said they had no choice but to "close all operations". However, for one valve manufacturer, a can-do attitude of "masks and smiles", was proving enough to keep the wheels of industry rolling. For most manufacturers though, working from home and rotational shift patterns for shop floor workers have proven the most effective measures.

"Those that have the possibility to work from home do so," said one steam equipment manufacturer, "and those working from the manufacturing facility undergo a quick health screening prior to entering the building." Elsewhere, other effective strategies included shielding over-60s, reduced staffing levels, split shifts, consolidated shipments and furloughing half the workforce at any one time.

For a specialist sensor manufacturer, the crisis has presented an unexpected opportunity. "We are soon to implement an online webinar and training platform for our customers in reaction to COVID-19," they said. "This may actually prove to be a long-term service for customers if it is successful. We would not have done this had COVID-19 not forced us to respond to the ban on face-to-face customer meetings."

Cash flow the main concern for manufacturers

Money.co.uk's research also shed light on the biggest challenges currently facing British manufacturers. Unsurprisingly, "cash flow" and a "drop in sales" were among the chief concerns, with one valve and

instrumentation supplier even revealing that customers were actively withholding payment on pre-crisis invoices, until normal business resumes.

For others, worries extended beyond the stress of money woes into more practical areas. These concerns ranged from “international shipment delays and costs” to “reduced air travel impacting cargo space availability”, as well as key contacts being unavailable through furlough and the constant pressure of trying to “do the right thing”.

Top five learnings from manufacturing business leaders

Based on the research, money.co.uk has summarised the top five activities that manufacturing business leaders will be investing in, to ensure their operations can continue throughout this crisis and beyond:

1. Use this time to engage with your customers and understand what their future pain points are likely to be – develop product and service offerings that specifically address their needs
2. With exhibitions and face-to-face demonstrations off the agenda, turn to digital media to showcase your products and capabilities
3. Understand how technology can be utilised to provide a virtual presence in your customers plants and facilities
4. Segment your customer base and understand which customers have vital operations that you need to assist with
5. Plan financially and understand what help is available to you from the government to navigate this crisis.

If you are worried about your business’ financial position and cash flow, money.co.uk’s business interruption loan guide has all the answers you need to gain access to vital government aid during the COVID-19 crisis.
The experts at money.co.uk have also created a coronavirus hub with up to date information on a variety of personal and business finance guides.

Reference: www.dpaonthenet.net

Watch out for: