



# UCC INNOVATES

## IMPACT FOR OUR SOCIETY

eNewsletter | July 2023



# UCC

Coláiste na hOllscoile Corcaigh  
University College Cork, Ireland

## Nuálaíocht Innovation

### UCC Celebrates Excellence in Research & Innovation

### UCC Spin-out Company CergenX Raises €1.2 Million in Funding

### Recruitroo Secures €1M Investment to Solve Global Labour Shortages

### UCC student wins Student Entrepreneur of the Year

### UCC Innovation brings Irish TTOs together for Deep Tech Partner Opportunity Platform

### Business Strategies for Start Ups - SPRINT Digital Badge

### UCC and Columbia University develop new method to improve Climate Policy

### Breaking Boundaries in Healthcare: UCC's Clinical Innovation Awards 2023

### Pencils, Patents and FDI

### Other News

## Welcome to the Summer edition of UCC Innovates



Welcome to the Summer 2023 edition of UCC Innovates newsletter. As we reflect on the end of another academic year, we look back at some of the exciting innovative activities that have been taking place throughout UCC over the past few months.

We celebrated our community of talented and innovative entrepreneurs at the Spring 2023 IGNITE Awards and Showcase in April, and a few weeks later honoured excellence in Research & Innovation at UCC's 2022 Research Awards. We reflect on the Deep Tech Partner Opportunity Platform, which brought together prospective university MedTech spin-out company founders to network with potential commercial experts. We also highlight the winning UCC projects in the Ideate Ireland and Enterprise Ireland Student Entrepreneur of the Year Awards.

Innovation takes place throughout the campus of UCC and beyond, and we were delighted to speak with Natalie O'Byrne from UCC's International Office about her innovative Swap Shop

initiative for international students as part of our Innovation in Action in UCC series. We also examine the launch of the Collaborative Town Centre Health Check Reports and the role of UCC Consulting in supporting that project.

I hope you enjoy this edition. As always, please feel free to get in touch with UCC Innovation at [uccinnovation@ucc.ie](mailto:uccinnovation@ucc.ie)

**Dr Sally Cudmore**  
Director of Innovation at UCC  
[s.cudmore@ucc.ie](mailto:s.cudmore@ucc.ie)





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## UCC Celebrates Excellence in Research & Innovation



**Above:** Innovator of the Year (Physical Sciences) Award Winners: Dr Tarun Narayan, Dr Han Shao, and Dr Alan O'Riordan.

**Climate scientists**, the developers of the medicines of tomorrow, budding entrepreneurs and partners with communities were among the researchers to have their contributions to research and innovation honoured at the 2022 UCC Research Awards held at Devere Hall on Thursday, June 1st.

UCC is an internationally competitive, research-led university that plays a key role in the development of Ireland's knowledge-based economy and provides insight and understanding on

the challenges facing our society. The UCC Research Awards recognise this excellence in research, innovation and entrepreneurial activity, across the entire university research community and from all disciplines.

The quality of research success across the University, including outputs from individuals and teams in UCC Research Institutes and Centres, is measured by key research metrics such as publications, citations, collaborative interactions, patents and spin-out companies. Researchers were awarded across 20 categories, five of which recognise specific achievements in entrepreneurship and innovation.

UCC's first European Research Council (ERC) Advanced grant winners, Professors Dagmar Schiek (the first legal scholar in Ireland to be awarded an Advanced ERC award) and Paul Ross were joint winners of the Researcher of the Year award. UCC's strong heritage in ribonucleic acid (RNA) research was also honoured. Early-Stage Researcher of the Year, Dr Piotr Kowalski was awarded for

the significant contribution he has made to the development of novel biomaterials for messenger RNA (mRNA) delivery, and the 'Father of RNA recoding', Professor John Atkins, was the joint recipient of a Career Achievement award.

Professor Hannah Daly is a regular columnist for The Irish Times and contributed over 100 media pieces in 2022 to explain and contextualise sustainable energy trends and policies, and climate change. Hannah actively engages with stakeholders on the topic of sustainable pathways for the energy system, encompassing energy access, climate change and air pollution. She was UCC's Researcher Communicator of the Year for 2022.

Professor Maggie O'Neill, recently elected to the Royal Irish Academy, was the recipient of the Engaged Research of Year award. Maggie, Director of UCC Futures - Collective Social Futures and director of ISS21 - The Institute for Social Science in the 21st century, has a long research career in Sociology and Criminology.

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Through her research, she is committed to working with communities and civil society organisations to create change, especially marginalised groups. Her research leadership has been instrumental in moving forward debates, dialogue and scholarship in three substantive areas: forced migration and the asylum-migration nexus; the commercial sex industry, gender-based violence; and arts-based and biographical methods.

Stephen McCarthy, founder of Recruitroo and a graduate of the Ignite Programme at UCC, received the 'Start-up of the Year' award for the development of a mock interview simulator for recent graduates. The company is positioned to serve the global market need for international talent recruitment and relocation in 2023 and beyond.

The guest of honour at the awards ceremony was Dr Catherine Day, chairperson of UCC's Governing Body, who highlighted the need for continued Government funding for R&D to "increase investment

in infrastructure and equipment if (UCC) want to be at the cutting edge of research and innovation." Dr Day further highlighted the clear gap between national policy documents and the reality on-the-ground of research practice.

**Professor John F. Cryan, UCC Vice President for Research and Innovation at UCC** said: "Congratulations to all awards recipients. The standard of nominations across all award categories was indicative of the exceptional level of research and innovation throughout the University. UCC is a research-intensive University, and the annual Research Awards recognise and celebrate those UCC researchers who have made exceptional and influential research and innovation contributions, pushing boundaries, enhancing knowledge and raising the national and international research profile of our institution."

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**Pictured top:** Consultancy Project of the Year Awardee Dr Marguerite Nyhan accepting her award at the UCC Research Awards.

**Pictured above:** Co-founder of Recruitroo Stephen McCarthy accepting the award for Start-up of the Year at the UCC Research Awards.



