



UCC INNOVATION

IMPACT REPORT 2024



Rialtas na hÉireann
Government of Ireland



Arna chomhchistiú ag
an Aontas Eorpach
Co-funded by the
European Union



Tionól Réigiúnach
an Deiscirt
Southern Regional
Assembly



Enterprise
Ireland



KTI
Knowledge Transfer Ireland
Where Research & Business Connect

PROFESSOR JOHN CRYAN

VICE PRESIDENT FOR RESEARCH & INNOVATION

Welcome to UCC Innovation's Impact Report for 2024, celebrating the achievements of our researchers as they transform expertise, research, and creativity into real-world impact.

Fostering an innovation-driven and entrepreneurial campus is central to our institutional strategy, Securing our Future - UCC Strategic Plan 2023-2028. This past year has been a remarkable one for UCC Innovation, marked by groundbreaking discoveries, ambitious ventures, and a thriving culture of entrepreneurship. Our researchers, students, and entrepreneurs have demonstrated outstanding creativity, pushed boundaries, and inspired others to embark on their own innovation journeys.

Through the UCC Futures programme, we continue to drive economic, societal, and cultural progress, building a foundation for long-term resilience and prosperity. By championing research excellence and innovation, UCC Futures provides the transformative environment needed to secure our collective future.



DR SALLY CUDMORE

DIRECTOR OF UCC INNOVATION

2024 was another dynamic year of innovation and entrepreneurial activity across the UCC campus - we are grateful to our entire ecosystem for fostering and supporting this progress.

UCC Innovation advances UCC innovations by proactively seeking new discoveries and protecting them through patenting. We also support the development and growth of new ventures from students, graduates and staff, and ensure UCC technologies are effectively licenced to enterprise. Alongside the milestones highlighted in this report, we continued to expand innovation opportunities for students and researchers. New initiatives, such as our Entrepreneur in Residence Programme and UCC's new Business Engagement portal, equip UCC students, researchers and staff with the skills and mindset to turn their ideas into impact. UCC's innovation pipeline remains strong, with several high-potential spin-out ventures in development.

We are grateful for the continued support of Knowledge Transfer Ireland and the European Regional Development Fund, whose funding supports UCC's innovation ecosystem, enabling researchers to translate cutting-edge discoveries into impactful products and services, fostering economic and societal progress.



69
(IDF)

**INVENTIONS
DISCLOSED**

217

**NUMBER OF
INVENTORS**

10

**PATENTS
FILED**

28

**PATENTS GRANTED
IN THE LAST 5 YEARS**

SEMICONDUCTOR PATENT GRANTED

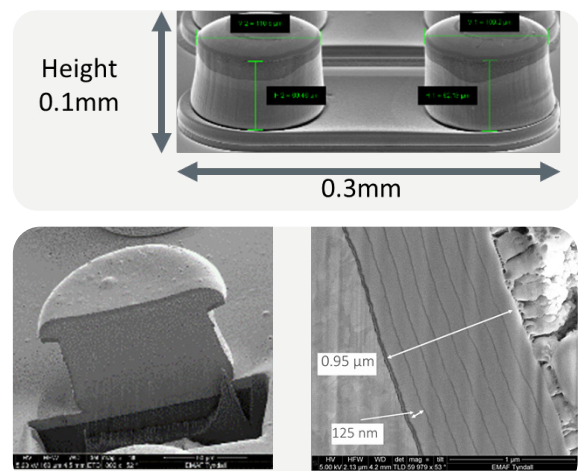
Prof Cian O' Mathuna, [Tyndall National Institute](#) and [School of Engineering](#) in UCC, had a patent granted recently in the area of semiconductors. The patent describes an advanced inductor device designed to improve power supply efficiency in microelectronics systems from smartphones to High Performance Computing for AI and data centres.

Traditional power supplies often rely on bulky magnetic components, which limit their miniaturization. The patented design reduces the need for large, discrete magnetic components, significantly shrinking the overall size of the power supply and leading to higher system efficiency. This invention enables the integration of the power supply with the load (i.e. the processor chip or AI engine) using a technique called integrated voltage regulator (IVR) technology. IVRs enhance power delivery efficiency by eliminating parasitic losses and providing a faster transient response, making these devices significantly more energy-efficient, leading to longer battery life or reduced data centre energy utilisation and reduced heat generation.

