



University College Cork Research Strategy

Foreword

Research and innovation are fundamental to who we are as a university. It shapes how we understand our world, how we educate our students and how we contribute to society's future prosperity, health, culture and sustainability. Research is a national investment in talent, knowledge and partnership, creating the ideas, people and innovations that strengthen Ireland's competitiveness while delivering lasting public value.

At University College Cork, we believe that the greatest advances come from ambitious and curious people working together across disciplines, sectors and borders to ask important questions and pursue meaningful, just, solutions.

Our ambition is built on a solid foundation. UCC has a long and distinguished record of research excellence and successful innovation, reflected in our leadership of nationally significant research infrastructure and our extensive, enduring, partnerships with industry, government and society. We have played a leading role in the development and success of Ireland's Research Centres network – from [APC Microbiome Ireland](#) and [INFANT Research](#)

Centres to our leadership across the newly launched [Research Ireland Rinn network](#), we have created internationally recognised ecosystems that translate excellent research into sustainable impact. At the heart of this achievement is our flagship [Tyndall National Institute](#), one of Europe's leading centres for deep-tech research and innovation, whose global partnerships and track record in semiconductor technologies, photonics, communications, health technologies and sustainable digital systems exemplify our commitment to research that delivers real-world benefit. Together, these achievements demonstrate our ability not only to generate new knowledge, but also to transform discovery into innovation, enterprise and public value.

This Research Strategy sets out our commitment to strengthening the environment in which research excellence can flourish. I am very proud that **UCC is leading in interdisciplinary, collaborative and engaged research, with deep partnerships that have global impact.** Our success depends first and foremost on talent. We are committed to attracting, developing and supporting outstanding researchers at every career stage, from PhD to senior leading global researchers and innovators. We foster a research culture that values those who undertake research and those who support and enable research, in an environment that promotes diversity, inclusion, integrity and collegiality. This environment supports our researchers and innovators to achieve success in competitive funding programmes, including those from the European Research Council

(ERC), while producing scholarly and creative outputs of the highest quality. Their success depends on access to excellent research environments, shared infrastructure, technical expertise and collaborative networks that enable ambitious ideas to flourish.

We are building an environment that ensures all of our student and staff innovators and entrepreneurs are

enabled to thrive. We recognise that excellence exists across every discipline and that discovery research, creative practice, applied research and translational innovation are all essential components of a vibrant research ecosystem. Over the genesis and implementation of UCC's Strategic Plan (2023 – 2028), The [UCC Futures Framework](#) provides the foundation for this ambition by bringing together disciplinary excellence with novel and extensive interdisciplinary collaboration to address challenges of global significance while creating opportunities for Ireland. Working in partnership across Civil Society and international collaborators, we will ensure that our research remains open, engaged and responsive to the needs of society.

Our ambition
is clear: to be
internationally
recognised not
only for the
excellence of our
research, but for
the real difference
that research and
innovation makes.

Research creates value in many ways. It advances knowledge, informs policy, enriches culture, inspires innovation, strengthens our economy, our democracy and our security, responds to both opportunity and challenge for the improvement of lives. Through this strategy, we reaffirm our commitment to research that is internationally competitive, ethically grounded and focused on delivering lasting benefit for people, communities and the planet.

At UCC, we are creating an environment where talented people pursue bold ideas, where partnerships amplify excellence and where research and innovation from every discipline contributes to a more sustainable, prosperous and equitable future.

Professor John F. Cryan

Vice President for Research and Innovation



University College Cork Strategic Plan 2023 – 2028



We are at the mid-point of the [University College Cork \(UCC\) Strategic Plan 2023 – 2028](#), which outlines our vision for creating knowledge that shapes an inclusive, sustainable and globally connected institution of excellence.

It has a student-led, research informed and practice focused approach, generating connections for excellence across research, education and innovation. Our Strategic Plan positions us to respond to the opportunities and challenges of a rapidly changing global environment. Though developing and providing the structures for curiosity, collaboration and creativity to thrive, it ensures UCC remains an innovative, resilient and internationally recognised competitive university that contributes positively to society and the global community.

Additionally, UCC's flagship Tyndall National Institute is a standalone institute with distinct strategic focus – to advance semiconductor research and innovation and translate that to real-world impact.



UCC's Strategic Goals

Goal One:

Research and Innovation

Deliver impactful research and innovation that addresses global grand challenges in signature areas of excellence through the UCC Futures framework, resulting in a distinctive research reputation.

Goal Two:

Student Success

Provide a student-centred, inclusive and digitally enhanced learning environment, a Connected Curriculum and an outstanding student experience, to prepare UCC graduates to make a positive impact.

Goal Three:

Global Engagement

Grow UCC's international reach to amplify our global impact.

Goal Four:

Our Staff, Our Culture

Implement a progressive and inclusive People and Culture Plan to attract, develop and retain our talent.

Goal Five:

Our Place, Our Footprint

Radically reform our practices and use of space and technology to meet our ambitious sustainability and climate action goals.

It is further enhanced by four key interconnected messages:



We are a University **of and for sustainability**, committed to the stewardship of our planet



We lead **interdisciplinary, collaborative and engaged research, with deep partnerships that have global impact**



We support and challenge our learnings through **research-based teaching** and digitally enhanced learning



We are proud of our **rich heritage, our diversity and our community**, where everyone belongs

The **UCC Research Strategy** outlines the structures and approaches, focused through these interconnected messages, to achieve the ambitions of Goal 1 of the UCC Strategic Plan.

Our Value Creation Pathway



Goal One:

Research and Innovation

Deliver impactful research and innovation that addresses global grand challenges in signature areas of excellence through the UCC Futures framework, resulting in a distinctive research reputation.

- 1.1 Implement the *UCC Futures* framework, informed by smart specialisation and the UN SDGs.
- 1.2 Improve strategic hiring, retention and development of our people at all career stages, supported by a research ecosystem and career framework.
- 1.3 Increase PhD enrolment numbers, enhance the research student experience, and embed research and innovation into our curriculum.
- 1.4 Transform UCC's research culture through the implementation of engaged research and open research, underpinned by academic integrity, and ethical and responsible practice.
- 1.5 Create an innovation culture and entrepreneurial campus, underpinned by an ethos of creativity and discovery

Research and innovation are fundamental to our contribution to Ireland's future, generating new knowledge that addresses today's challenges while anticipating those of tomorrow. Our central mission - *to enable transformative research and learning for the enrichment of society and stewardship of our planet* - drives delivery of internationally recognised excellence in scholarship and creativity. Our researchers address society's greatest challenges, support national competitiveness, inform public policy and transform lives, contributing to a more sustainable, healthy, creative and equitable world.

We combine scholarly excellence across all disciplines with interdisciplinary collaboration in a vibrant research ecosystem that integrates discovery, creativity, engagement, education and innovation. Transformative discoveries are generated from both curiosity-driven inquiry and applied and challenge-led research, grounded in the active engagement of those who will