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The full list of UCC Research Awards 2022 winners:

AWARD	WINNER(S)
Researcher of the Year	Prof Paul Ross, Prof Dagmar Schiek
Early-Stage Researcher of the Year	Dr Jean O'Dwyer, Dr Piotr Kowalski
Research Support Person of the Year	Martin O'Connell, Dr Seán Lucey
Research Supervisor of the Year	Prof Catherine Stanton, Dr Emanuel Popovici
Research Communicator of the Year	Prof Hannah Daly
Research Award for Open Science	Prof Colm O'Dwyer
Creating a Culture for Responsible Conduct of Research	Dr Aoife Coffey
Innovator of the Year (Life Sciences)	Dr Lucia Santos, Dr Patrick Harrison
Innovator of the Year (Physical Sciences)	Dr Han Shao, Dr Alan O'Riordan, Dr Tarun Narayan
Consultancy Project of the Year	Dr Marguerite Nyhan
Licence of the Year	Applied Mathematics UCC & Mercy University Hospital
Spin-out Company of the Year	Adiso Therapeutics
Start-up of the Year	Recruitroo
Best Publication of the Year Involving an Undergraduate Student as an Author	Ruairí McIntyre
Research Team of the Year	UCC Palaeontology
Research Image of the Year	Roksana Niewadzisz
Engaged Research of the Year	Prof Maggie O'Neill
Vice-President for Research & Innovation Award for Interdisciplinary Research	Dr Katharina Becker, Dr James O'Sullivan
Research Collaboration of the Year	Dr Patrick O'Callaghan, Prof Brendan Griffin
The President's Award for Research Impacting SDGs	Dr Alicia Mateos Cárdenas
Career Achievement Research Award	Prof John Atkins, Prof Anita Maguire



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## UCC Applied Mathematics and Mercy University Hospital licence technology to Laya Healthcare

Researchers from UCC's School of Mathematical Sciences and the Mercy University Hospital developed a mathematical model which analyses and predicts the incidence and prevalence of various diseases across the population and can analyse the possible effects of a range of 'what if' scenarios. This technology, which has been licenced to **Laya Healthcare**, won the UCC Licence of the Year Award at the Research and Innovation Awards on June 1st. Laya Healthcare can use the technology to profile the risks for their customers and make commercial decisions around the building and costing of insurance policies.

This is the first licence from the School of Mathematics, and has whetted the appetite of the researchers, who are delighted to see real-life applications of their mathematical models. We sat down with Professor Sebastian Wieczorek, Professor (Chair) and Head of Applied Mathematics at University College Cork, to discuss the history of the technology

and collaboration with Laya Healthcare, and the team's achievement of being awarded 'Licence of the Year'.

**Q. Congratulations on winning Licence of the Year at the recent UCC Research and Innovation Awards! Can you describe the background of your technology and the collaboration with Laya Healthcare?**

**A.** We are absolutely delighted to have received The Licence of the Year Award. It's a big achievement for our group that has already helped our early-stage researchers securing new jobs in both academia and industry.

The Applied Mathematics team was introduced to Laya healthcare CEO, Donal Clancy, by Prof. Micheál O'Riordain of Mercy University Hospital. An informal chat about the theory of tipping points (instabilities) led to the idea of a challenging project under the Enterprise Ireland Innovative Partnership Programme. This project was funded to develop a mathematical

model to predict future trends and tipping points in the inherently unsteady Irish healthcare system.

**Q. What have been the major achievements of the project since its commencement?**

**A.** The overarching deliverable is a mathematical model describing how the Irish healthcare system evolves over time, and where its tipping points might be. The model is underpinned by a special in-house Irish population model and is accessible through a user-friendly interface.

The main achievement of the model is its ability to foresee the impact of population aging and migration on the Irish population the prevalence of critical health conditions, such as cancer and diabetes, and the changes in the demand for resources in both public and private health services. As far as we know, this is the first model of this kind in Europe.

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### Q. What were your learnings from collaborating with industry?

**A.** The team and I learned firstly that mathematicians can design powerful tools to support industry, in this case the Irish healthcare industry and, possibly, inform healthcare policy making in Ireland.

We have gained valuable insight into the mathematical skill set sought by industry. This, in turn, has informed development of our undergraduate and MSc programmes to make our graduates strongly competitive on the current job market.

Finally, we have learnt a great deal from our licencing partners Laya Healthcare about project management and efficiency.

### Q. How have these learnings helped to inform your research, and in turn shape future research directions?

**A.** This is the first project in Mathematical Sciences that has resulted in a technology transfer. As such, it showcases how modern mathematical techniques can be used to solve real-life problems and inform and improve decision-making and day-to-day business in industry. This has stimulated

more interest in such collaborations as evidenced by two new Enterprise Ireland Partnerships in our group. These new projects are related to machine learning in the healthcare industry and are highly likely to lead to new technology transfers.

### Q. How has your experience of working with UCC Innovation been throughout this project?

**A.** The support of UCC Innovation was invaluable, especially during the later stages of the project which involved negotiations around the technology transfer. Dr Anthony Morrissey in particular, who worked directly with us on the project for three years, was an invaluable support to us. We felt that the whole process was well organised, very efficient, and the team would be happy to work with Dr Morrissey and the UCC Innovation team again, any time.

### Q. What are your future plans for this technology?

**A.** There are ongoing discussions about new industry initiatives that build on the technology. From an academic perspective, the project has initiated new inter-college research collaborations within UCC. We have been working with colleagues from the

School of Public Health on predicting the prevalence of diabetes - one of the fastest growing chronic medical conditions in Ireland. Due to the lack of public database for diabetes in Ireland, researchers tend to use methodologies that are only valid for specific points in time at which these studies have been conducted or provide fuzzy estimates of the diabetes prevalence in Ireland.

Our dynamical model is based on actual processes and thus overcomes these obstacles. In particular, the model can make reliable projections and quantify the associated uncertainties. The ultimate goal of this research is to support policy makers to prepare for the healthcare of tomorrow.



**Pictured above:** The UCC Applied Mathematics team accepting their award for Licence of the Year at the UCC Research and Innovation Awards 2022.



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Cork based MedTech company CergenX, which is developing ground breaking technology to screen newborns for brain injury, has raised an additional €1.2 million in funding.

The funding will support the ongoing development of the Newborn Brain Screener. The company will now expand its team by recruiting highly skilled professionals in AI, Product Management and Software Engineering. By attracting top talent in these critical areas, Cergenx aims to build on its strong momentum to date and accelerate the product's path to market.

This €1.2 million was raised via a private financing round, with a small number of high net worth individuals investing, along with Enterprise Ireland, a previous investor. The company has raised over €2 million to date.

