

University College Cork
**Research & Innovation
Strategic Plan (2017-2022)**



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh





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Introduction and Review of 2013–2017 Strategic Plan Period

University College Cork (UCC) is an internationally competitive, globally-focused, research-led university. It is Ireland’s first five-star University with internationally-recognised research in science, food, engineering, medicine, business, law, social sciences and the humanities. The institution is ranked in the top 2% of universities worldwide based on the quality of its research outputs and peer esteem indicators, and was the first University to be named *The Sunday Times University of the Year* for two consecutive years – 2016 and 2017 – in the 15-year history of the award.

The UCC Strategic Plan for Research & Innovation (2017-2022) is informed by the institution’s performance over the period of the previous Strategic Plan for Research (2013-2017). UCC’s Research Strategy in this period focused on creating and supporting world-leading clusters of researchers, building on the research strengths of the University and harnessing the capacity that had been developed within the University’s research environment over the previous 15 years. Progress in this regard stemmed, in part, from:

- (i) Close alignment between the institute’s Research & Innovation strategy and key Government strategies including the *Strategy for Higher Education to 2030 (Hunt Report)*, and Ireland’s Strategy for Research and Development, Science and Technology, *Innovation 2020*
- (ii) Significant UCC success in all Cycles of the Programme for Research in Third Level Institutions (PRTL).

The success of the Research & Innovation Strategic Plan (2013–2017), with regards to outcomes delivered, are detailed below but was particularly evident in the outcomes of the first two calls of the Science Foundation Ireland (SFI) Research Centres Programme, the largest joint state/industry research investment in Irish history. Of the twelve supported centres, UCC

leads four, co-leads one and is partner in six others with a total SFI investment in UCC of almost €100 million.

This period was also notable for the presence of significant volatility with regard to the national research funding and policy landscape coupled with considerably heightened compliance requirements at institutional level, and continuing downward pressures on the exchequer research funding envelope. To ensure that the institution was equipped with necessary agility to address these major challenges, the University Research Support Service was enhanced and reorganised, and a series of major University Policy initiatives were developed and implemented – a detailed summary is provided in the appendix, but examples include: a career development and complementary training structure for research staff; the introduction of a simpler, more transparent overhead rates policy, and the creation of an internal Strategic Research Fund (SRF). The SRF is helping the University to stimulate new research areas that are aligned with local, regional and national priorities, and will help to ensure the sustainability and development of existing and emerging research strengths so that the UCC continues to build critical mass in areas that underpin economic and societal growth. In addition, in 2013, the inaugural UCC Research Awards ceremony was held to recognise and celebrate researchers who made exceptional and influential research contributions, pushing boundaries, enhancing knowledge and raising the national and international research profile of UCC.

The Research & Innovation Strategic Plan (2013–2017) detailed a number of performance targets for research and economic development that sought to position UCC and Ireland as an international innovation hub. These Strategic Plan targets, and the performance achieved against these objectives, indicate that excellent progress was made during the 2013–2017 period, which will provide an important foundation to underpin continued institutional success in the Research & Innovation space from 2018 onwards (Table 1).