The miniaturization of components means that devices can be made even smaller and lighter without sacrificing performance. Additionally, the improved power delivery and faster response times can enhance the overall user experience, making devices more responsive and reliable. This technology also opens up possibilities for more compact and efficient wearable devices, smart home gadgets, and other consumer electronics, driving innovation and improving functionality in the tech we use daily.

The patent is focused on creating a vertical inductor, rather than a flat planar one, which takes up dramatically less footprint underneath the processor chip and allows a large array of power supplies with the patented inductors to deliver granular power to the processor chip. This patent leverages almost 30 years of Tyndall research in integrated magnetics technology, with the outputs being licenced to multiple international companies. Following additional proof of concept research over the coming year, we aim to licence this patent non-exclusively to Tyndall industry partners.

Based on his expertise as an innovative researcher, Cian has been invited to give a plenary talk at APEC2025, the IEEE Applied Power Electronics Conference, on "The Future of Integrated Magnetics in enabling High Performance Computing."



37

LICENCES, OPTIONS & ASSIGNMENTS

UCC IP TRANSFERRED TO ANOTHER PARTY FOR COMMERCIALISATION OPPORTUNITIES

25

CONSULTANCY CONTRACTS

WITH CLIENTS IN THE PRIVATE AND PUBLIC SECTORS FROM

IRELAND // ASIA // UK
USA // EUROPE

FRIENDS OF THE EARTH

Friends of the Earth Ireland engaged with UCC to commission a report on the impact of data centres on Ireland’s energy demand and greenhouse gas emissions. The UCC consultant for this project was Hannah Daly, Professor in Sustainable Energy and Energy Systems Modelling at UCC.

To deliver the project objectives, Hannah conducted a review of relevant documentation, producing quantitative scenarios, and evaluating several key areas.

Hannah applied existing knowledge in modelling energy demands and greenhouse gas emissions to produce a report that anticipates and brings an understanding of future demands. The report outlined the current energy demands from data centres and projected future needs. Recommendations in the report underscore the need for comprehensive strategies to manage the energy demand and emissions from data centres, ensuring alignment with Ireland’s carbon reduction goals.

The report, entitled “[Data centres in the context of Ireland’s carbon budgets](#)”, was widely referenced across print media and radio with UCC experts taking a central role.

The report has allowed both [MaREI - Research Ireland Research Centre for Energy, Climate and Marine Research](#) and Hannah to build their profile and reputation as experts in energy modelling.

The outputs from this study will be used to demonstrate and teach students as an example of how to communicate technical analysis to a public audience.

[UCC Consulting](#) supported Hannah by assisting with the development of a statement of work, agreeing contractual terms with the client and ensuring that any risks to client or university were identified and managed.



UCC LICENCE INCOME IN THE LAST 5 YEARS

€3.2M

LICENCE
INCOME DISTRIBUTED

€1.3M & €920K

DISTRIBUTED
TO INVENTORS

DISTRIBUTED TO
INVENTORS' SCHOOLS/
RESEARCH CENTRE

HIDDEN GALLERIES - EXPLOITATION OF IP FROM NEW AREAS

[The Hidden Galleries project](#), funded by the European Research Council (project no. 677355), and led by PI Dr James Kapaló, addressed a contested aspect of Europe's common heritage, the problematic legacy of fascist and communist regimes and their secret police operations against religious groups. Between 2016-2021, the UCC-based team of researchers from Hungary, Romania, Moldova and Ukraine, produced a series of public exhibitions and web-based resources presenting the visual and material cultural traces of targeted communities enclosed in the archives, bringing these heretofore hidden aspects of the past to public attention and re-connecting communities with their stolen patrimony.

The success and public profile of the exhibitions, which were staged in Hungary, Romania and Ireland, led to the signing of an intellectual property licence and subsequent IP disclosure, resulting in a collaboration with a publicly funded Museum in Romania, the Museum of the Horrors of Communism. This collaboration also unlocked €4000 funding from the museum for a Romanian-language volume to accompany the exhibitions which reached the July 2024 top-10 bestseller list with Humanitas, Romania's leading academic publisher. In addition, this gave access to Romanian Ministry of Culture funding to mount the exhibition in high-profile venues including the National Library of Romania and at the Memorial Museum of the Romanian Revolution, Timisoara, for the 2023 European Capital of Culture celebrations. Ultimately, this collaboration enabled the project's

work to reach an audience of many thousands including the impacted religious communities, students, academics and the general public.