Cergenx, a spin out from the Infant Centre in UCC, was founded by Jason Mowles (CEO), Professor Geraldine Boylan (CSO) and Sean Griffin (CTO) in December 2021. Cergenx is developing a Newborn Brain Screener to screen all newborns for signs of brain injury. The product uses AI to allow non-specialists to screen newborns for brain injury in less than 15 minutes. Early identification of at-risk new-borns will enable early intervention to help improve outcomes.



**Pictured above (l-r):** Sean Griffin, CTO; Professor Geraldine Boylan, CSO; and Jason Mowles, CEO of CergenX.

**Chief Executive, Jason Mowles** said, "This latest investment not only validates the immense potential of our new-born brain screener but also demonstrates the confidence our investors have in our vision. These funds will enable us to complete the development of the newborn brain screener and launch the product pilots next year. This is incredibly exciting and rewarding work and we have a real opportunity to make a major difference in a vital area of newborn healthcare."

A prototype device is already available and the device is scheduled to undergo regulatory approval next year, followed by a release in 2025.

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Brain injury affects 5 in every 1,000 newborns but the actual figure is higher, as brain injury in newborns is often clinically invisible and brain activity, unlike other vital signs, is not routinely monitored. As a result, many newborns with brain injury are not diagnosed at birth when intervention is most effective. There are treatments and interventions available and the sooner they start, the better the outcome is for the infant. Cergenx's ultimate ambition is for the newborn brain screener to become a standard of care for all infants at birth.

Electroencephalography (EEG) monitoring is the current gold standard for assessing brain function in newborns, however, EEG's can be expensive, complex to read, time consuming to set up, and very often there is a shortage of trained specialists available to interpret the results. It is therefore not possible to test all newborn babies after they are born. In fact, significantly fewer than 1% of all newborns have an EEG.

**Professor Geraldine Boylan** commented, "The device will help answer a very simple but important question for medical staff which is "Should I be worried about this baby's brain or not."

The impact of undiagnosed or delayed diagnosis means newborns may not be offered early interventions and treatments. This can lead to significant neurodevelopmental impairments and can have huge impacts on both babies and their families. The ongoing costs to health care systems runs into the billions, both from ongoing lifetime medical costs and potential legal costs, putting increased strain on healthcare systems worldwide.

The company has identified a considerable market for the new-born brain screener. The product has many potential use cases. There are approximately 140 million births worldwide annually. The initial target markets for the company are in the EU, UK and the US where there are more than 8 million births per annum with a market size in excess of €1 billion annually.





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## Recruitroo Secures €1M Investment to Solve Global Labour Shortages

Recruitroo, UCC Start-up of the Year 2022 at the recent **UCC Research and Innovation Awards**, announced that it has secured a €1 million investment round, led by Delta Partners, with participation from Enterprise Ireland and several notable angel investors. The funding will empower Recruitroo - a platform that solves global labour shortages, to further develop its end-to-end global recruitment and migration platform and expand its presence in the UK and European markets.

As countries in the Western world navigate chronic labour shortages that are contributing to a supply chain and cost of living crisis, Recruitroo is solving major pain points for businesses that are scaling their global workforce. While Governments have eased visa restrictions for skilled migrants across a broad range of industries, the private market is left struggling to cope with all the complexities and bureaucracy associated with hiring across international borders, from sourcing candidates, and assessments to cultural and language differences, emigration and immigration paperwork, relocation and onboarding issues.

Founded in April 2022, Recruitroo's recruitment and migration platform uses AI and automation to streamline all aspects of international hiring for their enterprise clients in



**Above (l-r):** Recruitroo co-founders Shane Kiernan and Stephen MacCarthy.

the construction & engineering, hospitality and healthcare industries. By linking companies and candidates around the globe through video-based profiles and digital skills assessments, Recruitroo breaks down contextual barriers. Recruitroo then completes the process by deploying AI and automation capabilities to process all documents and applications for employment permits and visas ensuring compliance with legal and regulatory requirements.

Recruitroo is one of the recent group of start-up companies to emerge successfully from the **IGNITE** start-up incubator at UCC. Co-founder Stephen McCarthy completed the programme in 2022.

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Recruitroo was inspired by the challenges the two founders witnessed in their previous businesses. In his manpower business in the Philippines, co-founder Shane Kiernan saw first hand the needs of European construction companies seeking to hire a global workforce. Stephen MacCarthy previously developed a solution to help tech founders in Ireland to assess software engineers abroad. Their combined experiences provide them with an in-depth understanding of international hiring challenges.

The team are also welcoming Andreea Wade as Chair of the Board. Andreea has extensive experience of the international HR tech ecosystem, having been the founder and CEO of recruitment AI company Opening.io which was acquired by ICIMS in 2020, and as part of her current role at ICIMS as VP of Product Strategy.



“This investment, plus the addition of Andreea, marks a significant milestone for Recruitroo as we strive to transform the international hiring landscape” said **Recruitroo CEO and co-founder, Shane Kiernan**. “We are committed to empowering businesses to access top global talent seamlessly, while ensuring compliance and simplifying the overall international recruitment process.”

“The labour shortages experienced in Ireland and across Europe and the US are a major contributor to challenges in the economy. Our investment in Recruitroo goes to the heart of solving these challenges”, said **Dermot Berkery, General Partner at Delta Partners and lead investor in Recruitroo**.

“We believe that Recruitroo’s innovative approach will have a major impact on the challenges. Their technology driven solution has the potential to

revolutionise the industry, and we are excited to support Recruitroo’s journey.”

**Leo Clancy, CEO of Enterprise Ireland**, said, “This is a significant milestone for Recruitroo as it implements its ambitious growth strategy. Attracting talent is one of the most significant issues facing businesses and Recruitroo is bringing solutions to the market that address this fundamental challenge. Enterprise Ireland has backed Recruitroo since its early days and we are confident that the innovation and vision of Shane, Stephen and their team will ensure they continue to compete and win in global markets.”

To find out more about Recruitroo, visit [www.recruitroo.com](http://www.recruitroo.com)



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## IGNITE Start-Ups Shine at the 2023 Spring Awards & Showcase

UCC celebrated its community of talented and innovative entrepreneurs at the Spring 2023 IGNITE Awards and Showcase, held in The Hub, UCC on Thursday, 27th April.

The event boasted an impressive line-up of guest speakers, including UCC President Professor John O'Halloran, Dr Sally Cudmore, Director of UCC Innovation, and Ian McMorrough, Director of Bank of Ireland Area South. Leo Clancy, Chief Executive Officer of Enterprise Ireland, delivered the keynote speech and emphasized the bright future ahead for Irish enterprises.