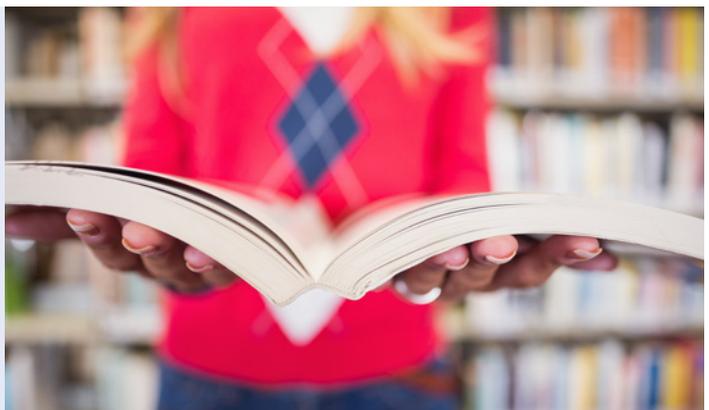


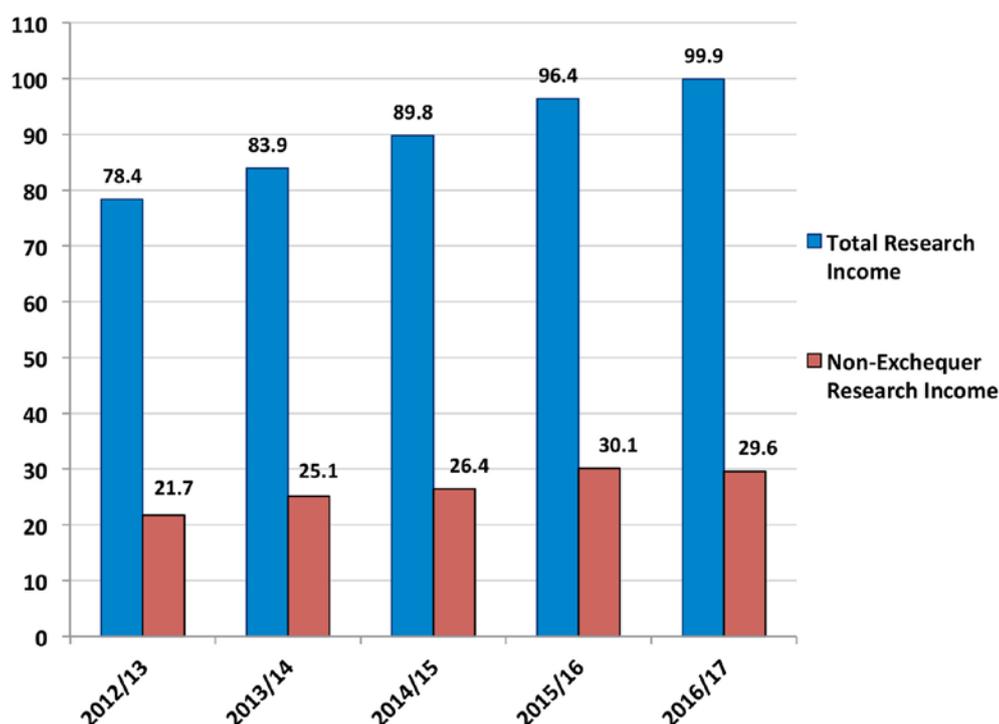
Table 1: Research & Innovation Strategic Plan (2013-2017) Performance Targets and Outcomes*

TARGET	OUTCOME
Increase annual research income from €79M in 2012 to €90M by 2017	Achieved – 2016/2017 Research Income: €100M
Increase non-exchequer research funding from €22M in 2012 to €30M by 2017	Achieved – 2016/2017 Non-Exchequer Research Income: €30M
Graduate 250 doctoral students annually by 2017	Work in progress – 200 doctoral graduates in 2017
Increase measures of research impact to a level greater than the average global impact for the subject area* by 2017 <i>*22 Subject Areas analysed, as defined by Thomson Reuters Essential Science Indicators (December 2016)</i>	Achieved for: 1. Agricultural Sciences 2. Biology & Biochemistry Chemistry 3. Engineering 4. Environment & Ecology 5. Immunology 6. Geosciences 7. Material Science 8. Molecular Biology & Genetics 9. Mathematics 10. Neuroscience & Behaviour 11. Pharmacology & Toxicology 12. Physics 13. Plant & Animal Science 14. Psychiatry & Psychology 15. Space Science
Establish 20 additional investment-ready high potential spin-out companies and 150 new jobs	Work in progress – 15 spin-out companies established between 2013 & 2017.

*As of December 2017

UCC continues to be the best-funded research university in Ireland with an R&D investment of €99.9 million in 2016/17, representing a 27% (€21.5 million) increase over the last 5 years despite a challenging economic environment, and an historical high for the institution (Figure 1).

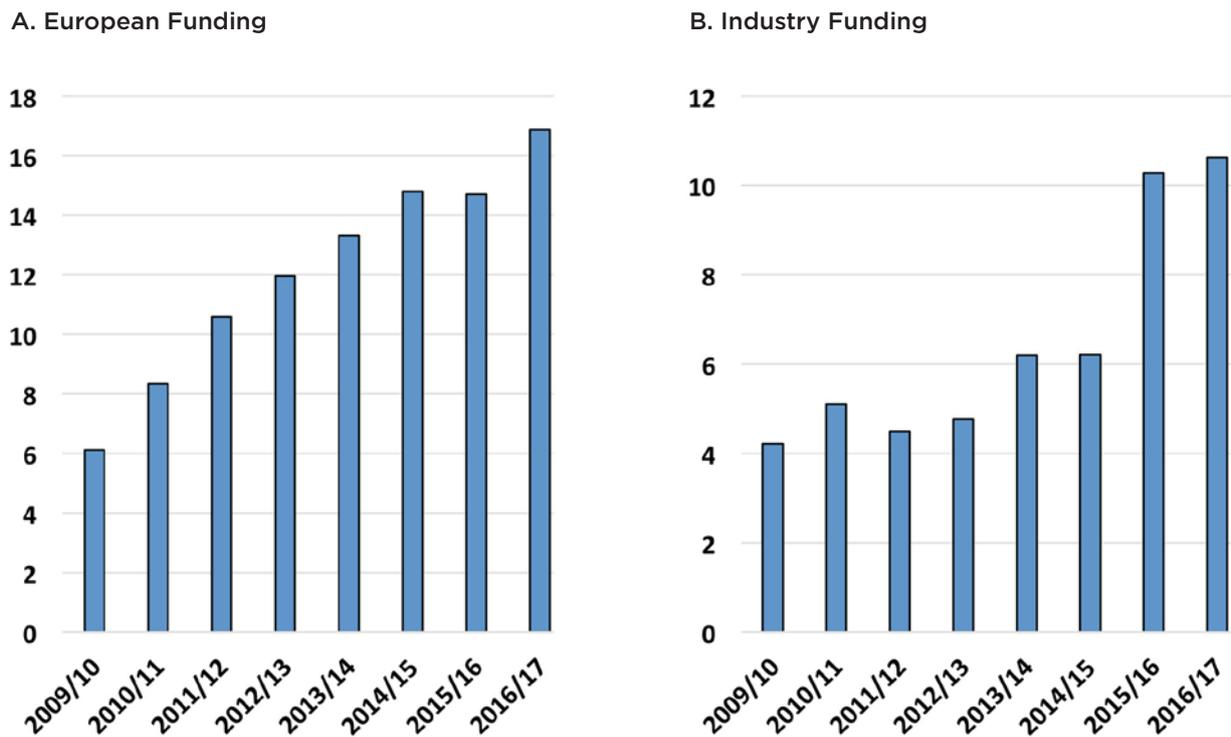
Figure 1: Overall Research Income Expressed as Expenditure (€/million) – 5 Year Profile