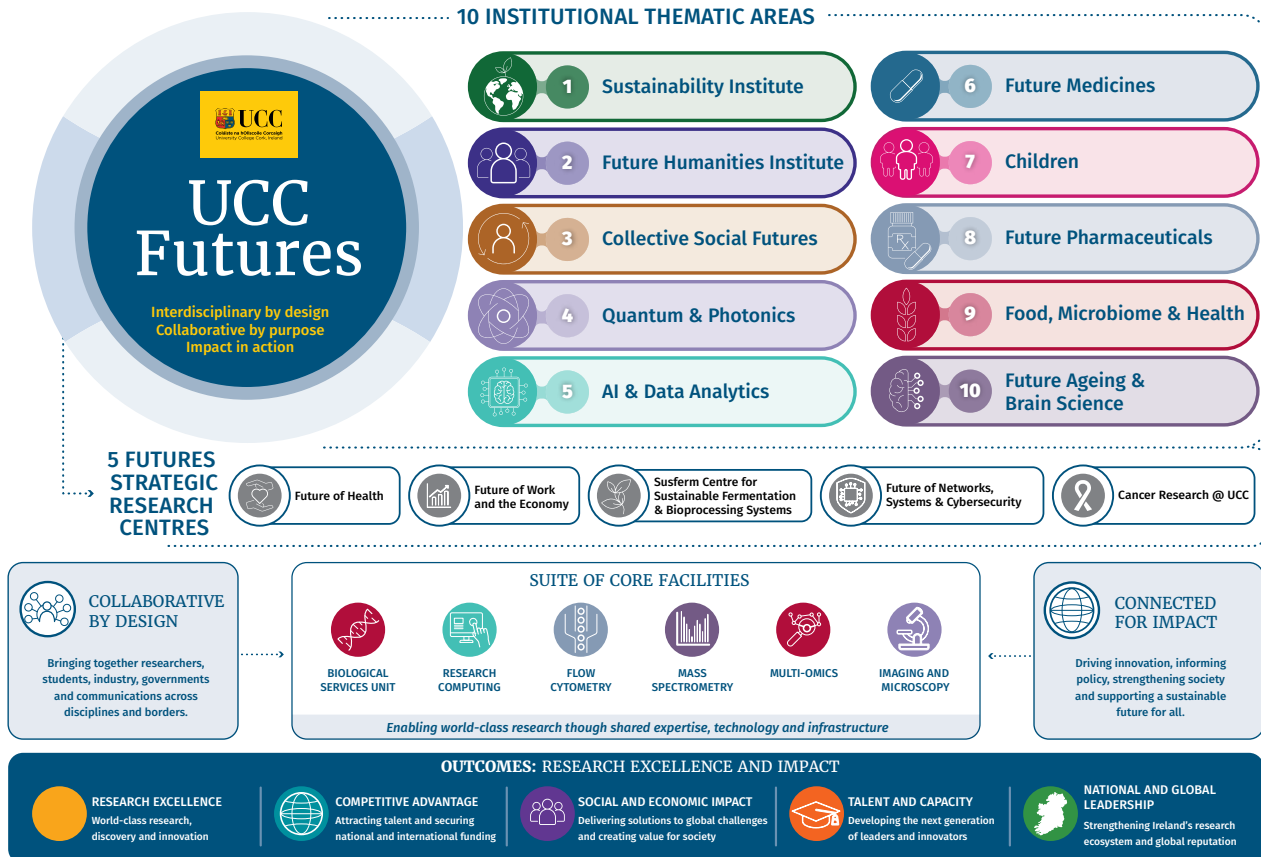
benefit from the research to ensure relevance and sustainable implementation are maximised.

The future demands universities that combine scholarly excellence with openness, creativity, integrity and partnership. Issues of rapid technological advancement, democratic resilience, global and national security and the stewardship of our planet cannot be addressed in isolation. The UCC Futures Framework provides the intellectual, practical and lived interdisciplinary framework needed to integrate diverse perspectives, enabling the development of resilient, evidence-based and sustainable solutions that make a real difference. It is building an integrated *One University* research ecosystem that supports discovery, develops talent, drives innovation and creates lasting public value. We are advancing knowledge, strengthening Ireland's research capability and creating solutions that benefit people, place and planet.

The UCC Futures Framework

AN INTEGRATED RESEARCH ECOSYSTEM

Delivering research excellence and impact for Ireland, and the world



The UCC Futures Framework is UCC's strategic initiative for research and innovation. Since 2023, this **creative, inclusive and transformative interdisciplinary platform** has focused on **prioritisation and deliberate investment** in areas of critical research and innovation leadership. UCC Futures comprises **ten institution-wide thematic areas, five College-based Futures Strategic Research Centres (FSRC)** and is enabled by **a suite of Core Research Facilities**.

Each thematic area and FSRC houses a critical mass of expertise within defined strategic themes, in an environment that enhances disciplinary strength and excellence. By concentrating expertise within strategically selected areas, UCC Futures **unites researchers, infrastructure, partnerships and focus around shared priorities**. Leveraging disciplinary excellence, this approach transcends traditional disciplinary boundaries and relationships, enabling researchers from discipline across the university to work within and across thematic areas. Here, they mine the frontiers of curiosity at the intersection of these disciplines, defining **novel, robust and sustainable solutions** to complex societal challenges.

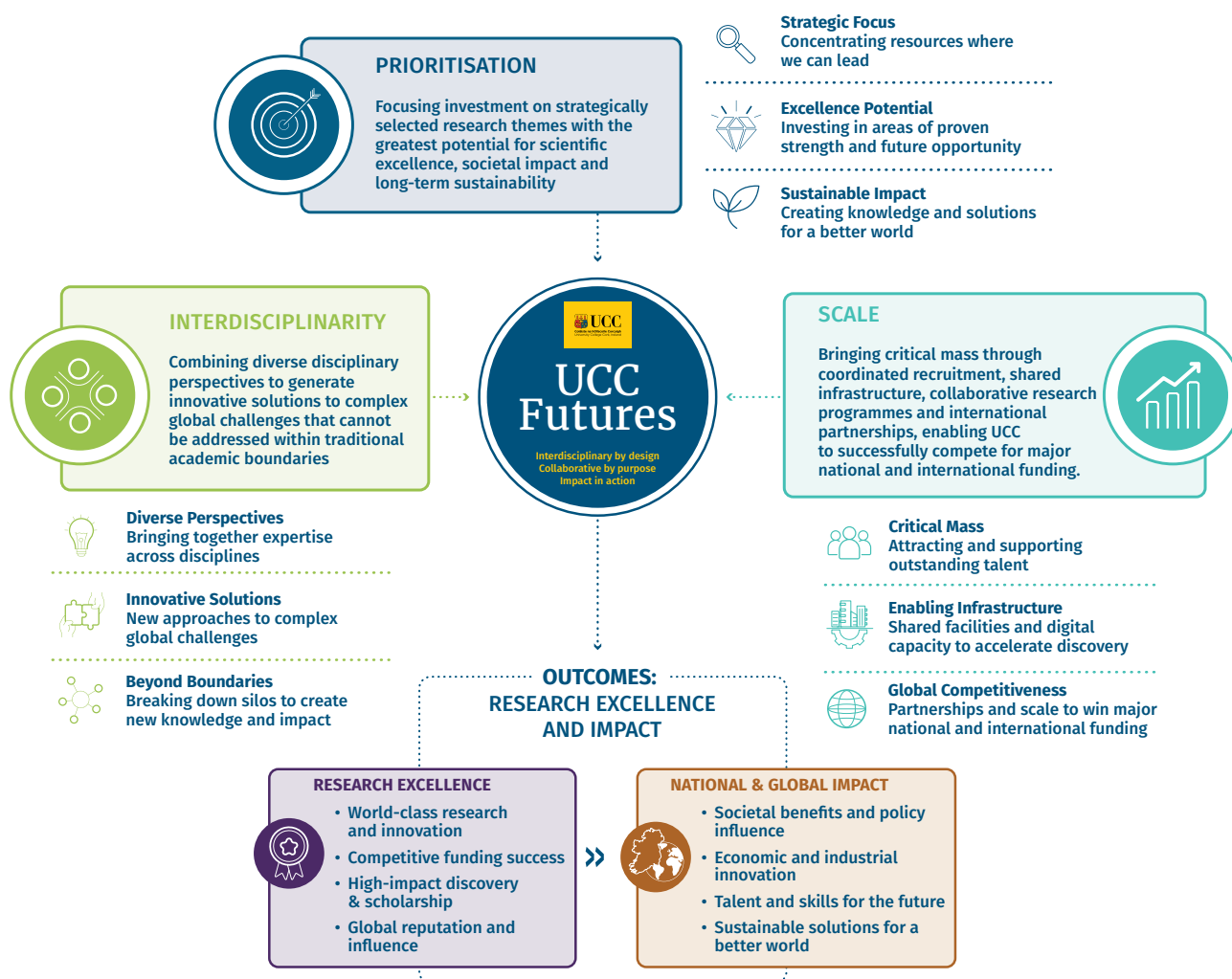
Rather than dispersing resources across many small initiatives, UCC Futures consolidates activity where critical mass, interdisciplinary collaboration and sustained investment elevate the conditions for internationally competitive research and innovation. That research becomes the platform enriching teaching, making UCC the place where **students are taught by**

world leading researchers. The UCC Futures Framework is an integrated knowledge ecosystem that develops people, accelerates discovery, strengthens partnerships and enables excellence - environments where **curiosity, creativity and collaboration are enabled to flourish**.