Maria McKnight from Bank of Ireland announced the award winners:

- **Bank of Ireland Investor Ready Award:** Zirkulu, founded by Jack Norman and Fionn McCarthy. Zirkulu are a premium outdoor apparel company, built on the principles of the circular economy. With a commitment to using bio-based and renewable materials in all garments, Zirkulu will also takeback and recycle all products at their end of life.
- **Local Enterprise Office Revenue Ready Award:** Assistiv, founded by Alan Craughwell. Assistiv provides bespoke assistive technology solutions to enhance workplace accessibility and support individuals with disabilities.



**Above:** Ignite Award winners Emily Murphy (The Mind Mechanic), Niamh Murray (ForgetMeNot), Fionn McCarthy & Jack Norman (Zirkulu), and Alan Craughwell (Assistiv).

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- **Bank of Ireland Investment Pitch:** ForgetMeNot, founded by Niamh Murray and Amy Boyden. ForgetMeNot is an app that acts as a bespoke and personalised digital memory book for people with dementia. The app provides a simple means for families and carers to practice reminiscence therapy, a practice with proven benefits for a person living with dementia.
- **Local Enterprise Office Sales Pitch:** The Mind Mechanic, founded by Emily Murphy. The Mind Mechanic provides innovative and creative psychotherapy services, designed to make research-based therapy tools and resources more accessible.

Other finalists were Jeff Gomez, founder of AthletHub, and Abhay Raj, founder of MobyShare.

The IGNITE Start-up Incubation Programme is supported by University College Cork, Bank of Ireland, the three Local Enterprise Offices of Cork City, South Cork and North & West Cork, Cork City Council, and Cork County Council.



If you are interested in finding out how IGNITE can help you start your business, click [HERE](#)

View highlights from the Spring 2023 IGNITE Awards and Showcase [HERE](#)



**Above:** Emily Murphy, founder of The Mind Mechanic delivering her pitch at the Ignite Awards in The Hub, UCC.



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## UCC student wins Student Entrepreneur of the Year



The Minister for Enterprise, Trade and Employment, Simon Coveney, TD, announced UCC student Emma Coffey as the winner of Enterprise Ireland's Student Entrepreneur of the Year Award at a ceremony in UCC.

FinalBend, founded by UCC commerce student and Quercus Scholar, Emma Coffey, is an innovative, sustainable affordable sportswear company, based in Cork.

As a competitive pole vault athlete, Emma founded FinalBend to meet a need for affordable, sustainable, attractive athletic clothing. Selling online, orders are designed, packed and dispatched from the company's warehouse in Blackpool, Cork.

Since its inception, FinalBend has grown through leveraging an authentic marketing style garnering over 75k followers and a 50k strong customer base.

Final Bend was one of ten finalists at the awards and the team received €10,000 as part of the Enterprise Ireland student prize. FinalBend will also receive mentoring from Enterprise Ireland to develop their products and explore new market opportunities.

Speaking at the awards ceremony, **Minister Simon Coveney** said: "The innovation and scope of projects in this year's Student Entrepreneur Awards is remarkable. We've seen ten shortlisted projects bringing new thinking and innovation to areas such as sustainability, healthcare, infant gifts, sportswear and SME marketing. The quality of entries is a credit to the student entrepreneurs, their academic supervisors and their institutions."

"Today's awards celebrate the thriving entrepreneurial spirit in the third-level sector in Ireland and I want to acknowledge the role that the sponsors play in showcasing this ambition and talent of our young entrepreneurs and I look forward to following the success of this year's entrepreneurs in the coming months and years."

Accepting the award, **Emma Coffey** said: "I'm so honoured to be named the overall winner at the Enterprise Ireland student Entrepreneur Awards, with my company FinalBend.

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I'm so thankful for the support of UCC and Quercus in helping me throughout my entrepreneurial journey, the competition was steep with the inspirational other student businesses so I am truly grateful."

**Richard Murphy, Manager LEO Support, Policy & Co-ordination Unit, Enterprise Ireland** said: "Fostering the next generation of Irish entrepreneurs is a priority for us at Enterprise Ireland and the Local Enterprise Offices and it is great to be here on what is the 42nd year of these awards. We've seen a remarkable slate of shortlisted projects from very ambitious and innovative teams, supported by their academic institutions. These Awards are an important milestone in these young entrepreneurs' business journey providing them with a platform and resources to explore the potential of their ideas and the opportunity to turn these into thriving businesses."

This is the 42nd year of Enterprise Ireland's Student Entrepreneur Awards, which are co-sponsored by Cruickshank, Grant Thornton and the Local Enterprise Offices.

The awards are open to all third-level institutions across the country.

Along with the prize money, the winners will also benefit from comprehensive business advice and mentoring from Enterprise Ireland and the Local Enterprise Office, Intellectual Property consultancy and protection from Cruickshank and business plan development from Grant Thornton.





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## UCC Innovation brings Irish TTOs together for Deep Tech Partner Opportunity Platform

The Technology Transfer offices of several Irish universities collaborated to hold an event on May 18th that brought 15 world-class life sciences and digital health spin out teams to meet with 50 seasoned executives in an invite-only event, based on the networks of the university technology transfer teams. The purpose was to help technical founders identify commercial and business experts and possible CEOs, to help them establish and grow their technology companies.

Four UCC teams attended the event held in the Pioneer Group's offices in Dublin, including one established UCC spin out, and three UCC teams pursuing their Enterprise Ireland Commercialisation Fund - SeqBiome, ClisteProbe, PhetalSafe and CommPal. Twelve other spin-out companies from other universities across the country were also involved. The event was coordinated and executed by UCC's Mícheál Collins and UCD's Simon Factor.

The commercial invitees at the event had decades of commercial experience, and global networks across life sciences

development. Many were exited-lifesciences entrepreneurs, who could massively advance the understanding of the research teams. The invite-only format ensured a high quality event, coupled with the curated set of spin-out teams presenting.

Dubbed the Deep Tech Partner Opportunity Platform, the process began with a brochure of teams sent to commercial attendees prior to the event, enabling preliminary research and targeting to occur. Following presentations by hosts Pioneer Group, and partners Enterprise Ireland on the Business Partner Program, the first hour began with informal networking and introductions, where each team had a dedicated space to make presentations and hold one to one meetings.

