



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Coláiste na hEolaíochta
& na hInnealtóireachta

College of Science
& Engineering

RESEARCH AND INNOVATION DAY 2023

- PROGRAMME -

SUSTAINABLE
FUTURES

INNOVATION
FOR
HEALTH

CURIOSITY
AND
DISCOVERY

DECISIVE
DATA



WELCOME NOTE

On behalf of the College of Science and Engineering Research and Innovation Committee, we are delighted to welcome you to the inaugural College of Science and Engineering Research and Innovation Day 2023. Going forward our annual Research and Innovation Day will be an important event for the College.

The College of Science and Engineering brings together science and engineering, uniquely positioning us to draw on our interdisciplinary strengths. Thus, ours is a college where discovery and creativity collide, to catalyse innovation and to drive transformational change. We are a research-intensive college and our research informs our teaching.

We are committed to focusing our research and innovation strength across four distinctive areas. We seek to accelerate understanding of disease and provide disruptive solutions for health (*Innovation for Health*). We develop innovative data-driven approaches to inform decision making and benefit society (*Decisive Data*). We seek to lead the transition to a sustainable future through innovation solution development (*Sustainable Futures*). We are committed to nurturing curiosity, fundamental discovery and high-risk blue sky research (*Curiosity and Discovery*).

Our Research and Innovation Day reflects these pillars of strength and is attended by our staff, researchers, students and external potential partners. Today our focus is on (1) stimulating future idea generation and (2) showcasing of our excellent research activities in our strategic research pillars of *Innovation for Health* and *Sustainable Futures*, as well as the impact of our research and innovation on Ireland and Global Challenges. We are particularly delighted that over 200 delegates have registered to attend the conference. This forceful statement of interest and commitment testifies to the strength of the research and innovation activity in the College of Science and Engineering.

We are honoured to welcome our invited panelists this year, and thank all members of the panel sessions for their willingness to share with us their perspectives and insights. Today is a day of celebration also, as we



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acknowledge the breadth and quality of research being undertaken by our PhD students and researchers, and as part of the event, we will award prizes to the best oral and poster presentations.

Today also affords us an opportunity to network to stimulate new ideas, and to develop new and strengthen existing collaborations and partnerships; an opportunity that is all the more precious after the last number of years.

Professor Laoise McNamara

**Vice-Dean for Research and Innovation, College of Science and Engineering,
University of Galway**

Dr Ann Ryan

**Director of Strategic Development, College of Science and Engineering,
University of Galway**



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Message from the Executive Dean

The College of Science and Engineering has set a strong vision to support ambition in research and innovation, to provide innovative and competitive programmes of research, and to drive research excellence. We will do this by attracting and developing talented researchers, nurturing fundamental and translational research and delivering intellectual capacity.

We focus our research and innovation strength and ambition across four distinctive research pillars: (1) Curiosity and Discovery, (2) Sustainable Futures, (3) Decisive Data and (4) Innovation for Health. Our distinctive research strengths are highly complementary to the University's strategic research areas of improving health and wellbeing, realising potential through data and enabling technologies, and sustaining our planet and people. We promote creative, theoretical and blue-skies research, translational and applied research and innovation across our schools and research institutes and beyond our College, both internally and externally, to develop new research, educational programmes, collaborations, solutions and technologies. We encourage our researchers to grow in both established and emerging research areas.

We will draw from our interdisciplinary expertise to deliver impact, by sharpening the focus of our research and innovation using the UN SDGs as a blueprint to achieve a better and more sustainable future. This enables our researchers to have successful careers and to become contributors of value to society. We expect and value excellence in all of our endeavours.

Our ambition is underpinned by our people, our students and researchers, and our staff who are creative, innovative and confident researchers; our purpose, excellent and impactful research; and our place, embedded in our city and region, with an international reach and outlook. Together, these drive our vision for the College of Science and Engineering to make a meaningful and sustainable difference at a global level.

Our endeavours will continually focus on excellence, respect, openness and sustainability as the enablers of our vision.

Professor Walter Gear

Executive Dean of the College of Science and Engineering



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GENERAL INFORMATION

College of Science and Engineering Research and Innovation Day Organising Committee

Chair and Vice-Dean for Research and Innovation: Professor Laoise McNamara.

Organising committee (Social and Logistics): Carmel Fennell (College Research Support Officer), Dr Ann Ryan (Director of Strategic Development), Noreen Ryan (College Administrator), Johnny Quinlivan (College Marketing Officer), Jeremiah Spillane (College Learning Technologist), Olive Mills (College Administrator).

Track Chairs: Prof. Jamie Goggins (Sustainable Futures), Prof. Jim Duggan (Decisive Data), Prof. Laoise McNamara (Innovation for Health).

Organising committee (Thematic): Prof. Laoise McNamara, Prof. Jamie Goggins, Prof. Jim Duggan, Prof. Michel Destrade, Prof. Henry Curran, Prof. Alan Ryder, Dr Kate Reddington.

Presentation format: Research talks are allocated 10 minutes (8 minutes for the presentation and 2 minutes for questions).