The UCC Futures Framework attracts talent, major international funding, supports ambitious collaborative projects and novel interdisciplinarity, while developing research leadership and supporting undergraduate, postgraduate and doctoral education. UCC Futures serves as gateway for external engagement, bringing together researchers, practitioners, policymakers, industry and the lived experience to accelerate discovery and its translation. It also provides fundamental and bespoke training through the UCC Academies. The UCC Futures Framework not only strengthens partnerships and enables new discovery, it also accelerates innovation and delivers measurable societal, economic and cultural impact.

Rather than creating entirely new structures, UCC Futures builds on the foundations established by highly successful research initiatives including APC Microbiome Ireland, MaREI, INFANT, IPIC, ISS21 and Insight. It provides a streamlined and integrated framework that enables the University to align expertise, infrastructure and investment around key societal challenges, while enhancing UCC's competitiveness for current and future Research Ireland RINN Centre calls and other strategic funding programmes.

The UCC Futures Framework is founded on three mutually reinforcing principles:



The UCC Futures Framework provides the **institutional platform through which research excellence is translated into equitable, sustainable and just outcomes** for Ireland and the wider global community.

Outcomes that matter





Ten Thematic Areas – People and focus



The UCC Futures thematic areas are embedded institution-wide and span the comprehensive disciplinary range at UCC, from areas of Science, Technology, Engineering and Medicines to the Arts, Humanities and Social Sciences. These thematic areas provide the interdisciplinary collaborative environment that inspires, engages and enables our research and innovation community within, across and between disciplines.

In partnership with the critical mass of co-located clinical facilities, enterprise and industry, the UCC Futures Framework, we are building a foundation for economic, societal and cultural resilience and prosperity. Through the UCC Futures Framework, UCC will continue to build the shared research and digital infrastructure required to support research excellence, talent development, innovation and societal impact at scale.

Artificial Intelligence & Data Analytics



The staggering expansion and influence of Artificial Intelligence (AI) and Data Analytics in our daily lives is a defining feature of the 21st century. With a complementary relationship, AI and Data Analytics are rapidly becoming two of the most important technologies in the world today.

Their impact is transformational, disrupting society and industry alike. Over the last decade alone, the availability of vast amounts of digital data, the availability of powerful computing architectures, and advances in AI techniques such as machine learning have led to major advances across multiple sectors.

There have been significant AI-enabled and data driven developments in smart manufacturing, autonomous vehicles, healthcare, home/service robots, education, cybersecurity, to name but a few.

Fundamental scientific advances in automated reasoning, Boolean satisfiability, and complex problem-solving, have brought within reach a variety of intractable AI tasks that arise in scheduling, diagnosis, model-based reasoning, security, verification, and planning.

Building on the legacy of Professor George Boole at University College Cork, UCC Futures - AI & Data Analytics promotes interdisciplinary collaboration at the cutting edge of AI and Data Analytics.

“Working with world leading academics and research Institutes such as the Insight Research Ireland Centre for Data Analytics, the Research Ireland Centre for Research Training (CRT) In Artificial intelligence, and the Confirm Centre for Smart Manufacturing, UCC Futures — AI & Data Analytics will use modern AI technologies to address key societal challenges and enable better decision making through high Impact research In data analytics.”

Professor Barry O’Sullivan

Director, UCC Futures - Artificial Intelligence & Data Analytics





The greatest global challenge of our time is discovering and implementing sustainable solutions for the world's growing population, balancing the need for societal development with our limited natural resources.

This requires us to co-produce equitable and just solutions to the problems of climate change, hunger, poverty and social and health disparities among the world's population. The complexity of the global sustainability challenge requires experts from multiple disciplines and sectors to collaborate in new and re-imagined ways. UCC believes that to solve these sustainability challenges, we need creative, interdisciplinary solutions, driven by an innovative and holistic approach that are co-developed with policy makers, businesses and communities

Sustainability research is embedded in our DNA at UCC, with a longstanding mission to deliver scientific excellence and maximum societal impact. The Sustainability Institute builds on the strong research capacity, outputs and impact of the Environmental Research Institute comprising over 500 researchers from 23 academic schools across all four colleges within UCC. This includes hosting the national Research Ireland MaREI centre for energy, climate and marine in which we are global leaders (in terms of citations) in offshore wind energy, electrofuels and energy modelling.

UCC's global leadership in sustainability research mirrors our global leadership sustainability practice over many years, which reflects a whole on institution approach to sustainability. Our student-led, research informed and practice focused approach to sustainability practice led to UCC being awarded Sustainability Institution of the Year at the International Green Gown Awards 2023. With the Sustainability Institute, we are driving sustainability within UCC, within Ireland, and globally.

"Through our existing programmes of transdisciplinary research at UCC, we are generating new knowledge, developing technologies and tools and contributing to services and policies that facilitate a just transition that developing is economically prosperous and socially inclusive, while protecting our natural environment."



Professor Brian Ó Gallachóir

Director, Sustainability Institute,
Associate Vice-President of Sustainability





UCC Futures - Children brings together UCC's longstanding tradition of pioneering research with and about children and our commitment to scholarship that has a meaningful impact on their lives.

This initiative unites research excellence across leading research centres that include the Irish Centre for Maternal & Child Health Research (INFANT), the Institute for Social Science in the 21st Century (ISS21) and the Centra for Children's Rights and Family Law, and the schools of Sociology & Criminology, Applied Psychology, Education, Law, Medicine, Public Health, Food & Nutritional Sciences, Applied Social Studies and Paediatrics & Child Health.

With the establishment of UCC Futures — Children, our mission is to establish UCC as a globally recognised leader in interdisciplinary research that has a meaningful impact on the lives of children. We commit to a wide-ranging research agenda, from child health to child justice, including the needs of vulnerable and marginalised children.

Our vision is to unite UCC's diverse and collaborative community of researchers, across all disciplines and career stages, around our commitment to innovative, child-centred research that addresses the most pressing social challenges affecting children's lives.

Our research has impact in local communities, where children live. Through our international collaborations, UCC Futures - Children also has global reach through our extensive network of partnerships with fellow researchers, agencies and funding bodies around the world. At UCC Futures — Children, we aim to develop new specialist graduate programmes, reflecting our research expertise, and to attract leading scholars from around the world to study, visit and work with us.

"UCC Futures - Children places children and families at the forefront of our research, representing a powerful fusion of knowledge, compassion, and innovation to create a

better today and a brighter future for all children. Our interdisciplinary expertise allows us to take a more inclusive approach to children's research, ensuring impactful and informed solutions to the problems of childhood today and tomorrow."

Professor Geraldine Boylan

Director, UCC Futures – Children's Research Institute



Collective Social Futures



UCC Futures - Collective Social Futures is re-imagining and addressing the complex and intertwined societal, environmental and political challenges faced across the world.

These include social and gender-based inequalities, geopolitical shifts, migration, health and climate change and the urgent need to foster a more caring and liveable world for all. The imperative to develop more collective and social visions of the future is more pressing than ever. By driving innovative, critical, theoretical, participatory and community-engaged research, UCC Futures — Collective Social Futures will foster excellence in social research to understand, re-envision and enact our collective social futures.

Building upon our history of outstanding social science research, the Collective Social Futures interdisciplinary platform is an evolution from the Institute for Social Science in the 21st century (ISS21) in collaboration with the Centre for Co-operative Studies, the Environmental Research Institute, Cleaner Production Promotion Unit, the Inclusion Health Research Group and other renowned centres and schools.

Together we will leverage cross-disciplinary synergies throughout our university and beyond, for meaningful co-production of knowledge, oriented towards social change and ecologically sustainable transformation. By driving innovative, critical, theoretical, participatory and community-engaged research, UCC Futures - Collective Social Futures will foster excellence in social research to understand, re-envision and enact our collective social futures.