In the post Cold War-era, when the communist and fascist pasts have become a battle ground in the search for historical truth and national memory, the engaged dimension of this project highlighted the consequences of state-sponsored repression and violence, whomever the target may be. A key aim of Hidden Galleries is to be open-ended, encouraging increasing numbers of scholars and communities to become involved in enlarging the [Digital Archive](#) and making the exhibitions and the revelations they reveal accessible to ever wider publics. This was the first licence of IP from the College of Arts, Celtic Studies and Social Sciences in UCC, and the key to success was unlocked by the support and expert advice provided by UCC Innovation.



23

START-UPS

SUPPORTED THROUGH THE IGNITE PROGRAMME

800+

STUDENT COMMUNITY MEMBERS

ENGAGED WITH 1 OR MORE ENTREPRENEURSHIP & INNOVATION EVENTS

93

ACTIVE START-UPS

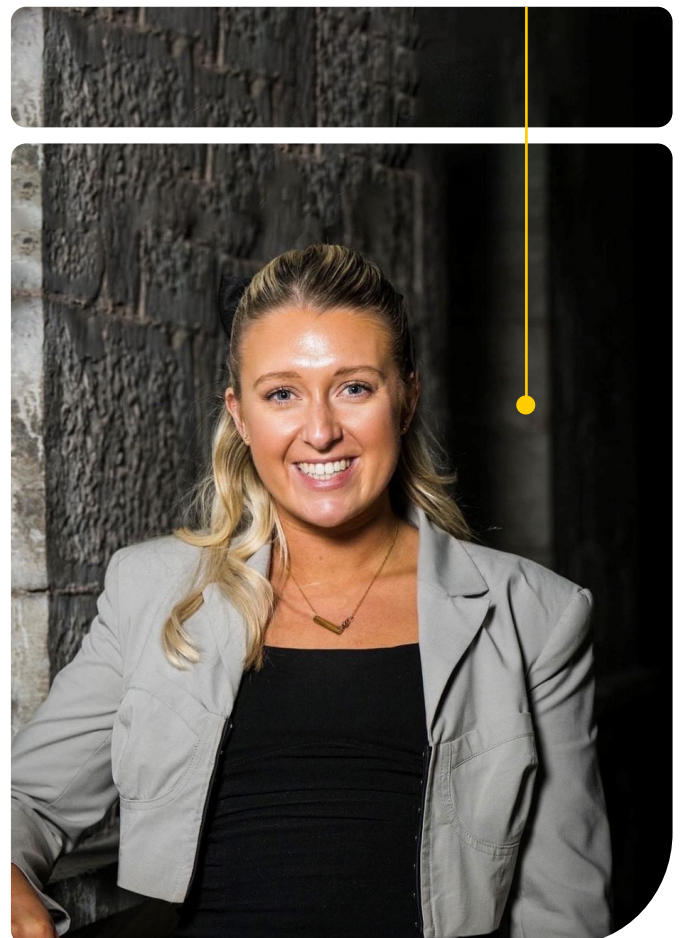
TRUSTDISH - A GRADUATE-LED START-UP

TrustDish, co-founded by Shannen O'Reilly, is an innovative allergen management system designed to make dining out safer for people with food allergies. The platform bridges the gap between individuals with specific dietary needs and food service providers, offering a subscription-based service for restaurants and a free app for customers.

Shannen's journey to creating TrustDish began with her family's food retail business and was further inspired by her sister Rachel's severe peanut allergy. After completing a Master's degree in Food Business and Innovation in UCC, Shannen developed the initial concept for TrustDish during her thesis and went on to develop it with the support of the IGNITE start-up incubation programme at UCC. The TrustDish app works by allowing customers to scan a QR code on the menu, which instantly reveals allergen information through a traffic light system. This dynamic system allows for real-time updates of allergen profiles and direct communication between customers and kitchens.

In May 2024, TrustDish won the 'Start-up of the Year' at the UCC Research & Innovation Awards. The company is currently expanding its team and consolidating sales in Ireland before entering the UK and US markets.

Shannen O'Reilly's innovative work with TrustDish has earned her recognition as one of the young business trailblazers to watch in 2025, as she has been named in the Sunday Independent's Thirty Under 30 List, solidifying her status as a rising entrepreneurial star in food safety and tech.



