



University College Dublin
An Coláiste Ollscoile, Baile Átha Cliath



Ireland's Global University

Strategy for Research, Innovation and Impact 2015-2020



Prof Des Higgins

UCD School of Medicine, author of one of the 10 most highly cited academic papers of all time.

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Creating value from knowledge

NovaUCD, UCD's centre for new ventures and entrepreneurs, has been home to some of Ireland's most successful start-ups.





ICT

Delivering transformational change through data analytics and the internet of things



Dear colleagues and partners of UCD,

University College Dublin is strongly committed to excellence in research and innovation and to delivering impact locally, nationally and globally.

We build on an outstanding base of scholarship within all our disciplines, and in the interdisciplinary spaces that develop from them. From this, we deliver knowledge and ideas that inform policy, support enterprise, deliver innovation, and enrich culture and society.

The quality of our research and innovation is apparent in

- our research publications, which have a citation impact 67% above world average;
- landmark scholarly contributions such as the five-volume *Art and Architecture in Ireland*;
- the fifty new and established companies that have chosen to locate on our campus to work with our research community, and the thousand more that partner with us;
- our people: the faculty, research staff and support staff who create our success stories, and the students they inspire.

It is because of these and other achievements that UCD is ranked as the number one Irish university for research.

In November 2014, UCD President Andrew Deeks launched the UCD Strategy 2015-2020. That document sets out ten key objectives which will shape planning at all levels of the University and will allow us to measure progress towards the achievement of the University's vision.

Research, innovation and impact are central to the UCD Strategy, underpinning all ten objectives. This document outlines UCD's Strategy for Research,

Innovation and Impact for the period 2015-2020.

For each of the ten University objectives, it describes how our activities in research, innovation and impact will contribute to the achievement of that objective, and identifies the key associated actions.

Over the period of this strategy, we will retain our commitment to excellent research in all its manifestations, to delivering innovation and to growing our impact.

We will build our connections, both internal and external, engaging stakeholders in new and exciting collaborations.

We will align around six major research themes, presenting a unified and accessible interface to partners, and support the development of emerging themes where we see the combination of excellence, scale and opportunity.

Above all, we will nurture talent, supporting all in our community to deliver on their ambitions in an atmosphere of creativity and integrity. The results will be evident in the impact we deliver to a dynamic economy and an informed, reflective society.



Professor Orla Feely
UCD Vice President for Research, Innovation and Impact
October 2015



Agri-Food
Number 1 for global citations
at scale in agri-food



Introduction

Excellent research and innovation are central to all that we do in UCD, drawing on the range and depth of our disciplines, the commitment of our community and the strength of our partnerships to deliver impact in areas of importance and opportunity.

Research and innovation are essential drivers of a dynamic economy, an informed society and a vibrant culture. UCD contributes to this through the advancement of knowledge and the dissemination and application of these advances, and through the development of informed and inquiring minds in an environment imbued with discovery and creativity. We are committed to ensuring the highest standards of integrity in all aspects of our research and innovation.

Research and innovation across a university of the breadth of UCD take many different forms. We have fundamental discovery-oriented research as well as research targeting applications in the short, medium or long term. We have lone scholars, small, medium and large research groups, start-up companies and large-scale collaborations with industry or other partners. We conduct research within each of our extensive range of disciplines, and across disciplinary boundaries.

We value all of these modes of research and innovation, and recognise the interdependencies and synergies between them. Whatever the form, we require all research and innovation supported within UCD to be **excellent**, and unambiguously identifiable as such by the measures applied within the relevant sphere internationally. Research and innovation of this calibre deliver important **impact** – advancing knowledge, supporting enterprise, informing policy, and underpinning the nature and quality of the education we deliver to our students. This is important to us. We recognise that this impact can take many different forms, over different time scales.

Recognising that all of the significant global challenges require interdisciplinary solutions, we will work to develop meaningful responses at scale in areas of major opportunity where UCD has the expertise, the infrastructure and the network to lead internationally.

By 2020, UCD will be known internationally for the **excellence** of our research and innovation, and for the effective manner in which we harness all of our resources and **partnerships** to deliver **impact** at scale in areas of global opportunity.