“UCC Futures — Collective Social Futures will bring together researchers from cross cutting disciplines to tackle key global challenges and progress alternative social futures by delivering critical, creative and impactful social science research grounded in values of inclusion, participation, inter-dependence, social justice, an ethic of care, equality and the collective.”

Professor Maggie O'Neill

Director, UCC Futures – Collective Social Futures





Addressing food and health challenges, in alignment with global and institutional sustainability goals and economic growth, requires us to find equitable and just solutions to the problems of global food systems.

From primary production, food processing, supply chain, consumption, nutrition and health through to consumer behaviour, marketing and food integrity, the complexity of this challenge requires experts from multiple disciplines and sectors to collaborate in new and reimagined ways.

Building on our long-standing reputation for research excellence across food, food business, medicine and microbiome science, UCC Futures — Food, Microbiome & Health will create a research environment that is able to respond with agility to established and emerging global challenges.

Working with world leading academics and research institutes such as APC Microbiome Ireland, Tyndall National Institute and the Sustainability Institute, and continuing our deep partnerships with Teagasc, the Health Service Executive and regional food and pharmaceutical industries, UCC Futures — Food, Microbiome & Health is uniquely placed to apply genuine inter- and transdisciplinary thinking to the complexity of global food, nutrition and health challenges.

UCC Futures - Food, Microbiome & Health is a once in a generation opportunity to maximise the potential of our academic expertise and provide tangible, impactful, solutions to some of the most important global challenges of our time.

“The synergies across the areas of food, the microbiome and health opened up through UCC Futures will allow us to continue to UCC’s leadership in these areas, by undertaking world-class research and supporting the national and global food sector.”

Professor Alan Kelly

Co-Director, UCC Futures,
Food, Microbiome & Health



“We have built a reputation of excellence across food, medicine and the microbiome. World-leading academics and research institutes such as APC Microbiome Ireland are based in UCC with deep partnerships across Cork’s food and pharmaceutical industry.”

Professor Paul Ross

Co-Director, UCC Futures –
Food, Microbiome & Health





Ageing and brain disorders are among the greatest challenges of our time, requiring sustainable solutions to address the health, socioeconomic and cultural challenges and opportunities that face a growing and ageing global population.

Enhancing knowledge on active and healthy ageing will be crucial to optimise the quality of life for all individuals and our society. Inadequate prevention and lack of effective treatment and management of many brain disorders and diseases of ageing affects the quality of life, not only of the people living with them, but of their families, carers, and society at large.

UCC Futures – Future Ageing & Brain Science will respond to these urgent societal challenges by empowering collaborative, transformative and Inclusive research led by experts in the sciences, medicine and allied health, humanities, business, law and technology, in partnership with community and industry as well as national and International colleagues. Expertise from this unique consortium of stakeholders will be leveraged to catalyse innovative and sustainable solutions, in order to maximise healthy ageing and brain health, and to prevent, diagnose and treat brain disorders.

Our mission is to enhance healthy ageing, emphasising brain health promotion as a means to combat the leading causes of dependency and institutionalisation within our communities, both in Ireland and globally.

“At UCC, we have a strong track record of collaborative and transdisciplinary research on ageing and the neurosciences. Research ageing and brain science using a multidisciplinary approach, from molecular and cellular levels, through to lifestyle, environmental and social aspects, will allow enhanced awareness of healthy ageing and brain health, ultimately improving quality of life in our society”

Professor Aideen Sullivan

Director, UCC Futures – Future Ageing & Brain Science





At the Future Humanities Institute, we are engaged with urgent and pressing questions that activate and reveal the human condition. The arts and humanities play a leading role in understanding and fostering the ways humankind can become impassioned to enact constructive change.

The thematic clusters in the Future Humanities Institute straddle a wide array of disciplines, and adventure outward, into collaboration with other fields, in ground-breaking ways. Our vanguard Radical Humanities Laboratory — within which world-leading scholars explore boundary-expanding and cross-cutting themes, bringing the humanities to a range of other fields — is key to leading the way to reimagined futures. The arts' and humanities' capacity to involve people, and our ability to bring together seemingly disparate threads of thought, analysis, creation and action in order to propose and communicate innovative solutions, are critical components of what research needs to do for society and with society.

Our members work with themes and come from disciplines as wide ranging as politics and government, the eco-humanities; the digital humanities; creative writing; film, music and theatre; the study of religions; archaeology, education; languages, literatures and cultural studies; translation; feminisms; queer studies; minority and migration studies; architectures and urban planning; anthropology; histories; traditional Irish cultures; folklore; and many others. At the Future Humanities Institute, we reach out and collaborate to enrich research partnerships with the empirical sciences, medicine, the social sciences, environmental science, engineering, entrepreneurship and beyond. We imagine, and imagination is the at the root of reinvention.



“The Future Humanities Institute leads the way in engaging hearts, minds and our creative souls to grapple with, and navigate, today’s complex world; our expertise in collaboration means we take a leadership position toward designing a better future.”

Professor Yvon Bonenfant

Director, UCC Futures – Future Humanities institute





UCC Futures - Future Medicines combines a multidisciplinary team of renowned world leading scientists, engineers and clinician investigators at University College Cork and affiliated hospitals to deliver high-impact, transformational, next generation medicines, and medical technologies within an Academic Health Sciences System.

It leverages the expertise and infrastructure across multiple schools in UCC's College of Medicine and Health, in addition to UCC research centres and institutes including APC Microbiome Ireland and our flagship Tyndall National Institute.

This unique translational environment will become a magnet for inward SME and MNC Investment to the region especially across the biopharma, healthcare and medtech sectors.

UCC Futures – Future Medicines is creating step-change advancements in earlier detection, faster prognosis and targeted treatments to reduce the global health burden and improve quality-of-life for patients with chronic conditions, such as cancer, Cardiovascular, gastrointestinal, neurological, and inflammatory diseases.

“At UCC, we have a reputation for research excellence to the areas of medicine, pharmacy, health and the interface of health with technology. This is strengthened by an ecosystem that integrates clinical, academic, and industrial settings, always with a key focus on patient outcomes and broader societal impacts.



Professor Caitriona O'Driscoll

Director, UCC Futures – Future Medicines



Future Pharmaceuticals



Modern medicines are increasingly based on complex pharmaceuticals and advanced therapeutics. Each of these must be designed, synthesized and produced at scale in a reliable, safe and sustainable manner.

New emerging treatments and therapies increase the complexity of component materials and processes, while the time pressures to produce new medicines are ever increasing. UCC is embedded in the heart of Ireland's globally significant pharmaceutical and biopharmaceutical landscape. Building on established partnerships, UCC Futures — Future Pharmaceuticals is enhancing interdisciplinary collaboration among world leading scientists and engineers.

Our existing collaborations with strategic national partners including NIBRT, the National Institute for Bioprocessing Research and Training and SSPC, the Research Ireland Centre for Pharmaceuticals, and the pharma and biopharma industry, nationally and internationally, strengthens our industry engagement through collaborative research projects and participation in research-led teaching. UCC Futures — Future Pharmaceuticals is advancing knowledge to underpin discovery, development, and manufacturing, from small molecules to biopharmaceuticals, and will drive the understanding of the development and production of new medicines at scale to ensure availability, affordability, efficacy, and safety through a patient-centric approach.



“Exciting opportunities for interdisciplinary research within the context of Future Pharmaceuticals are envisaged, building on existing research expertise within the university and our strategic partners, and enriched by complementary expertise in new research areas through these new appointments.”

Professor Anita Maguire

Director, UCC Futures – Future Pharmaceuticals





The first quantum revolution of the 20th century charted the development of semiconductors, transistors, lasers and, from there, computers and the internet.

The accelerating second quantum revolution will transform our lives as dramatically as these first-generation technologies and will solve many of the most profound challenges of the future.