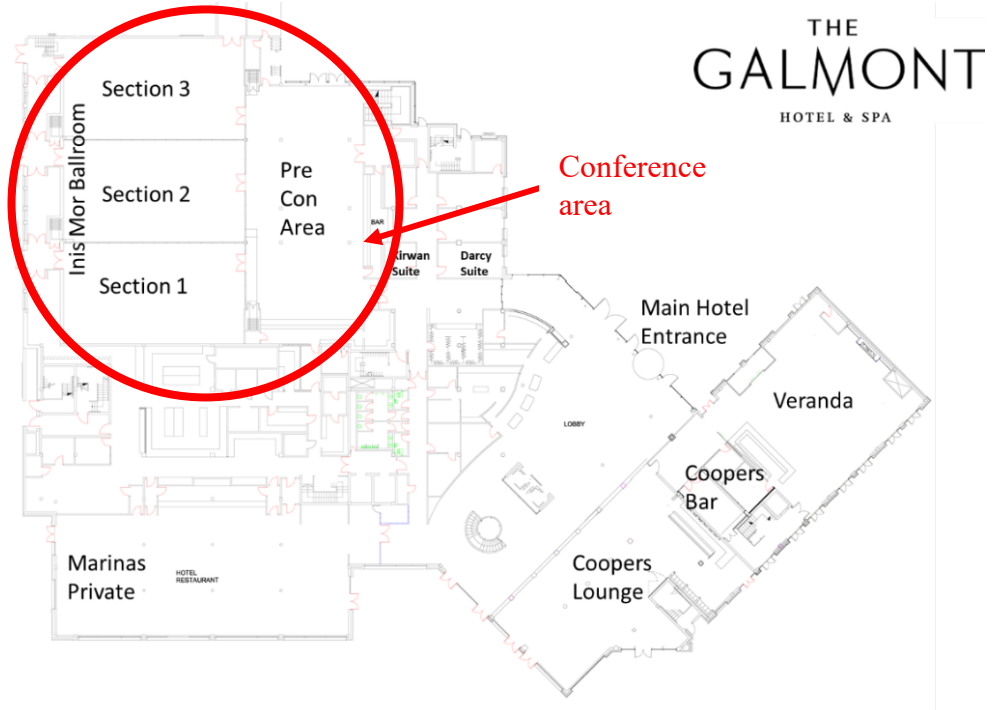
Poster format: Poster sessions will take place from 11.00 – 11.30 and from 1.00-2.00, and poster presenters should be available at their posters during these sessions. The maximum size of the poster boards is 1200 mm x 900 mm. Access to the poster presentation area will be from 8.45 – 9.30 am for assembly of posters. These poster presentations are a particularly important part of the program, and will showcase our excellent research projects and researchers.

Registration: All attendees must be registered. Access to all sessions, tea/coffee breaks, lunch and social events will only be granted to registrants.

Networking Programme: A networking event is included for all registered delegates, which will be a BBQ on Thursday evening from 4.30 – 6.00 pm in the Veranda Lounge of the Galmont Hotel.



Conference Floor Plan:



“Sustainable Futures” Panellist Profiles:

Padraig Burke, Director at Ward and Burke Construction Limited



Ward and Burke is a Galway-based international construction firm is one of Ireland’s principal civil and MEICA engineering contractors and which recently report a record revenue of €409M last year. A native of Portumna, Padraig Burke owns the company together with brothers Michael and Robert Creggs. Padraig Burke is a member of the Construct Innovate Governance Board.

Rachael Stewart MBA, Business Development Director at Stewart Construction



Rachel is a University of Galway graduate, where she studied English and Italian, and later an MBA in Business. She has over 20 years of experience as Business Development Director for Stewart Construction, a fourth generation construction company established in Salthill, Galway in 1902. Rachael has been a key player in the development of the family business over the past 25 years, focusing on collaboration and innovation to translate clients’ bespoke needs into quality buildings and appealing spaces that promote business evolution. Rachael was a founding member of Construction Professional Skillsnet and currently, is involved in the CIF Regional and Infrastructural



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Forum, a member of Galway Chamber and a member of the Construct Innovate Governance Board.

Mr Andy Leyland, Commercial Director, GlasPort Bio



Andy Leyland is an established leadership professional with over 25 years international experience in B2C and B2B environments in P&L delivery, strategic management, business development, multi-channel marketing, quality management, R&D, and operations. Andy has a proven ability to build consensus and improve performance among cross functional teams to support the operational needs of a global business. Andy has worked across multiple business sectors such as Automotive, Telecoms, Medical Devices, Fast-Moving-Consumer-Goods (FMCG) and Biotech.

Andy has worked for the last twenty years in senior director roles with Irish companies such as Bio Medical Research (Quality management, Head of Operations and ultimately as Chief Executive Officer of Slendertone), Lifes2good (as Business Development and Supply Chain Director) and Glasport Bio (Business Development Director). Andy has spent five of those years living and working in the US and has a strong knowledge of that market as well as having broad experience of the key markets across Europe and Asia.

Currently Andy is leading the commercialization efforts of Glasport Bio who have developed innovative products to reduce Green House Gases (GHG) and ammonia emissions across the Agricultural sector.

Dr Rory Monaghan, Associate Professor of Energy Systems Engineering at University of Galway



Dr Rory Monaghan is an Associate Professor of Energy Systems Engineering in the School of Engineering at University of Galway. He is a Principal Investigator in the Ryan Institute, a Funded Investigator in MaREI, the SFI Research Centre for Energy, Climate and Marine, and the Director of the Energy Systems Engineering Programme at University of Galway. Rory runs the EneRgy systems [INtegration \(Erin\) research group](#), which focuses on supply chains for decarbonisation of hard-to-abate sectors using hydrogen, bioenergy, renewable gases, carbon capture utilisation and storage (CCUS).