Throughout the high-energy afternoon, all teams gave a 5 minute presentation with Q&A, in two blocks. Between and after the blocks there was continued informal networking.

The event generated a high quality database of opt-in, committed entrepreneurial community members, who are eager to continue the format and to grow the exposure of Irish deep tech opportunities to commercial partners. The next event will take place after the summer, with a focus on another area of commercialisable deep tech research, as the format is anticipated to snowball in popularity.

For further information on the Deep Tech Partner Opportunity Platform, please email Mícheál Collins, Spin-out Manager with UCC Innovation at [micheal.collins@ucc.ie](mailto:micheal.collins@ucc.ie).



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## Innovation in Action in UCC: International Office Swap Shop

With sustainability and the cost-of-living crisis at the forefront of peoples' minds, many are searching for ways to reduce waste while saving money. This applies particularly to UCC's community of 4,000 international students, of whom 2,000 arrive in Cork each semester for a short-term stay. Short-term students who study at UCC for one semester often arrive with only one suitcase and come in search of duvets and kitchen appliances among other everyday items. Natalie O'Byrne, Senior Executive Assistant with UCC's International Office became aware of the enormous waste and cost implication of this and through her innovative thinking came up with a solution - Ireland's first university swap-shop for international students.



In 2018 after reading a book about living a more consumer conscious life, Natalie O'Byrne decided to make some changes to become more sustainable in her own life. She rescued some battery hens, began making her own bread and jam and generally tried to be more aware of her carbon footprint. She brought this awareness to the International Office at UCC and removed excess rubbish bins and introduced recycling bins to the office. However, she still felt that she could do more, and began to think about how she could bring sustainability to the International Office on a larger scale, while contributing at a grassroots level to help further UCC's sustainability

mission. "Two thousand international students arrive to UCC each semester and accumulate a lot of stuff over the term. From rain gear to camping equipment, duvets to Halloween costumes, these items were not going back home with the students but instead being thrown into landfills."

After identifying a shed at the back of the International Office building that was suitable for holding bedding, clothes and appliance donations and pitching the idea of a pop-up shop to her colleagues, Natalie got the go-ahead to open up UCC's Swap Shop for International students - the first of its kind in Ireland.

With support from her manager Suzanne Buckley, International Student Support Officer, a call was put out to students and staff alike to donate items. Before long, the swap shop's doors were opened to UCC's International student cohort - with the shop being cleared out in thirteen minutes!

"People are finding things tougher and more expensive with the cost-of-living crisis. The swap shop meets a need for UCC's international students who have little money to spend on home comforts during their time in Cork, and takes the pressure off them.

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When the students arrive, they donate €3 (over €1000 has been raised for local animal charity **Cork D.A.W.G.**) and take home whatever they can carry. Most of these items are returned to the swap shop at the end of the term, contributing to the circular economy." The circular economy is a system that aims to minimise waste and maximise the use of resources by continuously reusing, recycling and regenerating materials.

Natalie is a firm believer in small seeds springing big ideas and UCC's Swap Shop is testament to that belief. She has just returned from a staff Erasmus Training week in Alanya HEP University, Turkey, where she was selected as one of 70 peers from across Europe, out of 200+ applications, to present to the University and her peers about the Swap Shop. Furthermore, on a recent walk through Cork City she noticed that a local business had also taken her idea and ran with their own adaptation of a swap shop for the community. The initiative has also just received €1000 in funding from Cork City Council through their **Waste Prevention Grant**, which provides funding to voluntary or community groups or schools for waste prevention/reuse/repair/upcycling projects in their local community.

The International Office put out calls for donations from UCC staff throughout the year on their Facebook account and on WorkVivo. Most items are accepted once they are in good condition, including bedding, soft furnishings, pillows, kitchen items and toiletries. As well as donating items to the Swap Shop when the calls go out, Natalie simply wants UCC staff to become more eco-conscious. "We all have a part to play in terms of becoming more environmentally conscious. All actions make a difference, no matter how small. If you make a change, you never know who it might inspire and in turn, create a ripple effect."

Watch Natalie speak about the Swap Shop initiative **HERE**.

The International Office's Swap Shop is just one of many examples of innovative activity taking place throughout the UCC Campus. If you are engaging in innovative activity in UCC, or know of a colleague/student who is adding to the entrepreneurial and innovation space on campus, we would love to hear from you! Please email [snolan@ucc.ie](mailto:snolan@ucc.ie) to get in touch and to be featured in our Innovation in Action series.





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## ArrayPatch team announced as winners of the 2023 IDEATE Ireland business competition

Dr Waleed Faisal and the ArrayPatch team were announced on Tuesday 20th June as the winners of the 2023 IDEATE Ireland business competition.

The IDEATE Ireland business plan competition is committed to enhancing cooperation, connection and mutual understanding of business activities on the island of Ireland, engaging with communities and traditions around a shared passion for entrepreneurship and new venture development. IDEATE Ireland seeks to uncover and empower Ireland's next generation of entrepreneurs, helping to turn their brilliant ideas into thriving international businesses.

The business competition provides a unique opportunity for participants to put entrepreneurship principles into practice. Participants in the competition must have an innovative product, service or technology with global scalability to achieve international sales and create employment. The ten best submissions participated in a ten-week mentoring and support programme and competed for a €27,000 total prize fund. Out of

these submissions, Dr Waleed Faisal and the ArrayPatch team emerged victorious.

The ArrayPatch technology is a propriety wearable microneedle patch designed to fight nail fungal infection. ArrayPatch seeks to reduce treatment time and improve patient outcome over standard of care by using a painless ArrayPatch, which consists of an array of sharp but painless dissolvable microneedles that penetrate the skin on application and then dissolve to deliver a local effective dose of medication.

ArrayPatch aims to take a slice of the global onychomycosis treatment market currently worth US\$4.5 billion. In the last 4 years, the technology has attracted a total fund of €1.34M. UCC Innovation expects to establish a spinout company around this technology within 10 months, with the anti-fungal patch anticipated to hit the pharmacy shelves within 4-5 years when clinical trials are completed.