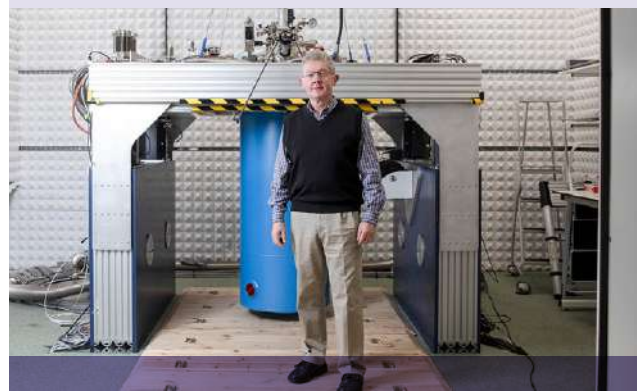
UCC Futures - Quantum & Photonics is an innovative multidisciplinary team, building on the powerful synergies of our globally renowned quantum and photonics research in the Schools of Physics, Engineering and Architecture, and Mathematical Sciences, and the flagship Tyndall National Institute.

We are pushing the limits of synergistic quantum and photonic research — a key element of this second quantum revolution. UCC Futures - Quantum & Photonics will drive a generational change across multiple sectors, including fundamental quantum physics, quantum computing, data transfer, quantum meteorology, sensing, quantum matter, healthcare, environment, energy and communications to deliver transformational progress, enhancing daily living while generating novel and disruptive solutions to some of the most important global issues of our time.

“At UCC Futures — Quantum and Photonics, we want to play our part, to shape new developments in how new technologies develop and how to use them safely to tackle challenges and improve lives. We will use our collective expertise, world class facilities and ground breaking research to channel new discoveries, direct progress and deliver transformational solutions to the problems that are most important to our society.”

Professor Alix McCollam

Director, UCC Futures – Quantum & Photonics





UCC

Coláiste na hOllscoile Corcaigh
University College Cork, Ireland



Futures Strategic Research Centres (FSRC)

Complementing our institutional thematic areas are five College-based **Futures Strategic Research Centres (FSRC)**. These are strategically important groups, although not yet at the scope and scale of the ten UCC Futures thematic areas. Each FSRC mirrors the governance structures of the thematic areas and has the potential to grow and evolve into a discrete UCC Futures Thematic Area. As with the thematic areas, each of the FSRCs has the potential to work across all other disciplines and areas.

Future of Health <i>College of Medicine & Health</i>	Focus	Ambition
	Brings together researchers across public health, clinical sciences, data science and social sciences with the health service to transform health and healthcare delivery	To create integrated, person-centred to health and new healthcare solutions that improve health outcomes across populations
Cancer <i>College of Medicine & Health</i>	Focus	Ambition
	Integrates basic, translational, clinical, and patient-informed cancer research to improve understanding, prevention, diagnosis, treatment and the lived experience of people affected by cancer	To accelerate discoveries that improve cancer prevention, diagnosis, treatment, supportive care, patient outcomes, and the lived experience of people affected by cancer
Future of Work & the Economy <i>College of Business & Law</i>	Focus	Ambition
	Explores the economic, organisational, technological, and societal changes shaping work, business and labour markets	To inform policies and practices that support productive, inclusive, and sustainable economies and workplaces
Future of Sustainable Fermentation <i>College of Science, Engineering & Food Science</i>	Focus	Ambition
	Develops sustainable fermentation technologies for food, pharmaceuticals, chemicals and the bioeconomy	To drive the transition to low-carbon, circular biomanufacturing through innovative fermentation science and engineering
Future of Networks, Systems & Cybersecurity <i>College of Science, Engineering & Food Science</i>	Focus	Ambition
	Advances research in secure communications, resilient digital infrastructure, artificial intelligence and cybersecurity	To develop trustworthy digital technologies that strengthen cyber resilience for industry, government and society

Enabling success – Culture and our Core Facilities

World-class research requires world-class enablers that provide the embedded systems, tools, supports and culture to make it happen. Our UCC Futures Framework provides **internationally recognised hubs of expertise that enable outstanding researchers to deliver on their potential**. The research and innovation potential arising from the UCC Futures Framework is underpinned by key enabling structures including:

Research Charter

1. Prioritise  excellence in all forms of research to develop and maintain positions of global leadership at the level of the individual, group and institute	2. Integrate  research throughout institutional decision-making	3. Secure  the time, space and infrastructure for research and researchers	4. Integrate  research, innovation and entrepreneurship within our curriculum, learning and teaching	5. Embed  integrity, ethics and a commitment to Open Research in all our endeavours	6. Ensure  equality, diversity and inclusion (EDI) is central to our research
7. Provide  the supports and enable the partnerships that strengthen successful funding acquisition and the achievement of research excellence	8. Amplify  impact through active cross-disciplinary collaboration including that with our communities, the city, county and region, nationally & internationally	9. Ensure  that the UN Sustainable Development Goals (SDGs) inform our research, which will, in turn, inform policy	10. Inspire  and enable active innovation, entrepreneurship and strategic collaboration with industry	11. Engage  with and deliver evidence-based thinking for society and policy makers	12. Support  development across the career lifecycle to seed and sustain research excellence

The UCC Research Charter was approved in 2022 and defines the core principles, culture and values that support our researchers in creating - and securing - the future through excellence in research, innovation and teaching. It represents a foundational commitment to fostering a dynamic, progressive and supportive research environment. It's 12 core principles were shaped by extensive, institution-wide, consultation with the research and innovation community, ensuring broad perspective shaped the principles that underpin delivery of research excellence at UCC. Bridging institutional strategy with the researcher voice, it serves as a catalyst for innovation, collaboration, and societal impact, ensuring UCC's researchers continue to shape and secure the future.

Our **Research Charter** reflects our commitment to **integrity, openness, inclusion, collaboration, respect and responsible research practice**. We promote research that is ethical, transparent, reproducible and **responsive to societal needs** including responsible research on, and with, new technologies such as Artificial Intelligence (AI). We support open research practices, responsible research assessment, with equality, diversity and inclusion not only in the research we undertake but also by the researchers who undertake it. The UCC Futures Framework provides a **cohesive identify that fosters wellbeing, collegiality and professional development** throughout the research community. The interdisciplinary focus of the UCC Futures Framework is fundamental to a living charter that will support our researchers to explore, question, innovate, disrupt and transform our world. By creating an inclusive and supportive research environment, we enable researchers to achieve their full potential while strengthening public trust in research and its outcomes.

UCC Core Research Facilities, digital infrastructure and research support services

The delivery of Goal 1 is enabled by sustained investment in research infrastructure, digital capability and technical expertise. Through the UCC Futures Framework, UCC aligns infrastructure investment with areas of strategic strength and emerging opportunity, creating shared facilities and digital environments that support excellent research across all disciplines. Research infrastructure enables interdisciplinary collaboration, enhances the recruitment and development of research talent, strengthens partnerships with industry, healthcare and society and increases UCC's competitiveness for national and international funding. UCC is committed to sustained, evidence-based investment in research and teaching infrastructure across all disciplines, informed by institution-wide scoping exercises and the

continually evolution of technology, services and processes. UCC prioritises investment in Core Research Facilities, digital infrastructure and research support services that address critical capability deficits, supports interdisciplinary collaboration through the UCC Futures Framework and maximises access for researchers, students, industry, community and other national and international partners.

UCC is committed to the sustainable development, governance and renewal of its research infrastructure ecosystem, ensuring that facilities, technologies, data resources and technical expertise continue to support discovery, innovation and impact in line with institutional and national priorities.

These enabling structures provide access to world-class infrastructure, advanced technologies, specialist expertise and collaborative environments that **accelerate discovery and increase research quality, its reproducibility and efficiency**. They strengthen collaboration within UCC while making it easier for external partners to engage and to pursue ambitious projects that would not otherwise be possible.

UCC Core Research Facilities are university-wide ecosystem of full-service research facilities, directly informed by UCC's activities, opportunities and institution-wide scoping exercises.



They are shared, centrally managed research infrastructures that provide advanced equipment, technical expertise and specialised services to multiple research groups across the university and beyond. A trusted research environment that provides the digital infrastructure, including high performance computing, supports every discipline and interdisciplinary cohort to design, undertake, protect and best exploit the potential of their research and innovation activities.