Professor Frances Fahy, Professor of Geography at University of Galway



Prof. Frances Fahy is Professor of Geography at University of Galway, who has coordinated > 20 funded research projects and is the coordinator and lead of the €3 million Euro Horizon 2020 project, EnergyPROSPECTS (2021-2024). She is the lead social scientist on the H2020 CAMPAIGNers project examining sustainable lifestyles across Europe (2021-24) and she leads the Irish research team on the European JCI-SOLTICE CCC-CATAPULT project, investigating young people's relationship with climate change. She has published more than > 80 publications. She is the past President of the Geographical Society of Ireland and a past Chair of the Planning and Environment Research Group of the Royal

Geographical Society. She was the recipient of the 2013-14 Fulbright Scholar Award and is the Vice-Chair for the International Geographical Union Congress 2024 'Bridging a World of Difference'.

Dr Florence Abram, School of Biological and Chemical Sciences, University of Galway



Florence is an Associate Professor in Microbiology and the Director of the Functional Environmental Microbiology research group, which was established in 2010. The group research activities centres around the application of novel technologies, including omics and machine learning, to investigate the response of microorganisms and microbiomes to changing environmental conditions. Current research includes work on: i) using deep machine learning to improve de novo protein identification; ii) investigating microbial exposure to PFAS; iii) exploring soil as a reservoir for antimicrobial resistance; iv) assessing the impact of agricultural practice on soil biodiversity and functioning; v) optimising and modelling of agriculture-based anaerobic digestion and vi) assessing the impact of metals on anaerobic digestion processes. To date Florence has supervised/co-supervised 18 PhD students (12 of whom have graduated) and 1 research MSc (graduated). She has also mentored 3 postdoctoral researchers. Passed students have secured employment in academia and in industry, with most of whom Florence retain collaborative links.

“Innovation for Health” Panellist Profiles:

Dr Liam Mullins, CTO and Co-founder of Perfuze



Liam Mullins is a B.Eng. (Mechanical Engineering) and PhD (Biomedical Engineering) graduate of University of Galway. Liam began his career as a Research and Development Engineer in Veryan Medical before pursuing his entrepreneurial career first as a BioInnovate Fellow. Liam co-founded and was CTO of Embo Medical, a medical device company developing innovative medical device technology to treat diseased peripheral vessels and organs. The company developed a unique platform technology for use in the field of vascular embolization, designed to achieve higher safety outcomes in shorter procedural times; resulting in fast, safe, cost-effective embolization. Embo was acquired by C.R. Bard in 2015. In 2017, Liam co-founded Perfuze and is CTO of the company. Perfuze specialises in creating medical technologies geared towards facilitating the rapid and complete removal of clots on the brain during an ischemic stroke.

Dr Jeremy Skillington, CEO of Poolbeg Pharma



Jeremy graduated from University of Galway with a BSc and PhD in Biochemistry. Jeremy began his biotechnology career in the Business Development group of Genentech, Inc in California in 2002. At Genentech he was responsible for executing over 40 licencing, investment and collaboration transactions. Returning to Ireland in 2009, Jeremy led Business Development and was a member of the Senior Management team at Opsona Therapeutics Ltd before becoming a founder and CEO of immuno-oncology

company TriMod Therapeutics Ltd. In 2014 Jeremy joined German investment fund HS Lifesciences GmbH to provide start-up and business development support to portfolio companies ImmunoQure AG and Ethris GmbH. Jeremy joined Inflazome on its founding in 2016 and was instrumental in their acquisition by Roche in September 2020 for €380M (£325M) upfront and significant downstream milestones. Currently, Jeremy is CEO of Poolbeg Pharma.

Dr Bárbara Luz Oliveria, Luminate Medical



Bárbara is a biomedical engineer by background with international research experience, having earned her MEng from the NOVA University Lisbon, Portugal, and her PhD from the University of Galway, Ireland, both in the exploration of new modalities for breast cancer diagnosis. Bárbara gained significant experience working as a clinical engineer on healthy volunteer studies and clinical trials, which allowed her to develop an in-depth understanding of how to validate innovative medical device solutions from an early stage with human studies. Since then, Bárbara has co-founded Luminate Medical, a medical device start-up based in Galway, where she is CTO. Luminate Medical is focused on the development of medical devices which enable patients to control and prevent the side effects of cancer treatment. Luminate's first product is Lily, an innovative medical device to prevent hair loss during chemotherapy.

Dr Ray McCarthy, Scientific Affairs Manager, Johnson & Johnson Cerenovus



Ray is a BSc (Chemistry) and PhD (Chemistry and Biomedical Science) graduate of University of Galway. He holds a Masters in Pharmaceutical and Analytical Chemistry from UCC also. Ray worked as Senior R&D Engineering/Scientist in Sadra Medical (a Boston Scientific Company in California), and subsequently, as Principal Investigator R&D Engineering in Boston Scientific and as Scientific Affairs Manager in Neuravi before joining Johnson and Johnson as Scientific Affairs Manager in 2017. Ray worked as a part-time lecturer in University of Galway for a number of years also.

Dr Kate Reddington, Biological and Chemical Sciences, University of Galway



Dr Kate Reddington is a Principal Investigator in the School of Biological and Chemical Sciences at University of Galway. Her research focuses on the development of innovative solutions for infectious disease diagnostics and public health microbiology. Of particular interest to her group is infectious disease diagnostics and the utilisation and adaption of emerging technologies, such as point of use metagenomic sequencing, for use in clinical settings. Dr Reddington has worked with a number of European and Irish SMEs on collaborative research and develop programmes funded through the European Union and Enterprise Ireland. Dr Reddington is also a founding member and director of a University of Galway spin-out called BioProbe Diagnostics.