We will continue to organise around our major research themes of Agri-Food; Culture, Economy & Society; Energy; Environment; ICT and Health.

These are areas of global opportunity in which UCD has the excellence, scale and network to deliver significant impact. We will further align internal resources and optimise our external engagements for each of these. We will keep these themes under regular review, and will facilitate the stratified development of additional thematic areas based on excellence, scale and opportunity.

We will deliver best-in-class structures to support interdisciplinary research and innovation, and will seek to ensure that our major research themes are appropriately reflected in our education and in the skilled graduates we produce.

Within, across and outside these major themes, the world will be further transformed by disruptive innovation over the years of this strategy. We will combine expertise across our themes and disciplines to imagine, to anticipate and to develop new seams of creativity in cross-cutting emerging areas. We will consider in particular the socialisation of disruptive innovation, combining our strength in humanities and social sciences with that in the STEM disciplines. We will seek to deliver, using the resources of our campus and community and with a network of strategic partners, novel and creative ways to test and implement new ideas in our local environment in a manner that has global impact.

We will translate our research findings into outputs that enhance economic, social and cultural well-being. We will deliver value through our interactions with enterprise, with the policy system and with social and cultural organisations. Our already renowned activities in entrepreneurship and commercialisation will take a leap forward.

Recognising that excellent research and innovation require world-class infrastructure, UCD will continue to prioritise investment in this area and deliver on the potential promised through previous infrastructure investments.

We recognise above all that it is through people that knowledge is transferred and impact delivered most effectively. We will support the development of outstanding faculty and researchers across all disciplines and at all career stages, and will ensure that our education programmes are enriched by our research and innovation activities.

Excellence in research and innovation demands the same excellence in support structures and services, and we will work with our research community to achieve this. We will also ensure that achievements in research and innovation are appropriately reflected in internal resource allocation.

By 2020, UCD will be known internationally for the excellence of our research and innovation, and for the effective manner in which we harness all of our resources and partnerships to deliver impact at scale in areas of global opportunity. We will be a central hub in leading international research networks in a number of strategic areas. Internationally-leading researchers will find in UCD an institution that matches their ambition and in which they want to build their careers. Partners and funders nationally and internationally in enterprise, education, government agencies and social and cultural organisations will find an open and dynamic institution that delivers value in areas of mutual interest. In recognition of UCD's particular role in Irish life, we will continue to support the economic, social and cultural development of Ireland through the supply of talented people and creative ideas. We will also fulfil our role as Ireland's global university, through our participation in the international research community and our contributions to addressing global challenges.



Environment
Understanding the earth
and its resources



Our six major research themes



Agri-Food



**Culture,
Economy
& Society**



Energy



Environment



ICT



Health



Culture, Economy & Society
Distinctly Irish, globally engaged



Delivering against University objectives



Objective 1

Increase the quality, quantity and impact of our research, scholarship and innovation

Research and innovation, by their nature, are highly competitive activities that demand continuous improvement. We will seek to build on our successes to date and to deliver success in new domains.

We are strongly committed to delivering impact from our research and innovation. Our greatest impact is delivered through the quality of our academic output and of our people. From both of these, all other impacts are possible. Building on this strong academic base we will work effectively with partners to translate our knowledge for the development of a better and stronger society and economy. As part of this strategy, impact will be a central objective of our research programmes and projects, and will be designed into them from inception. We will examine and assess the impact of our research and innovation, sharing best practice to improve performance, and communicating our achievements to a wide range of audiences.

Many important measures of research success, such as grants, research postgraduates, publications and citations, can readily be measured. In innovation, we can track licences, patents and spin-out companies. We will continue to develop our key metrics and use the results to drive improvement.

The research funding we secure reflects our competitiveness and also enables the delivery of research outputs and impact. We will grow our funding from a balanced range of sources: national, international (including but not limited to EU), foundations, industry and others. We will target in particular sources of funding aligned with our core objective of delivering research

excellence. We will work with partners to develop major value propositions that will attract very substantial funding not just to UCD but to Ireland.