Core Research Facilities are designed to maximise resource efficiency, foster internal and (revenue generating) external collaboration and support high-impact research in alignment with institutional, national, and EU strategic priorities. These centralised, expert-led hubs accelerate discovery, enhance funding competitiveness and maximise return on our research investment. Sustainable research infrastructure strengthens UCC's ability to attract competitive funding, recruit exceptional researchers and develop strategic partnerships with industry and international collaborators. They are a key research enabler.

Research Commercialisation and New Venture Incubation

UCC is committed to transforming research excellence into tangible societal, economic and environmental impact. Through UCC Innovation, the University has built a highly experienced team and a strong innovation ecosystem that provides the expertise, programmes, partnerships and infrastructure required to translate knowledge, technologies and research discoveries into real-world outcomes. Research commercialisation, entrepreneurship and innovation are integral components of UCC's research and impact strategy, enabling the University to maximise the value of its research and strengthen its contribution to sustainable economic and societal development.

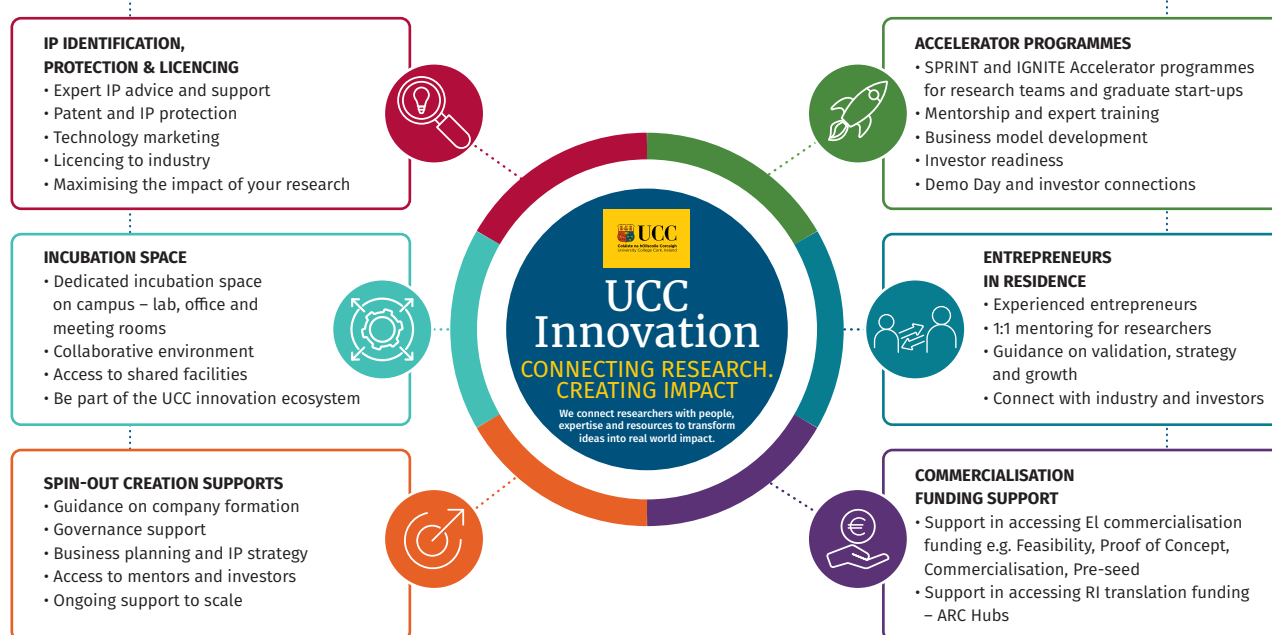
Building on decades of success in intellectual property management, technology transfer, industry engagement and venture creation, UCC will continue to strengthen its capacity to accelerate the translation of research into innovative products, services, policies and enterprises. The University's experienced commercialisation and entrepreneurship team provides specialist support across the innovation pipeline, helping researchers identify opportunities, protect and develop intellectual property, engage with industry partners and attract investment.

Strategic investments in initiatives such as the Start-up Central entrepreneurship hub, SPRINT and IGNITE accelerator programmes, the Entrepreneur in Residence Programme and the GatewayUCC incubation facility further enhance pathways for innovation and enterprise development. Together, these initiatives support researchers, students and graduates to develop entrepreneurial capabilities, build networks, access expertise and funding, and create high-value, knowledge-intensive enterprises.

Through this integrated innovation ecosystem, UCC will further strengthen its position as a leading entrepreneurial university, accelerating research translation, fostering innovation-led growth, supporting regional, national and international competitiveness, and delivering lasting impact for society, the economy and the environment.

UCC Innovation

From idea to impact – supporting your innovation journey every step of the way





Cólaiste na hOllscoile Corcaigh
University College Cork, Ireland



Delivering Excellence – our Strategic Approach

Goal 1: Research and Innovation

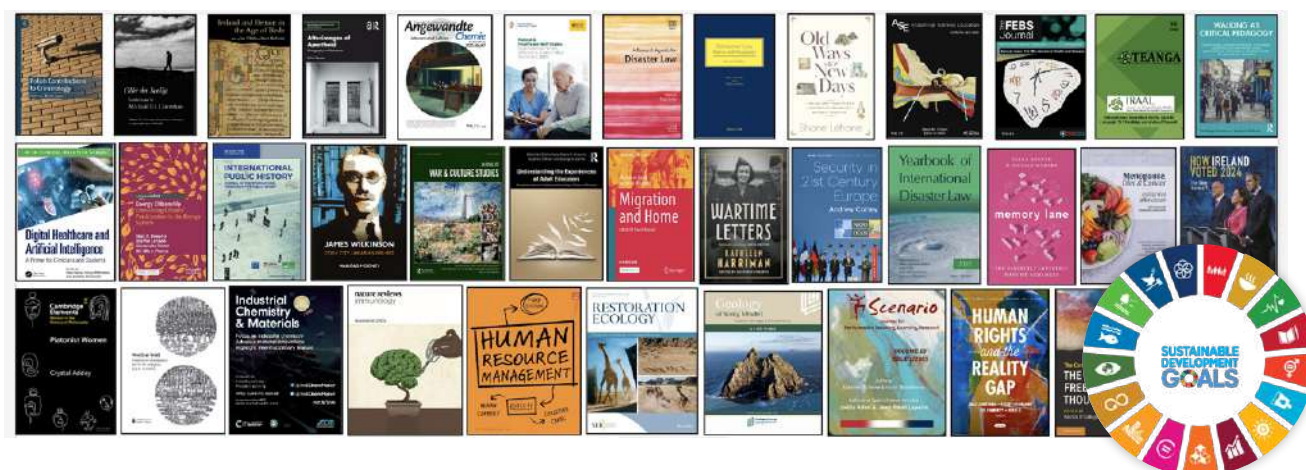
Deliver impactful research and innovation that addresses global grand challenges in signature areas of excellence through the UCC Futures Framework, resulting in a distinctive research reputation

UCC Strategic Plan 2023 – 2028: Strategic approaches

1.1 Implement the UCC Futures Framework, informed by smart specialisation and the UN Sustainable Development Goals

The UCC Futures Framework is the University's strategic model for delivering internationally competitive research excellence across and between all disciplines. Rooted in disciplinary excellence, it creates new opportunities for interdisciplinary collaboration, enabling researchers to address complex societal challenges through curiosity-driven, challenge-led, applied and translational research. Informed by Ireland's smart specialisation priorities, the co-location of clinical and industry partners and alignment with the UN Sustainable Development Goals, the UCC Futures Framework brings together expertise from any discipline across the University to develop innovative solutions in partnership with national and international stakeholders.

The Framework enhances UCC and Ireland's international competitiveness by supporting excellence across the full spectrum of research and scholarship, recognising that fundamental discovery, creative practice, humanities scholarship, social sciences, clinical research and technological innovation all contribute to knowledge creation, cultural enrichment, evidence-informed policy, democratic resilience and global security, economic development and societal wellbeing. By integrating disciplinary strength with collaborative approaches, UCC Futures creates the critical mass necessary to secure competitive funding, strengthen regional, national and international partnerships and deliver rounded, robust and sustainable solutions to current and emerging global challenges.