Commenting on his win, **Dr Faisal - a Project Manager with UCC's School of Pharmacy and a former SPRINT**



**Above:** Dr Caroline Blackshields, Dr Waleed Faisal, Dr Ziad Sartawi at the 2023 IDEATE Ireland Business Competition.

**programme participant** said: "It's fantastic to see one of the UCC's teams awarded such a prestigious award to transform commercially relevant research into investable high potential start-ups. The IDEATE Ireland programme provided us with a unique opportunity to put our entrepreneurship principles into practice. It has had a significant impact on our journey of validating our customers and navigating the available funding to further advance our new venture idea. The competition was a dynamic and challenging experience, and being the overall winner will give our start up the best possible kickstart."

To find out more about the IDEATE Ireland competition, visit [ideateireland.ie](http://ideateireland.ie)

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## Business Strategies for Start Ups - SPRINT Digital Badge

UCC Innovation launched the UCC Gateway SPRINT Digital Badge on May 24th, with SPRINT participants earning a digital badge for their participation in the seven week programme. The modules were developed and delivered by SPRINT Coordinator, Myriam Cronin, with support from outside business consultants and industry specialists and internal UCC business lecturers.

The SPRINT Accelerator Programme is designed as a pre-start up accelerator programme that includes masterclasses, workshops, live case studies and seminars, covering need to know knowledge about starting a business from research and includes mentoring from serial entrepreneurs.

The part time digital badge is created for researchers, Post Docs, PIs, PhD students and staff engaged in research from across the four colleges in UCC, as well as Tyndall National Institute and the SFI research centres APC Microbiome Ireland, INSIGHT, MaREI and IPIC.

Modules for the Digital Badge include: Business Model Canvas, Sales and Marketing introduction, Design Thinking, Customer discovery - interview techniques, Market Research, and Preparing an EI Feasibility Proposal. The participants also learn from entrepreneurs through case studies, receive general start-up advice on structuring a company, increase their networks. They also receive Mentoring/Coaching and professional advice.

Speaking about the launch of the digital badge, **SPRINT Coordinator Myriam Cronin** said: "We are delighted to bring this Digital Badge to our researcher community across campus and that the first cohort of 18 have commenced on the May-June programme. We will run this digital badge programme again in October/November of 2023 and are taking applications from interested candidates at the moment."

If you are a researcher interested in applying for the next SPRINT digital badge, please contact Myriam Cronin at [myriam.cronin@ucc.ie](mailto:myriam.cronin@ucc.ie) to express your interest.



**Pictured above left:** Veronica Murphy, Consulting Partner with The Discovery Partnership; Myriam Cronin, SPRINT Coordinator; and SPRINT participants at the launch of the SPRINT digital badge.



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## UCC CONSULTING CASE STUDY

## Collaborative Town Centre Health Check Reports

In early 2021, members of Cork City Council's Conservation Office and Social Inclusion team along with Ali Harvey, founding Co-Ordinator of the Heritage Council's CTCHC Programme, approached Jeanette Fitzsimons in UCC's Centre for Planning Education & Research Centre to undertake two Collaborative Town Centre Health Check (CTCHC) reports for Blarney and Tower. Blarney and Tower had just become part of Cork City Council's jurisdiction following the City Council boundary extension in 2019. The CTCHC projects were funded by the Department of Rural and Community Development as Town and Village Grants, which are a part of Project Ireland 2040.

The reports were officially launched by Minister Malcolm Noonan, Minister of State for Heritage and Electoral Reform in May 2023 at UCC. The stakeholders and community groups warmly welcomed the projects and will use them in the future for funding applications and further studies.

Following on from the CTCHC projects, Jeanette was successful in undertaking a stage two project - an urban design and mobility report for the neighbouring town of Tower.

The new partnerships that were forged through this CTCHC data-creation process have been hugely rewarding, helping to generate a collective place-making movement within all the partners, which is fundamental to empowering climate action by local communities. As the reports required the application of Jeanette's expertise, the projects were supported by UCC Consulting.

The projects provided an ideal opportunity for the first year students on UCC's Master's in Planning and Sustainable Development (MPlan) programme to undertake a real life project, which included data collection, surveys in the two towns, virtual community engagement and report writing. This cohort of students had

been learning behind screens and from home during the Covid pandemic and the follow-on report allowed for involvement in the preparation and planning of these reports, including in site visits, online engagement and idea generation. This further added to the student's work experience as they learned how ideas generated at the initial stage can be transformed into potential projects in the second stage.



**Pictured above (l-r):** CTCHC Founder & Co-ordinator Ali Harvey of the Heritage Council; Jeanette Fitzsimons, Centre for Planning Education, UCC; Minister Malcolm Noonan TD; and Martin McCormick, Cork City Council.

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This provided an ideal opportunity for a rich learning experience for the students under the guidance and supervision of Jeannette, that they could include on their CVs, and many have said that they were often asked about the projects in graduate job interviews after their studies. The new partnerships that were forged through this CTCHC data-creation process have been hugely rewarding, helping generate a collective place-making movement within all the partners, which is fundamental to empowering climate action by local communities. As the reports required the application of Jeanette's expertise both projects were supported by UCC Consulting.

Speaking about the support of UCC Consulting throughout the project, **Jeanette Fitzsimons** commented: "Having UCC Consulting on-board on these three projects was very valuable as they undertook the contract negotiations with the client and streamlined the processes. This allowed me to focus more on the consultancy itself, ensuring that my MPlan students were availing of a rich learning experience while

building strong relationships with the project stakeholders."

More information about the CTCHC project can be found [HERE](#).

Jeanette Fitzsimons is a lecturer in UCC's Centre for Planning Education & Research, whose flagship programme is the professionally accredited Masters in Planning and Sustainable Development (MPlan). Jeanette has a background in professional practice, having worked as a planner and urban designer in Ireland and New Zealand before joining UCC. Much of her teaching and research focuses on planning practice, including community-engaged learning, where students undertake research and engagement with community groups and other stakeholders. An established relationship with a number of stakeholders has developed through these projects.