Delivering on this objective will require excellent people working within and across disciplines, with world-class support structures and facilities, and in collaboration with a network of engaged partners. In addition to the key actions listed here, therefore, key actions across later objectives are also relevant to this objective.

Key actions:

- Identify the key quantity, quality and impact metrics for our research, scholarship and innovation, and agree targets with each academic unit.
- Balance our funding portfolio to target a range of external funding sources that best meet UCD's focus on excellence across all disciplines and are aligned with our research and innovation ambitions.
- Improve our competitiveness in securing external funding through active pipeline management and enhanced, targeted support for proposal preparation.
- Further improve our licence and patent outcomes.
- Improve our capacity to develop competitive spin-out companies.
- Build our capacity for the planning, delivery, evaluation and communication of impact.
- Enhance the discoverability of our research outputs through effective use of research repositories and a range of tools for dissemination.



Objective 2

Provide an educational experience that defines international best practice

Our activities in research, scholarship and innovation are central and distinguishing features of the education we deliver. They ensure that our students learn to inquire, to challenge, to solve and to create, guided by faculty at the leading edge of their disciplines. They also bring to our students the benefits of engagement with enterprise, with the public policy system, with social and community organisations and with international networks.

The greatest form of impact we deliver through our research, scholarship and innovation lies in the talented individuals developed in this environment, and their many contributions to delivering a strong and vibrant society and economy nationally and globally.

We will continue to ensure that research and innovation are threaded through our curriculum at all levels. Our leaders in research and innovation will continue to be student-facing, bringing the benefits of their knowledge and their networks into the classroom. Understanding of the approach to research and research methods will be part of the formation of all UCD students. We will further develop our offerings in innovation, design and entrepreneurship both within and outside the curriculum, incorporating teaching from leading practitioners.

The education of postgraduate research students is at the core of university research, delivering a cohort of skilled research-trained individuals to fuel a knowledge economy and an inquiring society. We will ensure that their research training is deep as well as broad, developing their competence and reputation in their area of specialisation while also supporting their professional development across a multiplicity of domains.

Key actions:

- Ensure that research skills and methods are prominent in UCD degree programmes.
- Present students with novel and exciting educational opportunities in innovation, design and entrepreneurship.
- Further support Master's and PhD programmes that develop strength in depth and breadth.
- Reflect our major interdisciplinary research themes in our education offerings.
- Ensure that our research leaders are also leaders in education.
- Expand the presence of external partners in the classroom through enhanced structured engagements.
- Introduce surveys of research postgraduate students, and use the results to improve practice.



Objective 3

Consolidate and strengthen our disciplines

Much of the distinctive value of UCD lies in the coverage and depth of our disciplines. Success in research and innovation can only be delivered if we build successfully from within these disciplines. This success will then in turn lead to stronger disciplines, through the attraction and development of outstanding faculty and students, stronger partnerships, better facilities and enhanced reputation.

The research programme of a single academic can add significantly to UCD's reputation in a field, or give rise to the development of a strong cluster of research over time. Our research environment must support a balanced approach, where single scholars as well as research groups of all sizes add to our body of knowledge and enhance the University's reputation. Above all, our research must be excellent, delivering impact to our society and economy. We will develop a framework that allows us to understand, evaluate and build excellence across our rich landscape of disciplines.

Our full programme of activities in support of excellent research and innovation will serve to strengthen our disciplines. A key measure of success will lie in the enhancement of our performance and reputation within each discipline. We recognise that essential disciplinary differences mean that measures of research excellence differ between disciplines, and we will take full account of these. We will at the same time take into account trends in disciplinary norms globally, and reflect best practice. Where the external environment presents particular problems for individual disciplines, we will work to counteract these.

Key actions:

- Develop a framework to evaluate research excellence across all areas that takes into account the diversity of our research activity.
- Profile our research and innovation performance by discipline and, using this information, work with schools to improve performance and build profile.
- Ensure that the metrics we use take appropriate account of disciplinary norms, while also transmitting best practice across disciplines and reflecting our ambitions as an institution.
- Identify and target funding opportunities aligned with disciplines.
- Assist in building academic capacity within disciplines through identification of opportunities and succession planning.
- Develop mechanisms that enable balanced contribution of all faculty to excellence in research and innovation.