NURTURING NEW VENTURES

38

**NEW VENTURES
MENTORED**

BY UCC'S
ENTREPRENEURS
IN RESIDENCE

>100

RESEARCHERS

PARTICIPATED IN SPRINT
ENTREPRENEURSHIP &
IP TRAINING

360

MENTORING HOURS

DELIVERED BY UCC'S
ENTREPRENEURS IN
RESIDENCE

21

**ACTIVE
SPIN-OUTS**

ARRAYPATCH

ArrayPatch, a spinout company from the School of Pharmacy at UCC, was founded by Dr Waleed Faisal to commercialize DerMap™, a proprietary microneedle-based drug delivery technology he co-invented with Professor Abina Crean. ArrayPatch is positioning itself in the dermatological market, focusing on innovative patch formulations of generic drugs.

The first DerMap™ product being developed, ITZ-DerMap™, is for the targeted treatment of onychomycosis, or nail fungal infection, a global market with over \$6B and where significant unmet medical need remains. The pipeline also includes applications in skin cancer, psoriasis, hormone replacement therapy and migraine, markets worth a combined \$70B.

Developed with over €1 million in funding from Enterprise Ireland, DerMap™ is a pain-free, dissolvable microneedle patch that releases medication under the skin on administration. The technology focuses on microneedles predominantly composed of meltable drugs, which are solid at room temperature and can form a glassy, amorphous needle-like structure upon melting and cooling in moulds. This patent-protected approach allows for high drug loading, with microneedles comprising 100% of the meltable drug, significantly enhancing the efficiency and effectiveness of transdermal drug delivery.

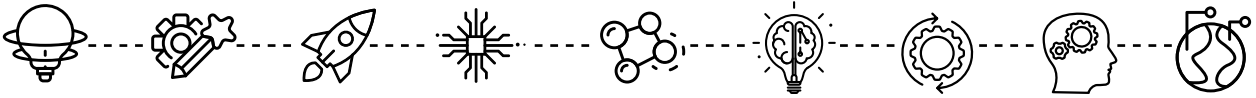
The technology has received several awards, including Innovation of the Year at the Pharma Industry Awards 2022, winner of the 2023 IDEATE Ireland competition, and finalist at Big Ideas 2024. Waleed was named in the HPN Professional Top 100 – a prestigious annual list which celebrates Ireland's top hospital and healthcare achievers.

Waleed led the spin-out of ArrayPatch from UCC in June 2024, and has since built an experienced management team around him, with proven track record in microneedle manufacturing, regulatory approval, product launch, fundraising and business development positions the company for success. The team includes Dr Tord Labuda (CSO), Ryan Bamsey (COO) and Darren Cunningham (CFO). Together they bring relevant expertise from companies such as Leo Pharma, Xeolas, Elan Corporation plc, Amarin Corporation plc and Innoture Ltd. ArrayPatch has attracted early angel investment and expects to raise up to €3 million in an initial seed round, followed by an €8-10 million Series A round to support clinical trials and the first product launch in 2028/29. The spin-out was supported by the SPRINT accelerator programme and is currently based in the GatewayUCC Incubation Centre.

ArrayPatch is now seeking €3M in seed fund investment, primarily to advance the ITZ-DerMap™ product to clinical proof of concept over the next 30 months.



INNOVATION HIGHLIGHTS IN UCC



JAN 2024 - UCC spin-out Neurobell secures investment of €2.1m to fund product development, clinical trials, and the creation of new jobs

FEB 2024 - Second National Deep Tech Partner Opportunity Platform takes place, focused on creating start-up teams

FEB 2024 - UCC Innovation launches Entrepreneur in Residence programme

APRIL 2024 - UCC holds first ever Innovation Week

JULY 2024 - IGNITE start-up Trustap raises \$5.5m in Series A funding

AUGUST 2024 - IGNITE start-up LegitFit secures €1.74m in funding to accelerate UK market expansion

SEPT 2024 - UCC spin-out company ProVascTec awarded €2.1m research grant from Eurostars

OCT 2024 - Two women-led commercialisation projects at UCC, FemmeMeno and SkinCoat, secure over €1M in Enterprise Ireland funding

OCT 2024 - UCC launches a new Business Engagement portal for industry

NOV 2024 - UCC spin-out company CergenX wins Irish Times Innovation Award in Life Sciences and Healthcare

DEC 2024 - Two IGNITE UCC alumni named in Sunday Independent's Thirty Under 30 List - Shannen O'Reilly (TrustDish) and Elvis Seporaitis (Volta Robotics)