If you are interested in availing of UCC Consulting's services, please contact Rachel O'Leary & Ruth Hargrove, UCC Consulting at [consulting@ucc.ie](mailto:consulting@ucc.ie)



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## UCC AND COLUMBIA UNIVERSITY DEVELOP NEW METHOD TO IMPROVE CLIMATE POLICY

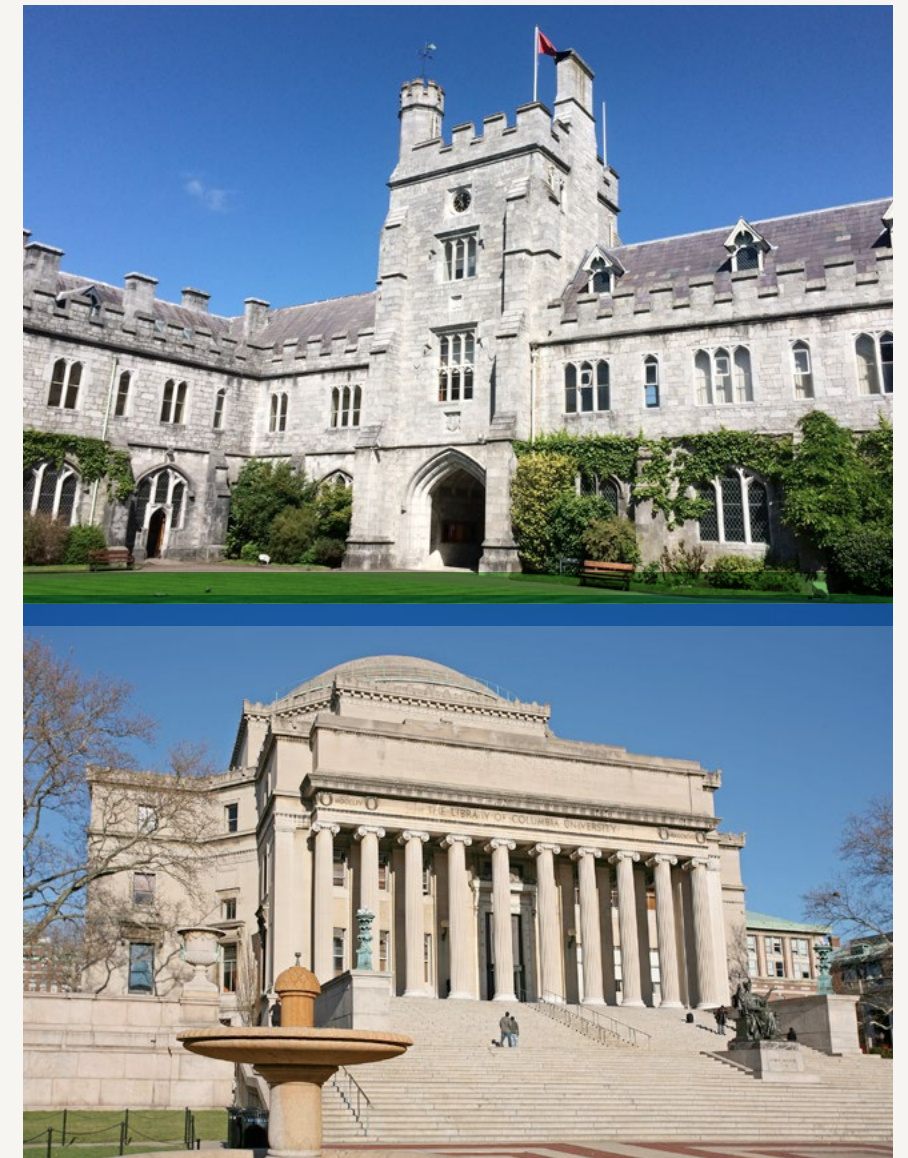
Researchers at University College Cork and Columbia University have developed **new research** that will improve the accuracy of estimating future demands for passenger and freight transport, that collectively account for 20% of global greenhouse gas emissions.

The United Nations estimates that the global population could grow from 7.7 billion people worldwide in 2019 to around 9.7 billion in 2050. The additional population and economic growth will likely lead to increased demand for transport services.

Reducing transport related emissions remains a considerable challenge for climate policy. Until now, transport demand projection tasks were handled by simulating demands or by using regression-based analysis. Now through this UCC and Columbia research, countries across the world will be more accurately be able to estimate future transport demands.

This research, published in *Scientific Reports*, introduces a new innovative machine learning approach called TrebuNet. The results demonstrate that this new TrebuNet architecture achieves superior performance compared with both traditional regression methods and more recent state of the art neural network and machine learning methods. The improvements extend to regional demand projection for all modes of transport demands at short, decadal, and medium-term time horizons.

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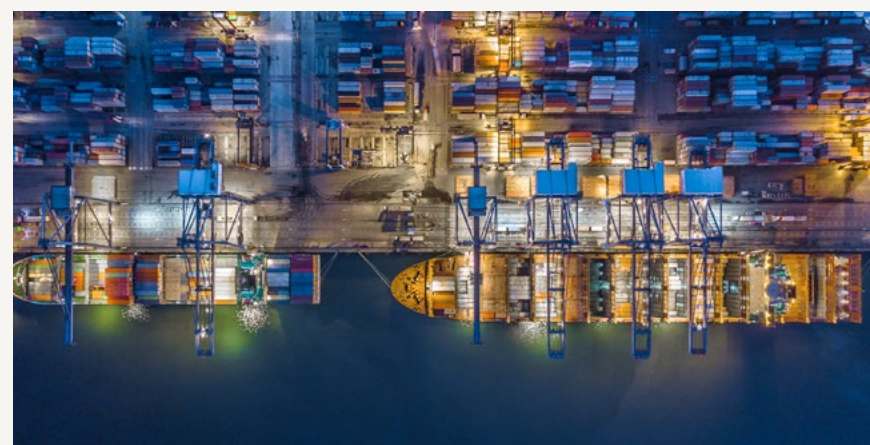
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**Siddarth Joshi**, who led this research as part of his PhD in Energy Engineering at UCC commented: “This study provides insights into development of a novel machine learning architecture that increases the accuracy in the estimation of transport energy service demands. The innovative machine learning architecture and its benefits are measurable for the energy modelling community and is transferable to different disciplines.”

“Not only are the accurate transport demand projections important for energy system models and climate policy, but they also act as backbone for understanding the future direction of global energy markets,” stated **Brian Ó Gallachóir, UCC Professor of Energy Engineering**.

**Dr James Glynn, Senior Research Fellow with Columbia University** added: “This new method demonstrates innovation in energy systems modelling and data analytics to solve weakness in understanding the outlook within energy system models for new applications of deep learning. This helps us remove uncertainty in decarbonization pathways. Decarbonizing transport in line with global net-zero 2050 targets requires urgent climate action. Collaboration between Columbia SIPA and UCC is leading to new approaches in energy systems modelling and data science to provide the tools and evidence-based research for decision-makers designing climate policy.”