The number of external awards that contributed to UCC’s research funding being sustained at a high-level through a period of recession also increased significantly (+55% in 5 years). In addition, during this period, the diversity of funding sources making awards to UCC researchers rose sharply and the number of PIs securing awards increased by 25%. These changes to the structure of the research funding envelope of the University have resulted in significant challenges in terms of research administration.

Reflecting the pressures on government funding, €29.6 million (30%) of 2016/17 research income was generated from non-exchequer sources (Figure 1). This represents a 36% increase in the last 5 years, and was primarily driven by a 41% increase in funding from EU programmes (to €16.9 million) and a 123% increase in funding from enterprise sources (to €10.6 million) (Figure 2).

Figure 2: Non-exchequer research income (€/million):



With regard to research income sourced from the enterprise sector, UCC is the top performing Irish institution securing twice the research funding of the next placed university (Table 2).

Table 2: Overall Research Income versus Industry Income — Irish University Comparison (2015/16)

University	Overall Research Income (€/million)	Industry Research Income (€/million)
UCC	96.4	10.6
TCD	91.0	4.6
UCD	81.8	4.2
NUIG	52.9	3.2
DCU	35.7	2.4
UL	30.2	3.6
Maynooth	22.8	0.23

Source: KTI Annual Review & Knowledge Transfer Survey 2016

Analysis of the exchequer versus the non-exchequer research funding 10-year profile reveals the success and resourcefulness of the UCC research community in adapting to a volatile, external funding environment and, in particular, the pressures that came on exchequer research funding from 2009/2010 (Figure 3 & 4).

Figure 3: Research Income (Expenditure): Exchequer versus Non-Exchequer (€/million)

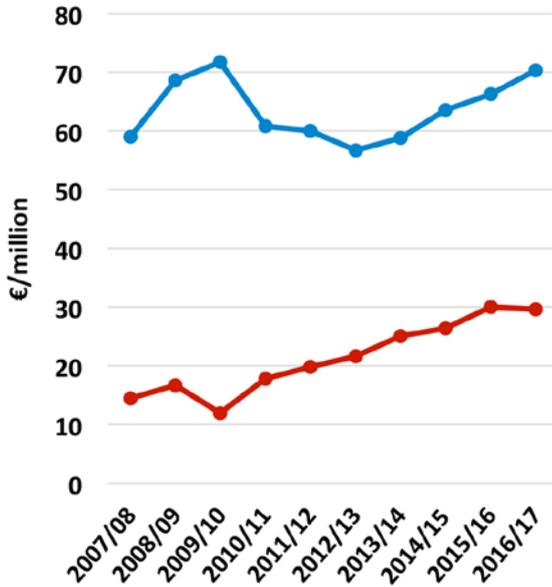
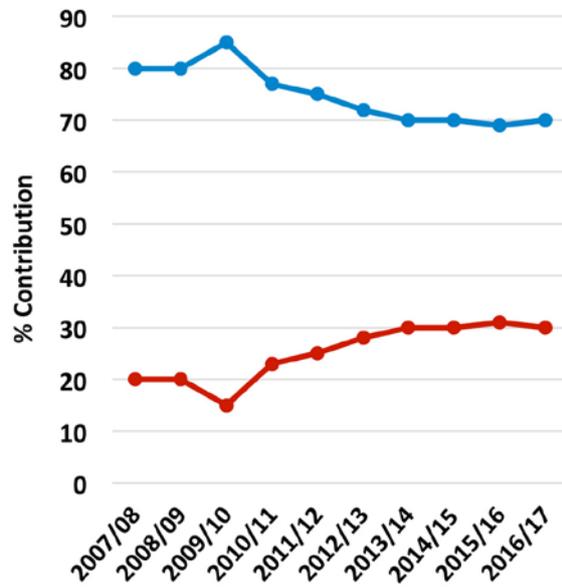