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Dr Andrew Simpkin, School of Mathematical and Statistical Sciences, University of Galway



Andrew is a Lecturer in Statistics at the School of Mathematical and Statistical Sciences at University of Galway. His multi-disciplinary research focusses on longitudinal data analysis, functional data analysis, genomics and data science. Andrew works on many interdisciplinary projects across medicine, engineering, biology, sociology and sports science. He is interested in applied statistics and data science, developing methods and tools to work with people in a wide variety of disciplines. These collaborations often lead to exciting questions which require novel theoretical statistical approaches. Andrew is a mathematics graduate of TCD (BA) and PhD graduate of University of Galway. In 2014 Andrew received a Career Development Award in Biostatistics from the Medical Research Council (MRC, UK) to investigate flexible methods for analysing longitudinal data.

Programme Overview: 4th May 2023

Time	Inis Mór Ballroom Section 1	Inis Mór Ballroom Section 2	Inis Mór Ballroom Section 3
09.00 - 09.30	Registration – Pre-conference area		
09.30 – 09.40	Welcome - Vice Dean for Research and Innovation, Prof. Laoise McNamara College of Science and Engineering Research and Innovation Strategy, Executive Dean of the College of Science and Engineering, Prof. Walter Gear,		
09.40 – 09.45	University of Galway and the Sustainable Development Goals, Dr John Caulfield, Director of Strategy Implementation, University of Galway		
09.45 – 10.00	Aligning your Research to the SDG's, Prof. Jamie Goggins		
10.05 – 10.50	“Sustainable Futures” Panel Discussion Chair: Dr John Caulfield, University of Galway		
10.50-11.20: Tea/Coffee, Poster Session, Pre-conference area			
11.20 - 13.00	Sustainable Futures 1 <i>Chairs: Dr. Myra Lydon, Prof. Jamie Goggins</i>	Decisive Data 1 <i>Chairs: Dr. Mamoona Asgar, Prof. Jim Duggan</i>	Innovation for Health 1 <i>Chairs: Dr. Eimear Dolan, Prof. Alan Ryder</i>
13.00 - 14.00: Lunch and Poster session, Pre-conference area			
14.00 - 14.45	“Innovation for Health” Panel Discussion Chair: Dr Ann Ryan, Director of Strategic Development, College of Science and Engineering		
14.50 - 16.30	Sustainable Futures 2 <i>Chairs: Dr. Florence Abraham, Prof. Jamie Goggins</i>	Decisive Data 2 <i>Chairs: Dr. Mamoona Asgar, Prof. Jim Duggan</i>	Innovation for Health 2 <i>Chair: Dr. Kate Reddington, Prof. Michel Destrade</i>
16.30- 16.35	Closing remarks		

Professor Laoise McNamara, Vice-Dean for Research and Innovation, Executive Dean of the College of Science and Engineering, Prof. Walter Gear

16.35: Prize giving, Networking, BBQ

Veranda Lounge

Thursday 4th May 2023 – Parallel Sessions

11.30 – 1.00	<p align="center"><u>Sustainable Futures 1</u></p> <p align="center">Venue: Inis Mór Ballroom – Section 1</p>	
11.30 – 11.40	<p align="center">Tidal GES: Tidal Energy – A transition to affordable and clean energy that can achieve Good Environmental Status</p> <p align="center">Flanagan, M., Goggins, J., Nash, S., Eftekhari, A., Power A.M., Lawton, C., Lambert, E., Kinderman, G., Hynes, S., Van Rensburg, T., Ayoub, M., Lanser, M.C., Finnegan, W., Munaweera Thanthirige, T.R.</p>	
11.40 – 11.50	<p align="center">SPOTBlade-WP5: Strategies for erosion and fouling Protection of Offshore Turbine Blade</p> <p align="center">Azarkaman, F., Goggins, J., Finnegan, W.</p>	
11.50 – 12.00	<p align="center">University of Galway State of the Art Building Envelope Test Facility</p> <p align="center">Moran, P., Hajdukiewicz, M., Goggins, J.</p>	
12.00 – 12.10	<p align="center">Exploring the effects of Solar Wind on Pulsars using the LOFAR telescope</p> <p align="center">Sai Chaitanya Susarla</p>	
12.10 – 12.20	<p align="center">Contrasting water soluble pesticide applications in mineral soils to predict the influence of surface runoff to watercourses</p> <p align="center">Scannell, S., Healy, M.G., McGinley, J., Ryan, P.C., Mellander, P.E., Morrison, L., Harmon O’Driscoll, J., Siggins, A.</p>	
12.20 – 12.30	<p align="center">StereoWaves: 3D Real-time wave analytics</p> <p align="center">Andy Donald</p>	

12.30 – 12.40	<p>Optimal Sizing of Behind-the-Meter Battery Energy Storage Systems Under Optimal Battery Operation: A Case Study in Ireland</p> <p>Rezaeimozafar, M, Monaghan, R, Barrett, E, Duffy, M</p>	
12.40 – 12.50	<p>ATP Pipeline: Market driven materials selection and characterization of Thermoplastic Composite Pipelines (TCP) used for offshore and subsea applications</p> <p>Bachour, C.I, Allen, R, O’Higgins, R.M, Flanagan, T, Harrison, N.M</p>	