UCD CONWAY INSTITUTE OF
BIOMOLECULAR AND
BIOMEDICAL RESEARCH



Objective 4

Conduct strong interdisciplinary research and education in important areas of national and global need

The areas in which we seek to deliver impact are not arranged within traditional disciplinary boundaries, although they draw from within them. The big global challenges require ideas and expertise drawn from a range of disciplines, as do enterprise and public policy. Recognising the human dimension to social, technological and business disruptions, this expertise must come from the humanities and social sciences as well as the STEM disciplines.

With excellence across a broad range of disciplines, UCD is very well positioned to succeed in this environment. We have developed for a number of years now our major research themes of **Agri-Food, Culture, Economy & Society, Energy, Environment, ICT** and **Health**. These are areas of global opportunity where UCD can lead, Ireland can lead and we have a strong network of partners. Over the period of this strategy we will expect significant advances for each of these themes, with step changes in international profile, strategic partnerships and major research successes. We will continue to review achievement against these expectations.

We will also seek to identify additional cross-cutting themes where the intersection of excellence, partnership and opportunity at scale is particularly significant. One example of a theme currently under intensive development in UCD is **Manufacturing**. We will support the development of this and further themes. We will continue to scan the horizon internally and externally and will support the development of emerging areas where UCD can be an early leader in a growing area of research.

We will ensure that our major interdisciplinary research themes are reflected in university structures in a manner that allows them to deliver

success and that facilitates easy engagement with external academic, industry and policy networks. We will seek to support them in external engagement, targeted recruitment and profile building. In particular, we will develop the role and organisation of our research institutes, which will be central vehicles in our response to interdisciplinary opportunities.

We know that interdisciplinary success can only emerge when the underpinning disciplines are strong, and that such success can in turn further strengthen the disciplines. We will seek to ensure this mutual reinforcement.

Key actions:

- Identify and keep under review a stratified set of major research themes in which UCD has the excellence, scale and network to lead internationally.
- Support the development of emerging interdisciplinary research themes of identified scale and significance.
- For these themes, identify areas of convergence with potential partners and audiences in academia, enterprise, government and other sectors, and develop and implement a strategy for engagement.
- Understand the research landscape we seek to develop and identify the best structures to allow us to do this.
- Ensure that internal structures aligned with research themes, in particular our research institutes, are appropriate for the delivery of excellent research and innovation, and that they have strong and synergistic connections to the core disciplines while also supporting interdisciplinarity.



Objective 5

Attract and retain an excellent and diverse cohort of students, faculty and staff

Our people – faculty, research staff, professional support staff and postgraduate researchers – are our core resource in delivering excellent research and innovation. We seek to recruit outstanding people in all of these categories to enhance our research activities.

We will invest in diverse and world-leading faculty and researchers in areas of identified opportunity. In doing so, we will add to the excellent base of talent at all levels in UCD. We will implement best practice in personal development programmes for faculty, research staff and research students. We will help our researchers to enhance their profile with academic and other audiences nationally and internationally. We will map excellent individuals to research opportunities, and support our researchers as they pursue prestigious career development awards.

We will take steps to counter the continuing gender imbalance in senior faculty positions, in particular in the STEM disciplines. This will be reflected in formal processes such as Athena SWAN, where we will achieve both institutional and local awards.

For our researchers and faculty to fully realise their potential for excellence, they must be supported by a dedicated and professional staff of research administrators and managers. Excellent staff will see opportunities for personal and professional development in research support at UCD.

Key actions:

- Improve our competitiveness in recruiting outstanding national and international research students and postdoctoral researchers, through flagship national and international funded programmes and other mechanisms.
- Implement support structures and personal development processes that enable research students to flourish in UCD.
- Encourage and support strategic recruitment plans for key faculty positions within disciplines and in major research themes.
- Inform the development of a search-based approach to recruitment, aligned where relevant with international and national funded programmes.
- Expand our cohort of European Research Council and other major award recipients through awareness programmes and internal supports and recognition mechanisms.
- Enhance mentoring and career development programmes for faculty and postdoctoral researchers, and implement internationally-recognised programmes such as Athena SWAN.
- Ensure that excellence in research, innovation and mentorship is recognised in internal promotions and recognition schemes.
- Create a structured approach to careers in research and innovation administration and management across the University.