Figure 4: Research Income (Expenditure): Exchequer versus Non-Exchequer (% Contribution)



Up to that point, UCC researchers had been particularly successful in securing significant research funds from national programmes, especially SFI, Health Research Board (HRB) and the Higher Education Authority (HEA)/PRTLTI. When the Irish economy went into recession, and the year-on-year budgetary increases in these programmes ended (and, in many cases, reversed), UCC researchers utilised their resourcefulness and the value of their reputations by successfully completing for non-exchequer research funding.

The primary outcome of these actions was that the overall research income secured by the UCC research community was maintained at a high, yet stable level over the period of the recession and that the decreases in available exchequer funding were compensated by success in securing funding from alternative, non-exchequer sources.

Looking to the future, UCC researchers now collaborate with over 2,400 research-performing entities across 130 countries, generating over 6700 publications, and are ideally placed to leverage these collaborations for success in future exchequer and non-exchequer funding programmes.





European Engagement & Horizon 2020

Horizon 2020 is the current EU framework programme for research and innovation. Launched in December 2013, this €80 billion programme represents a major opportunity for UCC across all disciplines of research. At a national level, the Government has set an ambitious financial draw-down target for the programme of €1.25 billion.

To address these challenges, and to ensure that UCC was positioned appropriately to maximize success, UCC Research Support Services developed the *Horizon 2020 Action Plan* that set out a strategy to augment and improve existing research supports, develop and implement new targeted supports, with the ambition of providing our researchers with a significant competitive advantage in Horizon 2020.

In the context of national discussions in July 2014, an institutional target for UCC of €110.3 million was agreed and endorsed by the University. Implementation of the Action Plan through a series of initiatives to support the UCC research community in reaching this ambitious target is a major element of research support provision in the institution.

One key objective of the Action Plan was the establishment of a new Unit offering project management services with a focus on EU coordinated projects and European Research Council (ERC) programmes. *PrimeUCC*, UCC's project management service and the first such resource of its kind in Ireland, was launched in November 2013 and the demand for the service by the UCC research community has already exceed expectations.

As of December 2017, UCC researchers had secured 100 Horizon 2020 awards (33 as coordinator and 67 as partner) from an overall total of over 700 applications submitted to the Commission. This equates to a success rate of 14%, versus an EU average of 12%, with a financial drawdown of €52 million since the start of Horizon 2020 in 2014. Awards secured to date equate to 47% of UCC's institutional target for the Horizon 2020 programme — €110.3 million over the 7 years of the programme (to 2020).

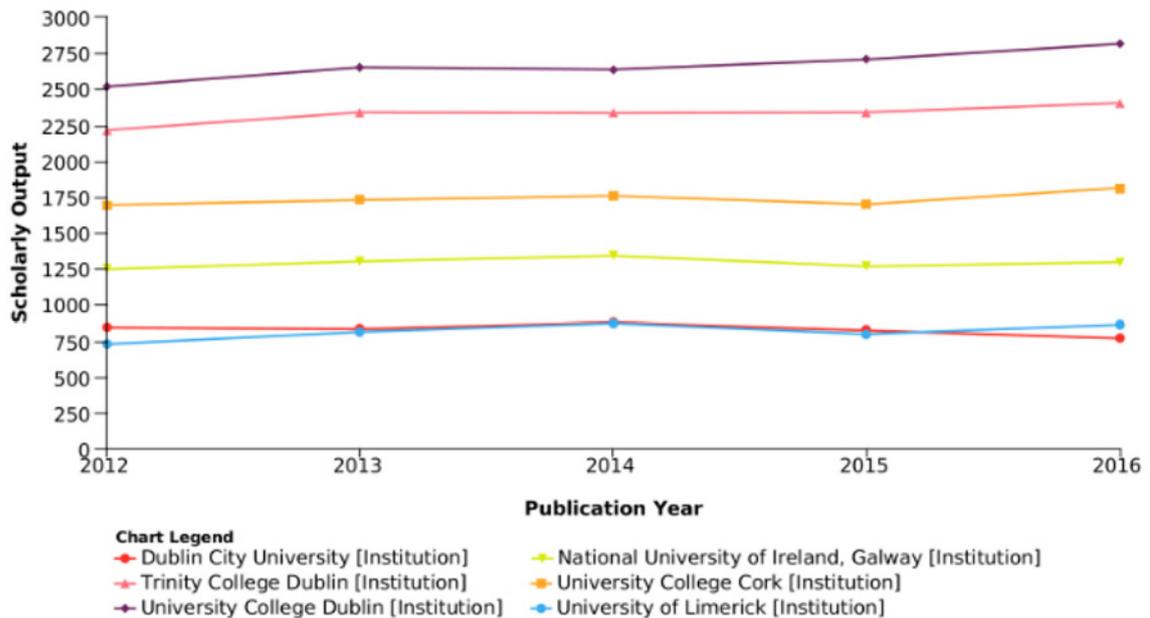
2013/2014 also saw the end of FP7, the previous EU framework programme for research and innovation. During the period of the programme, UCC participated in over 1000 applications (as Coordinator or Partner). 205 of these applications were successful (21% success rate) with a funding drawdown of €74 million. This performance level compares very favourably to the institution's participation in FP6, in which just over €30 million was secured in total.