11.30 – 1.00	<p><u>Decisive Data 1</u></p> <p>Venue: Inis Mór Ballroom – Section 2</p>	Page
11.30 – 11.40	<p>I-ASIDE: Towards the Global Interpretability of Image Models through the Lens of Axiomatic Spectral Importance Decomposition</p> <p>Jiaolin Luo, James McDermott, Colm O’Riordan</p>	
11.40 – 11.50	<p>Designing multi-user social spaces in Virtual Reality for People living with Dementia</p> <p>Reilly G.R., Flynn A.F., Redfern S.R., Brennan A.B., Muntean G.-M.</p>	
11.50 – 12.00	<p>Leveraging Adversarial Autoencoders for Generative Probabilistic Novelty Detection</p> <p>Asad, M., Ullah, I., Madden, M.G</p>	
12.00 – 12.10	<p>A Comparative Analysis of Data Synthesis Techniques to Improve Classification Accuracy of Raman Spectroscopy Data</p> <p>Flanagan, A, Glavin, F.G.</p>	
12.10 – 12.20	<p>Regional Mapping of Peatland Boundaries using Airborne Radiometric Data and Supervised Machine Learning</p>	

	O'Leary, D., Brown, C., Daly, E.	
12.20 – 12.30	UPFRONT CO2e emissions of buildings in Ireland Moran, P., Larkin, C., Flynn, J., Barrett, S., Barry, P., Goggins, J.	
12.30 – 12.40	Modelling the infection spread dynamics of Mpox Ajmal, H., Hunter, E., Walsh, C., Duggan, J.	
12.40 – 12.50	Exploring an OTA Model Update Process for TinyML-Based RTOS Systems Jordan, E.	
12.50 – 13.00	ChildGAN – A Dataset of Synthetic Children for Data Privacy in Smart-Toy Platforms Corcoran, P., Farooq, M-A, Yao, W.	

11.30 – 13.00	<u>Innovation for Health 1</u> Venue: Inis Mór Ballroom – Section 3	Page
11.30 – 11.40	Manipulation of purine homeostasis to exploit and Achilles heel in MRSA beta-lactam resistance Zeden, M.S., Nolan, A.C., Kviatkovski, I., Campbell, C., Urwin, L., Corrigan, R.M., Grundling, A., O'Gara, J.P.	
11.40 – 11.50	Protein – Calixarene Crystal Engineering Mockler, N.M., Ramberg, K.O., Raston, C.L., Crowley, P.B.	
11.50 – 12.00	An in vitro investigation into the mechanisms underlying actuation-mediated foreign body response modulation Ward, N.A., Roche, E.T., Duffy, G.P., Dolan, E.B.	
12.00 – 12.10	Isolation and Characterisation of Mesenchymal Stem Cell Apoptotic Bodies Buckley, F.A., Contreras-Kallens, P., Brennan, M.A.	



12.10 – 12.20	Direct in-situ evaluation of stress in muscle Destrade, M.	
12.20 – 12.30	Co-culture with HepG2 spheroids spurs in vitro growth and development of the infective stages of the helminth pathogen <i>Fasciola hepatica</i> Vitkauskaite, A., McDermott, E., Lalor, R., De Marco Verissimo, C., Dehkordi, M.H., Thompson, K., Fearnhead, H., Dalton, J.P., Calvani, N.E.D.	
12.30 – 12.40	PTBP1 enforces ATR-CHK1 signalling determining the potency of CDC7 inhibitors Göder, A., Quinlan, A., Rainey, M.D, Bennet, D., Shamavu, D., Corso, J., Santocanale, C.	
12.40 – 12.50	Laser Functionalisation of Flexible Polymer- Carbon Composites for Medical Sensing Scully, P., Biswas, R., Mischo, C.	
12.50 – 13.00	Implantable Sensor for AAA Surveillance for Post-EVAR Follow-Up: Challenges of Sensor Design and Characterisation Silva, N. P., Amin, B., Dunne, E., O'Halloran, M., Elahi, A.	

	<u>Sustainable Futures 2</u> Venue: Inis Mor Ballroom – Section 1	Page
15.00 – 15.10	Vision Transformer-based Depth Estimation for Autonomous Vehicles Hafeez, M.A., Madden, M.G. and Ullah, I.	
15.10 – 15.20	Integration of anaerobic co-digestion into a sustainable livestock farming system Tisocco, S., Beausang, C., Zhan X., Crosson, P.	
15.20 – 15.30	Driving Climate Action Carragher, V., Goggins, J.	
15.30 – 15.40	Field scale assessment of coconut-based activated carbon systems for the treatment of herbicide contamination McGinley, J., Healy, M. G., Scannell, S., Ryan, P. C., Harmon O’Driscoll, J., Mellander, P.E, Morrison, L., Siggins, A.	
15.40 – 15.50	The emerging field of AgroGeophysics – Its role in sustainable agriculture Eve Daly	
15.50 – 16.00	Using genomes of novel uncultured lineages to investigate archaeal evolution and habitat adaptation Sheridan, P.O.	
16.00 – 16.10	Rule-Based Multi-Agent System for Autonomous P2P Energy Trading in Dairy Farming Shah, Mian Ibad Ali1, Barrett, Enda1, Mason, Karl	
16.10 – 16.20	Emerging Pollutants in our Environment: the What, the Where, and the Why Do We Care Martin Sharkey	