Objective 6

Build our engagement locally, nationally and internationally

External engagement is vital to the delivery of excellent research and innovation. We will transform our approach to external engagement over the course of this strategy, growing our partnerships in number, scale and strategic significance. We will apply our strongest resources to deliver value to partners, and bring value from our partnerships to all that we do in UCD.

Through key strategic partnerships with other academic institutions we will complement and grow our areas of excellence. We will deliver to enterprise, from SMEs to multinationals, an enhanced interface and a focus on collaborations of significance. To the policy system we will deliver a strong voice on matters of importance. We will bring our research and our researchers to the public through an enhanced focus on communications and impact.

UCD is Ireland's global university. We will build our global profile and our global network, with visible institutional presence in key regions and further development of strategic partnerships internationally. We will play a role in responsible development that will serve the long-term future of Ireland and beyond.

We will ensure that our students benefit from our external network within the classroom and through internships and exchanges that enhance their educational experience and cultural awareness. Our postgraduate and postdoctoral community will find within our partnerships enhanced opportunities to develop as researchers.

Ours will be a strong and influential voice in support of higher education, research and innovation in policy systems nationally and internationally.

Key actions:

- Develop and implement a coherent model for engagement between enterprise, social and cultural organisations and UCD.
- Develop major strategic alliances with local, national and international partners, and deliver success for these through innovative actions.
- Support faculty to work with policy-makers nationally and internationally.
- Facilitate faculty exchange between UCD and other universities, industry and policy systems nationally and internationally.
- Develop a structure to facilitate consultancy by UCD academics.
- Lead in shaping the emerging agenda around impact in higher education and research.
- Further develop our public engagement strategy around research and innovation.
- Develop an approach to strategic marketing nationally and internationally.



Objective 7

Develop and strengthen our University community

One of UCD's greatest strengths is the breadth of our academic disciplines. We will harness this strength, creating opportunities for our faculty to meet, exchange ideas and develop new concepts in areas of shared interest. These emerging ideas can result in breakthroughs in individual disciplines, or be the seed of an emerging and growing area. We will support this activity through a range of mechanisms that will assist in bringing ideas from concept to early stage development. Through bootcamps and other participatory events in innovation and entrepreneurship, students, faculty and staff can further develop their ideas and skills in a creative interdisciplinary environment.

Recent investments in infrastructure have created a vibrant research environment in UCD. Our largest investment, the UCD O'Brien Centre for Science, has created a space that mirrors the open, dynamic and interdisciplinary nature of our research. Our physical infrastructure supports our ambition to engage all staff, faculty and students in the research activity on our campus. We will use our outstanding facilities for campus events that showcase our research to the community.

We will also further develop outreach activities to bring our research to a wider community, through initiatives such as the Decade of Centenaries and Healthy Ireland programmes.

Key actions:

- Support interdisciplinary mechanisms to facilitate academic staff to develop new interdisciplinary research ideas and bring these to fruition.
- Present students, faculty and staff the opportunity to engage with programmes in innovation and entrepreneurship.
- Develop across the University community an awareness of our key successes and strengths in research and innovation.
- Continue to support our researchers in effectively communicating their research to a wide audience on campus and beyond.
- Support forms of recognition that encourage and promote excellence in research, innovation and impact.



Objective 8

Further develop world-class facilities to support the vision

UCD has a strong track record in renewing our campus. The needs of our research community have shaped this development, while their ambitious plans have contributed to securing significant investment to deliver on our vision.

Over the period of the strategy we will further develop our facilities in support of research and innovation. We will examine current provision, identify necessary improvements and seek the necessary investment from both public and private sources.