In May 2013, following significant work in implementing the principles of the *European Charter and Code for the Recruitment of Researchers*, UCC was conferred with the European Commission's '*HR Excellence in Research Award*' accreditation. This award reflects the significant progress by the University to support researchers, including the introduction of structured PhD programmes, and the implementation of the University Employment and Career Management Structure for Researchers. The award also supports our researchers in their proposals to attract international funding, and promotes the University as providing a favorable working environment for researchers.

Publication/Citations

Analysis of key research outputs generated from UCC research activity — peer-reviewed research publications, reviews and conference papers — reveals a consistent trajectory over the last 5 years, in line with other Irish institutions (Figure 5). 1,810 articles (as indexed by the Scopus database) were published by UCC researchers in 2016, a 7% increase over the last 5 years.

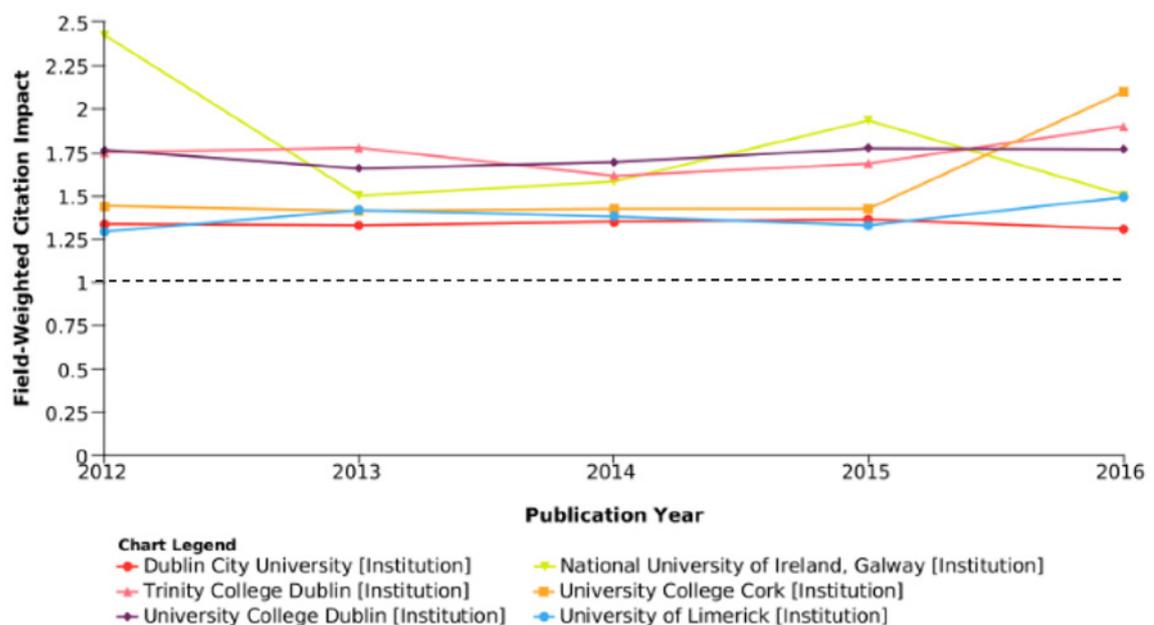
Figure 5: Research/Scholarly Publication Output — Irish University Comparative Analysis



Source: SciVal Analytics (as of December 2017). Publication types included — articles, reviews & conference papers

Comparative analysis of the citation impact performance of research publication outputs, combined across all disciplines, reveals that all Irish universities have consistently performed above the world average over the last five years. Of particular note is the significant improvement in UCC's performance in the last year. This achievement was preceded by a period in which UCC's citation performance, as assessed by this metric, lagged behind UCD, TCD and NUIG (Figure 6).

Figure 6: Field-weighted Citation Impact* Performance — Irish University Comparative Analysis



*Field-weighted Citation Impact: The ratio of citations received relative to the expected world average for combined subject fields, publication types and publication year. Score >1 indicates citation impact greater than the world average.