	<u>Decisive Data 2</u> Venue: Inis Mór Ballroom – Section 2	Page
15.00 – 15.10	Multimodal Machine Translation Hatami, A., Buitelaar, P., Arcan, M.	
15.10 – 15.20	The TAPAS Project: Tracking adaptation progress in agriculture and food security using an AI-powered satellite remote sensing platform Geever, M. , Ó Fionnagáin, D., Tessema, Y., O’Farrell, J., Trearty, R., Codyre, P., Golden, A., Spillane, C.	
15.20 – 15.30	A Support Centre for Developing and Deploying Sustainable Data Spaces Curry, E, Zaarour, T, Haque, R	
15.30 – 15.40	Effective Usage of Thermal Imaging Technology for the Development of Extended Forward Vision Systems for Advanced Vehicular Systems Muhammad-Ali Farooq, Peter Corcoran	
15.40 – 15.50	A multivariate exploratory data analysis of a crisis text messaging service to measure the impact of the COVID-19 pandemic on mental health in Ireland Ajmal, A., Melia, R., Young, K., Bogue, J., Wood, H., O’ Sullivan, M., Duggan, J.	
15.50 – 16.00	Monitoring energy use and indoor environmental quality of new build and retrofit homes Moran, P., Mishra, A. K. , Syed, M.J., AzimiSechoghaei, M., Goggins, J.	
16.00 – 16.10	Exploring the Effect of Misinformation on Infectious Disease Transmission Mumtaz, N., Green, C., Duggan, J.	
16.10 – 16.20	Improving Human Trafficking Detection Through Audio Event Classification and Semantic Ontologies Jordan, E.	

	<u>Innovation for Health 2</u> Venue: Inis Mór Ballroom – Section 3	Page
15.00 – 15.10	Novel mechanobiological modelling of bone metastasis reveals that substrate stiffness, biochemical bone cell signaling and mechanical stimulation alter metastatic activity Kumar, V., Naqvi, S.M., McEvoy, E., McNamara, L.M.	
15.10 – 15.20	Computational Optimization of Insulin Release from Macroencapsulation Devices Trask, L., Tarpey, R., Duffy, G.P., Dolan E.B.	
15.20 – 15.30	Unravelling the protease-inhibiting role of Fasciola hepatica serpins in host-parasite Interactions Kilbane, T., Dalton, J., Dobó, J., Gál, P., De Marco Verissimo, C.	
15.30 – 15.40	Social isolation-induced transcriptomic changes in mouse hippocampus impact the synapse and show convergence with human genetic risk for neurodevelopmental phenotypes Laghneach, A., Kelly, J.P., Desbonnet L., Holleran, L., Kerr, D.M., McKernan, D., Donohoe, G., Morris, D.W.	
15.40 – 15.50	A Fully Coupled Computational Framework for Bone Fracture Repair in the Presence Of Bioabsorbable Magnesium Fixation Devices Quinn, C., Van Gaalen, K.G, McHugh, P.M, Kopp, A.K, Vaughan, T.V	
15.50 – 16.00	Impact of Probe Typology and Electrode Size on the Accuracy and Repeatability of Conductivity for Left Atrial Appendage Electrical Characterization Bellow 100kHz	



	Benchakroun, H, Ištuk, N, Dunne, E, Elahi, A, O'Halloran, M, O'Loughlin, D.	
16.00 – 16.10	A Clot Composition Dependant Hyperelastic Model in The Simulation of Direct Aspiration Thrombectomy Bein Snee, K., McCarthy, R., McHugh, P., Fereidoonzhad, B., McGarry, P.	
16.10 – 16.20	A Design Outlook of Augmented Reality Exergames for People with Osteoporosis: Improving Stability and Engagement to Reduce Falls Thuilier, E., Carey, J., Dempsey, M., Dingliana, J., Whelan, B., Brennan, A.	
16.20 – 16.30	Genome-wide CRISPR/Cas9 Loss-of-Function Screens Reveal Genes that Determine Cell Responses to CDC7 Kinase Inhibitors Rainey, M.D., Santocanale, C.	

Poster Presentations: Pre-conference area

Sustainable Futures: Lead the transition to a sustainable future through innovation solution development	
Presenters	Title
Sirin, C., Goggins, J. Hajdukiewicz, M.	A review on building-integrated photovoltaic/thermal systems for green buildings
Finnegan, W., Goggins, J.	LOGIC-TIDE: logistical and Industrial Co-design for Tidal Energy
Flanagan, M., Goggins, J., Finnegan, W.	MIDRONE: Advanced Manufacturing Technologies to enable Intelligent DRONE delivery
Pierce, H., Tuohy, P., Healy, M., Fenton, O., Daly, E.	REWET: Hydrologic impacts of water table management on carbon-rich grassland soils
Memon, L.R., Moran, P., Goggins, J.	Assessment and Extension of Energy Performance Contracting (EPC) to include metrics for Internal Environment Conditions (IEC)
Xu, K., Finnegan, W., Goggins, J., O'Rourke, F.	Develop new protocols for introducing complex cyclic loading spectra during fatigue testing of full-scale tidal turbine rotor blades
Ahmad, A., Finnegan, W., Jiang, Y., Goggins, J.	Development of decision-making tools for end-of-life of wind turbines
McGinley, O., Moran, P., Goggins, J.	Evaluating existing One-Stop-Shop retrofit services in Ireland and the householder retrofit journey
Kazemi Vanhari, A, Fagan, E, Finnegan, W, Jiang, Y, Goggins, J	A novel strength-based method for fatigue life prediction of composite wind turbine blades
Bachour, C.I, Flanagan, M., Jiang, Y., Finnegan, W.	DeepWindDemo: Design, build and testing of a novel Deep-sea Wind energy Demonstrator