This research was funded by Science Foundation Ireland and the National Natural Science Foundation China under the SFI-NSFC Partnership Programme.

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## Breaking Boundaries in Healthcare: UCC's Clinical Innovation Awards 2023

Health Innovation Hub Ireland (HIHI) is excited to announce the return of the Clinical Innovation Awards for 2023, co-launched by Enterprise Ireland and HIHI. This pioneering award is specifically designed to support healthcare professionals, researchers and academics working in clinical capacities within the health service, empowering them to explore the commercial feasibility of their innovative ideas that have the potential to transform medical care in Ireland and beyond.

The remarkable support and opportunities offered to participants is what sets the Clinical Innovation Awards apart. Enterprise Ireland is generously providing up to three Commercialisation Feasibility Fund awards, each worth

€15,000. These awards enable successful applicants to investigate the commercial viability of their innovative ideas, providing crucial financial backing and guidance on their entrepreneurial journey.

Last year, UCC had the privilege of being associated with one of the 2022 winners, PremSmart® 2.0, developed by Dr Ann-Marie Brennan, Cork University Maternity Hospital (CUMH), Dr Brendan Murphy, University Hospital Waterford, and Sarah Fenton, CUMH. This ground-breaking digital solution will revolutionise nutritional care for preterm infants. PremSmart® 2.0 addresses a global unmet need by delivering improved clinical and economic outcomes for these vulnerable patients.

## Clinical Innovation Awards 2023



The success of PremSmart® 2.0 at last year's Clinical Innovation Awards demonstrates the immense potential for impactful innovation within the Irish Healthcare System. With the support of the HIHI Clinical Innovation Award, the team behind PremSmart® 2.0 is committed to advancing and refining their technology to significantly improve the care and outcomes for preterm infants.

This year, the Clinical Innovation Awards 2023 is inviting aspiring innovators to submit their ideas for innovative solutions to major healthcare challenges by the application deadline on September 28th. To ensure the highest standards of quality and feasibility, each application must be led by a clinical

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person and supported by an academic institution's technology transfer office. Detailed information regarding the application process can be found at [www.hih.ie](http://www.hih.ie).

By participating in the Clinical Innovation Awards, participants have the opportunity to receive substantial financial support, expert mentorship, and access to a network of influential healthcare professionals. Additionally, last year, the Department of Health sponsored a member of the winning team to attend the esteemed NHS Clinical Entrepreneur Programme, providing unparalleled exposure and growth opportunities.

Now is the time to seize this extraordinary opportunity and make your mark on the future of healthcare. Join HIHI in shaping a better tomorrow, where innovation and compassion converge to transform patient care.

For further details on the Clinical Innovation Awards 2023, visit:

[www.hih.ie/engage/clinical-innovation-award/](http://www.hih.ie/engage/clinical-innovation-award/)

Together, let's embrace the spirit of innovation and pave the way for a brighter future in clinical care.



**Pictured above (l-r):** Michael Duane, HIHI; Eimer O'Connell, HIHI; Mr Brendan Murphy, UHW; Sarah Fenton, CUMH; Ann-Marie Brennan, CUMH; Dr Claire Walsh, Enterprise Ireland; Dr Steven Griffin, HIHI.





# UCC INNOVATES

## IMPACT FOR OUR SOCIETY

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# UCC

Coláiste na hOllscoile Corcaigh  
University College Cork, Ireland

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in Research & Innovation**

**UCC Spin-out Company  
CergenX Raises €1.2 Million  
in Funding**

**Recruitroo Secures €1M  
Investment to Solve Global  
Labour Shortages**

**UCC student wins Student  
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TTOs together for Deep Tech  
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**Business Strategies for Start  
Ups - SPRINT Digital Badge**

**UCC and Columbia University  
develop new method to  
improve Climate Policy**

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**Pencils, Patents and FDI**

**Other News**

## Pencils, Patents and FDI

Dr David Corkery

For a patent application to successfully become a granted patent, in addition to costing significant amounts of money, the patent application has to pass three fundamental tests of containing something that is novel, useful and non-obvious.

The story of the Faber Castell pencil is an excellent example of these three tests. Although it is probably open for debate, the invention of the modern pencil is most often attributed to Nicholas-Jacques Conte. Conte was a scientist and army officer in Napoleon's army and was requested to come up with an effective alternative to the existing pencils of the time. Up until then, the most common form of an easy writing tool was pure graphite wrapped with paper or something similar. The highest quality graphite was found in the Lake District in the United Kingdom. By virtue of a blockade of British imports, the French army's access to the graphite from the Lake District was restricted. Conte roasted a mixture of water, clay and graphite in a kiln and then wrapped it in a wooden surround. So the modern pencil was born.

However, if a pencil was invented in 1798, how was it that the US supreme court was adjudicating on patents for pencils in 1875? The answer lies in the protection of subsequent innovations in the development of the pencil, such as the hexagonal shape of the pencil. This was first commercialised by the Faber pencil company in New York in the early 1820s and 1830s, promoted by virtue of the hexagonal shape making it less likely that the pencil would roll off the desk. The inventor was Ebenezer Wood, who told everybody about the idea, destroying the novelty of the invention so was unable to patent.

In the 1860s, the Reckendorfer company, one of several pencil companies in the United States at the time, secured a patent for attaching the eraser to the top of a pencil. Faber-Castell, who had at this stage taken over the Faber company managed to have the patent overturned following a battle that went through the US courts to the Supreme Court. The fact that it had gone so far through the legal system points not only to the importance of the pencil in the American economy but also the concept of non-obviousness.



Like the story of the 501 jeans in our last UCC Innovates newsletter, the patents are not the only drivers of the success of the pencil industry or the Faber-Castell company. They are, however, a key brick in the wall of innovation that helps companies to continue to grow and develop.

In his **article** in the Irish Times in 2018, UCC's Mervyn O'Driscoll highlights how the arrival of Faber-Castell to Fermoy, a "trail blazing company from Germany", came to be one of the earliest foreign direct investments in Ireland and paved the way for the many similar instances of German industrial investment in the country. Some readers may remember seeing the Faber-Castell pencil shaped signpost in Fermoy, when the Dublin Road went through the town. The link between patents, innovative companies and economic development in Ireland is an old one, but it still holds strong. So when you discover something new, don't tell everyone like Mr Ebenezer Wood, but look for companies like Faber-Castell that look to innovate and grow. Just make sure that it's not obvious.



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