Source: SciVal Analytics (as of December 2017). Publication types — articles, reviews & conference papers

A potential contributing factor to the recent improvement in citation impact performance was the implementation of a series of ongoing University-wide initiatives, undertaken by UCC Research Support Services in collaboration with UCC Library, to raise awareness of bibliometric analysis as a measure of research impact, and to highlight strategies (including open access options) to improve performance.

Example initiatives include the following:

- UCC Library introduced initiatives to facilitate the archiving of articles in CORA with the result that, in 2017, UCC was the top contributor of peer reviewed journal articles to RIAN, the national open research portal.
- Workshops focussed on measuring and maximising citation performance, developed by UCC Research Support Services and the Library, have been delivered as part of the UCC Research Skills Training Programme and are currently being rolled out more widely across the institution.
- The launch of *Nature Masterclasses Online Resource* which provides training, delivered by Nature journal editors, to help UCC researchers publish in top-ranked journals.

Further actions and interventions in this space forms a key part of the current Research & Innovation Strategic Plan

External analysis of the impact of UCC research publication outputs, as assessed via a number of different university ranking exercises, reveals a similar theme. For example, in the EU-sponsored U-Multirank Exercise (2016), which surveyed 1,300 higher education institutions from more than 90 countries, UCC performed strongly scoring 14 A's and 9 B's across the 28 categories. The institution did particularly well in research categories achieving 'A's for Citations Rate, External Research Income, Top Cited publications and Post-Doctoral Positions. The University's achievements in the U-Multirank follows other recent successes with the institution featuring in the top tier globally for 14 subject areas in the recently published QS World University Rankings (2016), with Nursing and Midwifery listed in the top 50 worldwide. In addition, in the CWTS Leiden Ranking Exercise (2016), UCC was ranked number one in Ireland for Physical Sciences and Engineering research based on the proportion of papers in the top 1% of journals





Assessing Research Performance – Institutional Research Quality Review Exercise

In 2009, UCC was the first university in Ireland to undertake a comprehensive review of research activity across the entire institution. Research performance of all staff was evaluated against international standards and criteria, in an independent process involving some 115 international experts in 15 panels. The review confirmed that the university has achieved distinction in its research output as well as considerable success in the transfer of research to the market place, with many areas performing at the highest international level.

The second cycle of Research Quality Review (RQR) took place in 2014/15. The objective of this exercise was to provide an independent assessment of the quality and level of research activity at Department/School/Research Institute, Centre and Unit (RICU) level, benchmarked on a disciplinary basis, for the period 2008 to 2014. In addition, a key goal of the process was to provide information at a sufficient level of granularity to facilitate UCC Research Support Services in its planning for the future levels of support needed and to inform strategic planning at an institutional level.

Following approval by the by the University Quality Promotion Committee and noting by Governing Body, the final Report of the RQR was published in January 2017 (www.ucc.ie/en/qpu/rqr-1415/). Overall the reports indicate notable improvements in reported research performance, with improved scores (57% of Units assessed at a score of 4 or greater) testifying to higher levels of research attainment since 2009 in a context of increased international competitiveness, on the one hand, and severe resource constraints, on the other. There was also acknowledgement in the Panel Reports of clear evidence of improved leadership, support and management in the area of research, over and above improvements in scoring. Many Panels also provided expert advice on approaches and strategies which could further enhance the development of research at UCC, including the introduction of measures that support our research community in targeting higher quality publications for their work. Taken holistically, the advice contained within the Reports provide an additional, and important, context for future strategic planning across the University.

Technology Transfer & Innovation Metrics

UCC is committed to working with industry as an important partner and contributor as part of our overall research effort. In 2016, UCC established over 120 new research projects fully or part funded by industry, ranging in scale from €5,000 Innovation Vouchers in collaboration with local enterprises to multi-million multi-annual collaborative programmes with indigenous and multinational companies. The overall value of the industry contributions alone from these projects exceeds €20 million.

UCC has a strong track record of establishing spinout companies to capture the economic potential of the university's intellectual property and expertise. In the period of the Research & Innovation Strategic Plan (2013-2017), 15 companies were established. This brings UCC's start-up portfolio to 20 companies that are actively trading, over half of which are more than 3 years old. An overview of technology transfer activity since 2010 is summarized in Figure 7.

2016 marked the 5th anniversary of the IGNITE Graduate Business Innovation Programme. IGNITE is a 9-month programme that supports recent graduates from any 3rd level institution in Ireland to turn an innovative product or service idea into a sustainable, scalable business. The programme combines workshops, seminars and guest speakers, the support of mentors and industry contacts with office space and early seed funding, tailored to the specific needs of each start-up. To date, the programme has supported 50 start-ups involving almost 70 founders. 11 start-ups have progressed to become clients of Enterprise Ireland and many have successfully raised private investment, among them Anabio Technologies Ltd, Vconnecta Ltd and PunditArena. Total employment across the start-ups now exceeds 100 and continues to grow. The programme is funded by Cork City Council, Cork County Council, the Local Enterprise Offices of Cork City and County, Bank of Ireland and University College Cork.