We will enhance our infrastructural supports for companies, from start-ups to established companies, that seek to locate on our campus and to work with our research community. Possibilities exist to develop highly innovative facilities on our campus and beyond, in support of major opportunities for UCD and for Ireland. We will seek to realise these.

In some cases the facilities required by our researchers lie by necessity outside UCD, and we will seek to support access to such facilities.

Key actions:

- Ensure optimum use of existing facilities and continue to invest in their development so that they are fit for purpose.
- Identify the priority areas for investment in research and innovation infrastructure, both within disciplines and across major research themes.
- Underpin capital development proposals with ambitious and inspiring plans for the associated research and innovation.
- Target funding sources aligned with UCD's capital and infrastructure needs, through a structured approach aligned with the UCD Foundation.
- Identify core research infrastructures and equipment and develop a sustainability plan for them.
- Enhance models for external access to our facilities, in order to build research engagement and ensure financial viability.
- Support membership by Ireland and by UCD in major international facilities that enable our research success.



Objective 9

Adopt governance, management and budgetary structures which enable the vision

We will ensure openness, transparency and inclusivity in research governance; maintaining the highest standards of governance and management in our internal structures and in our external engagements. Our commitment to quality will be evident not only in our research outputs, but in the manner in which we conduct our research. This will include adherence to strong policies and procedures around research integrity and ethics.

Excellence in research and innovation demands the same excellence in its support structures and services. We will work with the research community to align our supports with the needs of researchers and deliver these supports as close to the researcher as possible. This researcher-centric view will be an underlying principle for the development of support services in research and in technology transfer. An integrated approach, that connects central expertise with local administrators and managers in colleges, schools, institutes and funded programmes, will deliver the most effective service to our researchers and we will work to deliver that approach. This will include close co-operation between UCD Research and Innovation and all support units around the University, ensuring strong and integrated supports for the research community.

We will ensure best-in-class systems for capturing the complex set of metrics around our research and innovation activity and for reporting those metrics in a manner that enables improvement. Improvement will also be supported by internal resource allocation that encourages and rewards the delivery of research and innovation.

Key actions:

- Ensure best-in-class policies and procedures around research integrity and ethics, clearly communicated and implemented.
- Develop an effective structure to enhance and manage connections between UCD Research and Innovation and the academic and support units.
- Increase the effectiveness of overhead investment, financial allocation mechanisms and other internal incentives in supporting research and innovation activity.
- Improve our competitiveness in securing external funding through active pipeline management and enhanced, targeted support for proposal preparation.
- Improve our post-award supports, and monitor and report on research expenditure in a manner that encourages effective use of funding awards.
- Provide enhanced systems to capture and report quantity, quality and impact metrics for our research, scholarship and innovation.
- Develop standard management and performance reports to assist academic units with research and innovation planning.



Objective 10

Overcome financial, human resource management and other external constraints

We will be strong advocates for the value of research and innovation and of higher education. We will argue the case for increased national and European investment in research and in higher education, with strong supporting evidence. We are very clear on the necessity for a balanced portfolio of research excellence across all disciplines, and will continue to make the case for this.

We believe that excellent research and innovation require a flexible, agile and dynamic environment. UCD will be recognised internally and externally as such an environment, and existing and developing partners within the national research system will see the benefits of this in realising shared ambitions.

We will work with the policy system and with partner organisations to eliminate constraints on the higher education system that impede our ability to deliver excellence in research and innovation. This will include addressing inadequacies in current coverage of research costs by funders.

Career pathways for researchers require particular national consideration, and we will be to the fore in delivering solutions.

Key actions:

- Help to shape the national and international policy agenda around research, innovation and higher education, with an emphasis on excellence across a portfolio of opportunities.
- Display to external partners the benefits of an agile and ambitious university environment, and grow support for this environment.
- Make the case for increased investment in research, including the resolution of certain gaps in covering the costs of research.
- Help to shape the national position on career pathways for researchers.



Health
Personalised approach to
health and wellbeing





Energy

Setting the agenda in energy systems integration



Ireland's **Global**
University



University College Dublin
Belfield, Dublin 4, Ireland.

 www.ucd.ie