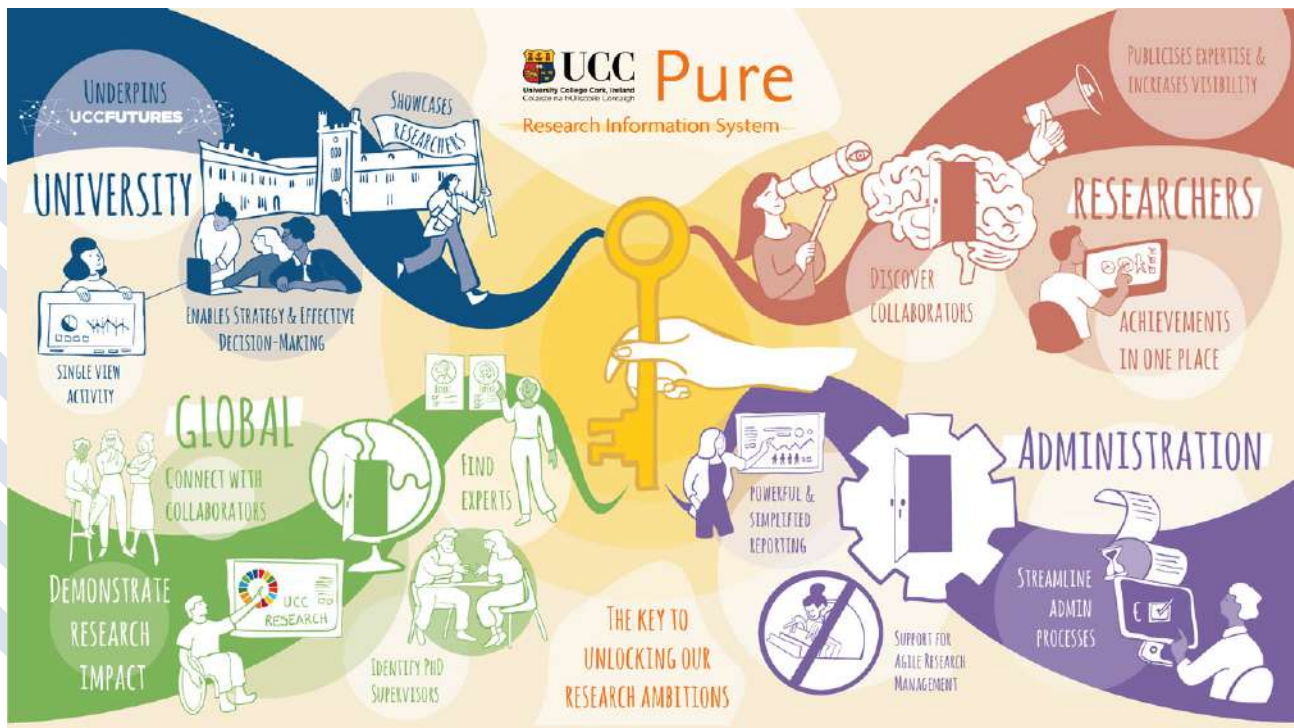
UCC Strategic Plan 2023 – 2028: Priority Actions aligned with Strategic Approach 1.1

- i. Position UCC's research activities within the ten inclusive and interdisciplinary themes of the UCC Futures Framework. This will support researchers to compete successfully for funding and drive innovative, solution-focused research.
- ii. Embed impact mapping in our research ecosystem so that all researchers can articulate the links between their research and global grand challenges via the framework of the UN SDGs. Prioritise research where UCC can have maximum impact.
- iii. Develop enabling structures for academic staff to prioritise research and dissemination of quality research publication outputs in high-impact peer-reviewed journals.
- iv. Develop research and innovation excellence criteria that reflect the diversity of research outputs, providing for discipline-specific articulation of achievement and success.
- v. Ensure maximum societal, cultural and economic impact through active cross-disciplinary collaboration with our communities, across the city and region, nationally and internationally.

1.2 Improve strategic hiring, retention and development of our people at all career stages, supported by a research ecosystem and career framework

Outstanding people are the foundation of research excellence. UCC is committed to **attracting, retaining and developing exceptional talent across every career stage**, recognising that researchers, technical professionals and professional services staff collectively enable world-class research and innovation.

Through strategic recruitment, career development, leadership opportunities and international collaboration, we are building a diverse, inclusive and internationally competitive research community. Equality, diversity, inclusion and belonging are fundamental to our research culture, ensuring that researchers from all backgrounds can contribute fully to the University's research mission.



The UCC Futures Framework has provided opportunity for highly successful novel recruitment approaches, including cluster hiring within thematic areas, whereby positions across multiple disciplines are advertised within the context of a discrete thematic area. Employment Initiatives that recognise and value our research and innovation community enable research and innovation to be undertaken with creativity, rigour and integrity.

Supporting strategic initiatives that value our research and innovation community, such as Professorships of Practice, Professorships of Innovation and Entrepreneurship, cluster hiring for academics across all disciplines and thematic areas with an innovation/entrepreneurial intent, bridge funding and funding that allows for high risk, high reward exploration and innovation sabbaticals, provide a flexible and responsive environment where talent can best deliver impact of all kinds. The integrated UCC Futures Framework research ecosystem supports a distinct identity for researchers, career progression through interdisciplinary opportunities, shared infrastructure, mentoring, professional development and collaborative networks, all of which support reputational enhancement, increased productivity and its impact.

UCC Strategic Plan 2023 – 2028: Priority Actions aligned with Strategic Approach 1.2

- i. Use a strategic hiring approach under the UCC Futures thematic areas where all new academic hires demonstrate the potential to achieve prestigious funding awards such as European Research Council (ERC) or equivalent.
- ii. Supporting the enhanced excellence agenda, increase the number of ERC awards secured by UCC researchers.
- iii. Collaborate closely with key stakeholders to inform and shape national/EU research funding ecosystem policy and strategy
- iv. Revise the Research Overhead Allocation policy and establish a Strategic Research Fund.
- v. Deliver a Digital Enablement programme to leverage better data and infrastructure that supports institutional strategic objectives across the research lifecycle.

1.3 Increase PhD enrolment, enhance the research student experience and embed research and innovation within our curriculum

Developing future research talent is central to UCC's mission. Doctoral education, supported through the UCC Doctoral Institute and the UCC Futures Framework, provides an outstanding research environment where students develop the knowledge, creativity, networks and professional capabilities required to become future leaders across academia, industry, healthcare, government and society.

Through structured doctoral programmes, interdisciplinary research opportunities, international mobility, excellent supervision and strong external partnerships, UCC is strengthening Ireland's research talent pipeline while enhancing the quality of the research student experience.

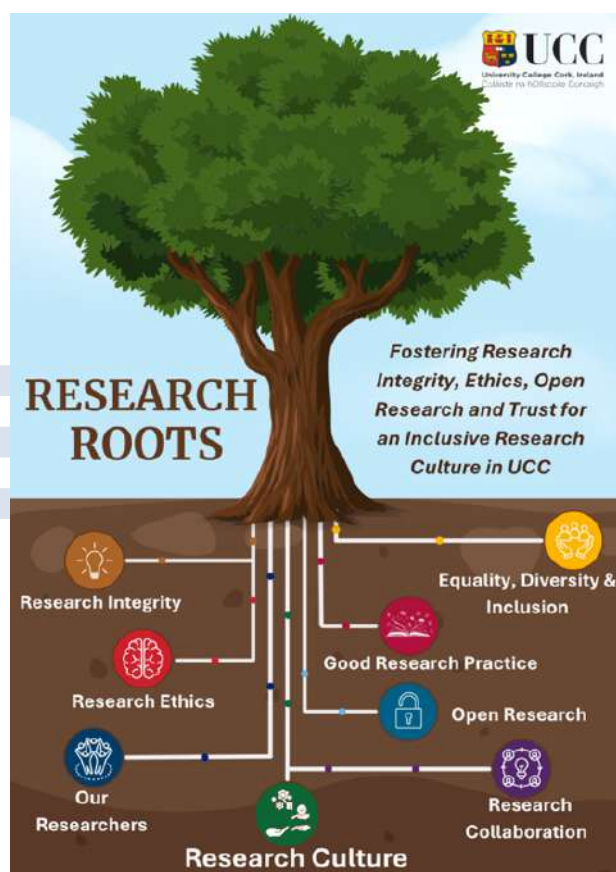
Research excellence also underpins learning throughout the University. Through our **Connected Curriculum**, students engage directly with research and innovation at every stage of their education, developing critical thinking, creativity, an entrepreneurial mindset and evidence-informed decision-making. UCC Futures postgraduate programmes provide opportunities for students to participate actively in discovery, innovation and knowledge creation, ensuring graduates are equipped to contribute to an evolving economy and society.