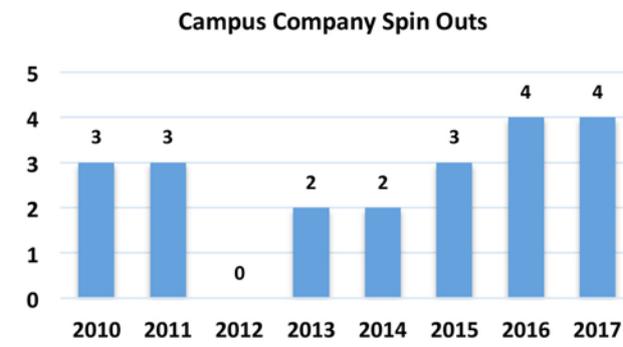
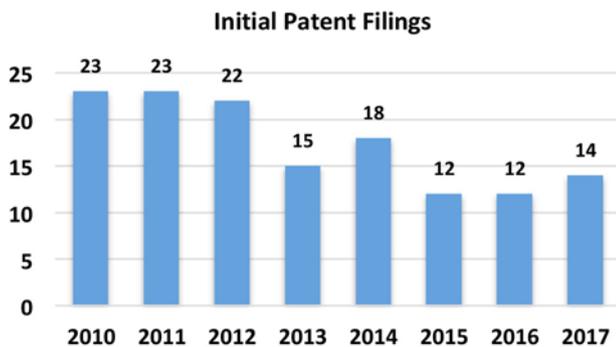
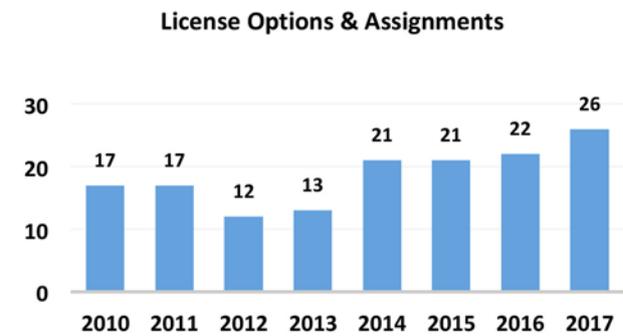
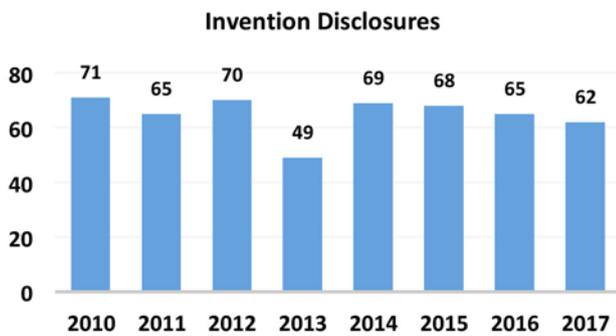
GATEWAY UCC is UCC's flagship 21 Unit business Incubator and a key element in the infrastructure supporting entrepreneurship in the Region. The resource further provides entrepreneurs and knowledge based startup companies with a

comprehensive business support programme such as the SPRINT Accelerator Programme, the first structured learning programme for commercialisation in the University covering the 'A to Z' of how a research led business startup is formed and researchers assisted to commercialise their knowledge to create HPSU Campus spin out companies. GATEWAY UCC has supported 40 fledgling companies including spinouts using IP generated in the globally recognised Research Centres of INFANT, APC Microbiome Institute and Tyndall (e.g. InfiniLED, Luxcel Biosciences and Keelvar Systems). These companies have gone on to create 240 jobs. The impact of these jobs in the region is estimated at €17 million annually in wages and €5 million in tax revenue annually to the economy. GATEWAY UCC also provided hot desk spaces for entrepreneurs and emerging start-ups at the pre start up stage, providing a stimulating environment to nurture and explore the feasibility of their business opportunity and is fast becoming a hub of knowledge transfer activities in the areas of ICT, Medtech, Food, Pharma, Bio, Renewable Energy and Wearable Technologies.'

The SPRINT Accelerator Programme was developed by GATEWAY UCC Business Incubator to increase the number and the success rate of knowledge based Spin-out start-up companies, utilising IP and Innovation from UCC research community. SPRINT is sponsored by Enterprise Ireland, Bank of Ireland, Cork City LEO and Cork City Council, commenced in 2016 and has just graduated its first 10 researcher led ventures all of which are now in support of investment grant packages.