Basu, Rumia, Colin Brown, Patrick Tuohy, Eve Daly	Estimating soil moisture at high resolution using Sentinel 2 data
Wahid, A., Breslin, John G, Muhammad Intizar Ali	Faults Can't Hide: How GAN and TCN Unlock Accurate RUL Prediction in Complex Mechanical Systems.
Glennon, C., Finnegan, W., Munaweera Thanthirige, T.R., Jiang, Y., Goggins, J.	Commercialisation of a Recyclable and Innovative Manufacturing Solution for an Optimised Novel marine turbine (CRIMSON)
Pontes, F. A., Schukat, M., Curry, E.	Fuzzy vs. Crisp in Uncertainty-aware Service Selection: Enabling Sustainability on Multimedia Event Processing
Dowd, B., McDonnell, D., Tuohy, M.G.	Treatment of cattle paunch contents, an agri-waste, with novel marine and terrestrial fungal secretomes.
Dowd, B., McDonnell, D., Tuohy, M.G.	Electro-thermal Modelling of Eco-efficient Magnet Wire in Motors/Generators
Agnieszka I. Olbert*, Alexander Shchepetkin, Galal Uddin, Sogol Moradian	Combined statistical, hydrodynamic and machine learning modelling of water levels in coastal basins
Johnson, C, Harrison, N, Mitchell, S	BIOPLASTICS: AN EVALUATION OF SUSTAINABILITY THROUGH FIELD EXPERIMENTS AND LIFE CYCLE ASSESSMENT
Kagiri, C., Carragher, V., Goggins, J.,	ENACT (Enabling National Action of Commercial Take-up of Retrofit)
Du, B, Gu, M, Hu Z, Zhan X, Wu G	Thermodynamic Analysis of Extracellular Electron Transfer During Ethanol Oxidation in Anaerobic Digestion Systems
Fereidoonnehzad, M., Leen, S.B., Nash,	A new BEMT model for analysing spiral-bladed vertical axis tidal turbines



S, Flanagan, T., McGarry, P.	
Prevedello, M., Wilson, C., Abram, F.	Interplay between microbial sulfur reduction, methanogenesis, and transition metals supplementation
Kashyap, R., O’Ceallaigh, C., McGetrick, P.J., Harte, A.M.	Review of connections in a multi-storey modular CLT building
Ge, S., McGetrick, P.J., O’Ceallaigh, C.	Gaps in LCA practices for wood products between Ireland and worldwide
Innovation for health: Accelerate understanding of disease and provide disruptive solutions for health	
Presenters	Title
Chandaliya, R.	AI-Based Real-Time Detection COVID-19 Infections using Cough
Ali, D., Morris, D.	MEF2C DYSREGULATION AND ITS ASSOCIATION WITH NEUROPSYCHIATRIC DISORDERS AND COGNITIVE FUNCTION IN HUMAN NEURAL CELLS
VITALADEVARAM, VISWANATH	MM/PBSA binding free energy calculations of heparin binding domain of fibronectin with self-assembled monolayers Abstract
Zeeshan, R, Asghar, M, Bogue, J.	Employing Blockchain & AI to innovate Sensitive Data Handling practices in Mental Health Services.
Boxwell, S., Armfield, D., Cardiff, P., Cook, S., Loughnane, D., Kelly, P., McNamara, L.M.	In Silico Clinical Trials of Transcatheter Aortic Valve Replacement in the Bicuspid Aortic Valve
Matheus de Castro, Alan G Ryder ¹	Measuring protein-polymer nanoparticle interactions using polarized Excitation Emission Matrix (pEEM) spectroscopy
Senthil, D, Concannon, J, McGarry, J.P.	Novel patient-specific beating heart model incorporating active contractility and a pseudo-fluid domain

Aris, H., Mitras, T., Marangon, T., Contreras Kallens, P., Dwyer, R., Daly, A., Duffy, G.P., Brennan, M.Á.	Delivery of extracellular vesicles for tissue regeneration
Chole, A.M., Duffy, M.	Magnetics-free DC-DC Power Conversion using Piezoelectric Transformers
Malik, S, Golden, A.	LncRNA based antigen load enables the classification of patient's survival and immunotherapy outcomes in Melanoma
Schulte, J., Grenon, Schulte, Carroll et al.	Fantastic DNA in a Box: A successful example of adapting interactive hands-on science outreach to work remotely online
Sharma, D., Gite, S., Tuohy, M.	Hydrolysates obtained from fish waste promote growth of gut-friendly bacteria
Ryan, K., O'Connor, D., Barkley, L.R.*, Ó Broin, P.*	Transcriptomic characterisation and identification of potential neoantigens in cancer-associated fibroblasts in breast cancer.
Ostojic, D., Corley, E., Donohoe, G	The impact of complement-based polygenic risk score for schizophrenia on cognitive performance via cortical thickness in schizophrenia and healthy adults
Wanis Nafo, Ogulcan Guldeniz, Hyungmin Jun, Eunho Kim.	Eccentric Intradiscal Pressure and High-Stiffness Ligaments Explain Progression of Spinal Deformities: A Finite Element Analysis
Tidke, P., Dodson, H., Flaus, A.	Dynamics of chromatin factors RSF1, CENPS and CENPX at DNA damage sites
Ratul Kumar Biswas, Patricia Scully.	2D Digital Laser printing of Kirigami-inspired 3D Strain Sensor
Hawsawi, W, Dodson, H, Flaus, A	H2AX gene copy number in cancer cell line models
Taheri, P, Golden, A	A PET radiomic signature to predict survival in non-small cell lung cancer patients
Soheil. F, Mishra, A. K., Moran, P., Goggins, J.	Resilient classrooms for the future – Exploring lean and agile techniques for sustainable and healthy learning environments