UCC Strategic Plan 2023 – 2028: Priority Actions aligned with Strategic Approach 1.3

- i. Inform and influence the reform of state supports for PhD researchers.
- ii. Develop and execute an action plan to grow the number of doctoral students and fellowships.
- iii. Prioritise structured PhD programmes in signature areas of excellence that can be developed at scale.
- iv. Enhance the experience of PhD students through structured programmes, enhanced support of supervisors and increased opportunity for practice-based PhDs. Mentoring and supervision programmes, tracked and informed by the Graduate Education Manager (GEM)_ system (formally the, will be embedded and aligned with our Graduate Attributes Programme (GAP).
- v. Ensure research excellence, particularly that demonstrated through UCC Futures, is embedded within our curriculum offerings, enabling UCC students to experience a comprehensive, research-informed education.

1.4 Transform UCC's research culture through engaged and open research, underpinned by academic integrity and ethical and responsible practice



Research delivers its greatest value when it delivers something people actually need. UCC is committed to undertaking research openly, responsibly and in partnership with those who benefit from it. Our research culture is founded on academic integrity, ethical practice, openness, inclusivity, responsible research assessment and true engagement.

UCC champions engaged research that brings together researchers with communities, policymakers, healthcare providers, industry, cultural organisations and civil society to co-design research questions, generate shared knowledge and maximise societal relevance, implementation and impact. These partnerships strengthen research quality while ensuring that knowledge is accessible, trusted and responsive to public needs.

Open research principles are embedded throughout the research lifecycle, promoting transparency, reproducibility, accessibility and responsible stewardship of research outputs and data. Together with our Research Charter, these commitments create a research culture that values collaboration, integrity, multiculturalism, collegiality and continuous improvement while supporting excellence across all disciplines and all forms of research.

UCC Strategic Plan 2023 – 2028: Priority Actions aligned with Strategic Approach 1.4

- i. Launch UCC's first Research Charter, driving research culture change to develop and implement a holistic research and innovation environment.
- ii. Develop policies and mechanisms to support the effective dissemination of research expertise and maximise impact by taking a coordinated, holistic approach to embedding principles and practices of open research.
- iii. Actively support staff and students to embrace a range of rigorous research approaches and methodologies that share a common interest in collaborative engaged research 'with' and 'within' society, such as Public Patient Involvement, Inclusion Health, Evidence for Public Policy and Citizen Science. Enhance public outreach efforts on our research initiatives, both in collaborative engaged research and otherwise, in the pursuit of improving community engagement with research and its practical applications.
- iv. Provide supports to ensure FAIR (Findable, Accessible, Interoperable and Reusable) data stewardship.
- v. Ensure that the environment in UCC supports the conduct of research to the highest ethical standards, and that UCC researchers are appropriately trained.
- vi. Enhance research excellence and impact by integrating equality, diversity and inclusion into the design, execution and monitoring of research activity.

1.5 Create an innovation culture and entrepreneurial campus, underpinned by an ethos of creativity and discovery

Innovation at UCC encompasses technological, clinical, social, cultural, policy and creative innovation, recognising that every discipline contributes to societal progress, environmental wellbeing, cultural enrichment and economic development. The UCC Futures Framework enables new interdisciplinary pathways that translate research into products, services, policies, professional practice, creative outputs and measurable public and social value.

Entrepreneurship, commercialisation, consultancy, knowledge exchange and policy creation and creative public engagement are embedded throughout the University, creating opportunities for researchers and students to readily

translate discovery into impact. By supporting student and academic entrepreneurs, start-up companies, industry collaboration, creative bodies and public sector innovation, UCC strengthens regional development and national competitiveness, providing opportunity and benefit across sectors.

Research impact extends beyond commercial outcomes. Through engagement with government, communities, enterprise, healthcare, the cultural sector and others, UCC research informs policy, improves professional practice, enriches culture, strengthens communities and contributes to sustainable economic, social and environmental development.

Further enhancing our regional strengths is our outward-facing engagement with the city, across local authority, cultural organisations and businesses. UCC is a key partner in enabling Cork to fully realise its potential as a centre of innovation, supporting indigenous enterprise, sustained foreign direct investment and the continued growth of the arts, heritage, and cultural sectors. The co-location of our educational, research, creative and innovation potential with regional and international enterprise and the health services creates opportunities to develop innovation and cultural districts, where artistic and entrepreneurship-enabling spaces are co-located and cross-fertilize. These will strengthen the region's economic, social, cultural, and creative development while extending its impact nationally and internationally. UCC serves as a vital conduit for a regional innovation ecosystem, aligning educational excellence, research capability and intellectual property development with enterprise, the arts and culture to drive sustainable regional development. This broad conception of innovation recognises its common roots, with enterprise, in human creativity and discovery. It reflects UCC's commitment to creativity, discovery and responsible research that delivers lasting benefits for people, place and planet.

UCC's commitment to fostering an innovation culture is demonstrated through the annual [UCC Innovation Impact Report](#), which captures the breadth of entrepreneurial, commercialisation and knowledge exchange activity across the UCC, demonstrating how research is translated into economic and societal value.



UCC Strategic Plan 2023 – 2028: Priority Actions aligned with Strategic Approach 1.5

- i. Increase our knowledge exchange measures through strategic alignment with the UCC Futures Framework. Significantly increase the number of spin-out companies arising from UCC research, creating employment, engaging enterprise and driving investment in the university sector.
- ii. Create an Entrepreneur in Residence programme to enhance the impact of our research and innovation, as well as the creation of new ventures, products and services for societal benefit. Create a new student Entrepreneurship/ Start-up Hub within the existing university infrastructure.
- iii. Establish an externally facing business engagement unit to strengthen engagement with key sectors and enhance commercial activity, particularly with indigenous enterprise.
- iv. Be inclusive of a broad range of creative contributions from performance and composition to discovery and invention, strengthening knowledge exchange and cross-disciplinary research collaboration.
- v. Align the south/southwest hospitals research framework with that of the University to support the development of an Academic Health Sciences System.
- vi. Work with external stakeholders, including local authorities, IDA Ireland and Enterprise Ireland, to play a leading role in the economic development of Cork as an innovation region, including through the development of UCC's city centre campus, Cork Science and Innovation Park, and the embedding of the Cork Innovation Corridor concept into national plans as they develop for innovative cities.

Our Commitment

The challenges facing society demand curiosity, creativity, collaboration & courage

By investing in excellent people, internationally competitive research, world-class infrastructure and meaningful partnerships, the UCC Futures Framework supports our research and innovation community to expand the frontiers of knowledge and translate this knowledge to practical benefits for a more sustainable, equitable and prosperous future.

Our success is ultimately measured not only by research income, publications and international recognition, but by the difference our research makes - for our students, communities, industry, government, Ireland and the wider world. Working with our partners, we will continue to create knowledge that, informs policy, inspires innovation, enriches culture, supports sustainable development and addresses critical questions about security, identity and social justice, providing real public value through transforming lives.

Through the UCC Futures Framework, UCC will continue to invest in excellent people, ambitious ideas and world-class research environments that support discovery and innovation across – and between – all disciplines, strengthening our contribution to Ireland's prosperity.

Our ambition is clear:

to be internationally recognised
not only for the excellence
of our research, but for the
real difference that research
and innovation makes.