Bukhari, MMM, Naqvi, SM, McNamara, LM	Development of 3D Vascularized and Humanized Models of Healthy and Osteoporotic Bone
Naqvi, S.M., O'Sullivan, L.M., Allison, H., Casey, V., Schiavi-Tritz, J., McNamara, L.M.	Microarray analysis reveals temporal changes in gene expression associated with matrix alteration and secondary mineralisation in long-term estrogen deficiency
Khabooshani, MK, Naqvi, SMN, Von Euw, SVE, McNamara, LM	Development of advanced in-vitro mineralized models to study osteoporosis
Senthilkumar, I.S., Howley, E.H, McEvoy, E.M	An Integrated Finite Element and Agent-Based Model For Mechanosensitive Tumour Growth
Hamon, S., Tilly, G., Saillet, N., Lalor, R., Gaughan, S., Griffin, MD., Dalton, JP., Brouard, S., Degauque, N	Investigation of parasite-derived immunomodulatory molecules on T and B lymphocytes
Decisive Data: Develop innovative data-driven approaches to inform decision making and benefit society	
Presenters	Title
Adams, T., Goggins, J, Jameel, S.M.	Opportunities and Barriers around Sustainability Reporting at Higher Education Institutions
Grant, S.R., Ryder, A.G.	A Robust Elemental Screening Method for Cell Culture Media used in Biopharmaceutical Manufacturing based on Microwave Plasma Atomic Emission Spectroscopy
Syeda, DZ., Asghar, M.	Generation and Analysis of Dataset for Dynamic Malware Classification of Windows Portable Executable (PE) Files
Kadamala, K., Barrett, E.	Comparative Analysis of RL Algorithms with Transfer Learning for Cross-Building HVAC Optimization

Victoria Sánchez Muñoz, Michael Mc Gettrick	CHSH game with 3 players in a triangle with bi-partite and tri-partite entanglement
Jaleed Khan, John Breslin, Edward Curry	Enhancing Data-driven Neuro-Symbolic Visual Understanding and Reasoning with Common Sense Knowledge
Wang Yao, Muhammad-Ali Farooq, Peter Corcoran	Will your Doorbell Camera still recognize you as you grow old?
Yang, Xue, Howley, Enda, Schukat, Michael	Adaptive Anomaly Detection Using Reinforcement Learning-based Dynamic Thresholding
Arcan, Mihael, Buitelaar, Paul	Bootstrapping a Chatbot on Industrial Heritage through Term and Relation Extraction
Dalal, D., Arcan M., Buitelaar P.	CALM: Causality-Aware Language Models and Benchmarks for General Causal Reasoning
Hayes, C., Tighe, C., Connolly, M.	Creating a Pandemic Surveillance Dashboard for Europe
Trearty, R., Geever, M., Ó'Fionnagáin, D., O'Farrell, J., Tessema, Y., Codyre, P., Spillane, C., Golden, A.	Measuring intensification of cropping cycles in Northern Senegal using time-dependent classifications with Time-Series-to-Image Transformations and Convolutional Neural Networks
Sogol Moradian, Apoorva Bamal, Agnieszka I. Olbert	Multivariate flood analysis based on copula and parametric and non-parametric distributions
Manjunath S, Zayed O, Connolly M, Buitelaar P	Towards Suggestion Extraction from Short Texts: Approach and Dataset on Social Media
Ó Fionnagáin, D., Tessema, Y., O'Farrell, J., Trearty, R., Codyre, P., Golden, A., Spillane, C.	Identifying rice cultivation in the Senegal River Valley using multi-wavelength earth observations and ensemble classification methods



Byrne, D. , Harkin, S. , Crotty, T., Glavin, M. a1, Jones, E.	Uptime: Component Failure Prediction System for Agricultural Machinery
Mir Talas, Mahammad Diganta, Md Galal Uddin, Agnieszka I. Olbert	Improving algorithm for retrieving Chlorophyll-a using remote sensing incorporating artificial intelligence technique
Abdul Majed Sajib, Md. Galal Uddin	A comparison of various retrieval techniques for assessing dissolve oxygen in marine ecosystems using remote sensing techniques



Time	Inis Mór Ballroom Section 1	Inis Mór Ballroom Section 2	Inis Mór Ballroom Section 3
09.00 – 09.30	Registration, Tea/Coffee, Pre-conference area		
09.30 – 09.40	“College of Science and Engineering Research and Innovation Strategy”, Dean of the College of Science and Engineering, Vice Dean for Research and Innovation		
09.40 – 10.00	“Aligning your Research to the SDG’s”, Prof. Jamie Goggins		
10.00 – 10.05	“University of Galway and the Sustainable Development Goals”, Dr John Caulfield, Director of Strategy Implementation, University of Galway		
10.05 – 10.50	“Sustainable Futures” Panel Discussion		
10.50-11.20: Tea/Coffee, Poster Session, Pre-conference area			
11.20 – 13.00	Sustainable Futures 1	Decisive Data 1	Innovation for Health 1
13.00 - 14.00: Lunch and Poster session, Pre-conference area			
14.00 – 14.45	“Innovation for Health” Panel Discussion		
14.50 – 16.30	Sustainable Futures 2	Decisive Data 2	Innovation for Health 2
16.30 – 18.00: BBQ, Networking, Prize giving, Veranda Lounge			



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