Figure 7: Technology Transfer Activity (2010-2017)



EXTERNAL ENVIRONMENT

UCC's key strategic aim, in the Research & Innovation space, is to be Ireland's leading research-performing institution, to be a premier European research university, and to be a key national contributor to the ongoing development of Ireland's knowledge-based society.

The capacity of UCC to exploit its full research potential, however, is heavily dependent on external barriers and drivers — significant factors in this regard are summarized as follows:

A. National Research & Innovation Ecosystem:

- Sustainability: Continued pressures on public Research & Innovation funding and impacts of close links with political cycles
- Absence of a high-level stakeholder group, at a national level, to advise on research policy formulation & implementation
- Continued impact of research prioritisation

B. International Research & Innovation Ecosystem:

- Horizon 2020 and beyond – increased competitiveness, reduced success rates & need for an EU engagement strategy
- Institutional performance in ERC programmes as an increasingly important metric of excellence
- Maximising philanthropic opportunities
- Impact of Brexit: Opportunity & Challenges

C. Policy Landscape:

- System-wide, and stage-appropriate, articulation of Research & Innovation impact (including social and societal impact)
- Citation Impact Performance relative to competitors
- Implementation of Research Integrity Policy
- Increased policy focus nationally (HEA Review) and internationally (EU) on addressing gender inequalities in research
- Research Data Management – challenges of meeting open data requirements and compliance with the General Data Protection Regulation (becoming mandatory on 25th May 2018)
- Researcher careers/recruitment – impact of Fixed-Term Work (FTW) Act
- Focus on excellence and broadening the funding base – strategic appointments via the Research Professors mechanism
- UCC as a destination of choice for leading researchers – performance in World University Ranking Exercises
- Agility at the University-Enterprise interface – complexity and approach to risk
- Overhead return and sustainability of research activity.

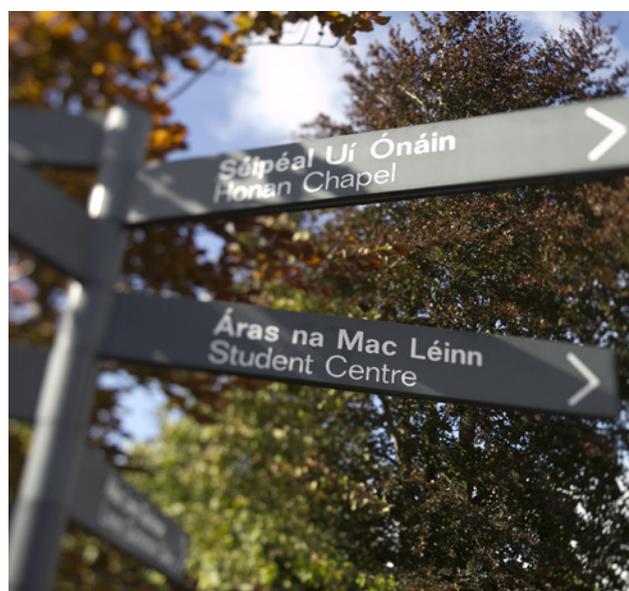
PLANNING, PROCESS & IMPLEMENTATION

The Research & Innovation Strategic Plan (2013-2017) was developed through an extensive consultation exercise, which incorporated detailed discussions with a variety of internal stakeholders including the Heads of College and their executive teams, the College Research Committees, the Academic Council Research & Innovation Committee, and the Entrepreneurship Implementation Group. Two workshops were convened with the Directors of UCC's Research Centres and Institutes, and the Strategy was also tabled at Academic Council and at a series of meetings of the University Management Team.

The Research & Innovation Strategic Plan is also informed by national, European and international research policy trends and priorities. In addition, detailed consultations were undertaken with relevant stakeholders to ensure optimal alignment with the University Strategic Plan (2017-2022), and with the institutional Academic Strategy and Civic Engagement Plan.

The Research & Innovation Strategic Plan, and its associated actions and targets, will be reviewed annually by the Office of the Vice President for Research & Innovation and the Academic Council Research & Innovation Committee in response to changes in the internal and external environment.

Focusing on the actions and targets, an implementation plan will be developed and reviewed on an annual basis.



Research & Innovation Strategic Plan (2017–2022): Strategic Goals

The success of the UCC Research & Innovation Strategic Plan for the period 2013–2017, with regards to outcomes delivered, has been clearly demonstrated, and the research income secured by the research community is now at an historical high as is the proportion of this income that derives from non-exchequer sources. In the addition, the policy and support environment underpinning research activity in UCC has been considerably developed over this period (Appendix).

That said, it is important to note that there are significant challenges for the institution in managing current levels of research income and associated activity including:

- Challenges associated with management of the diversity and volume of the funding source portfolio and associated contractual obligations.
- The value of overhead income earned from UCC research funding awards is not at sufficient level to support the associated levels of research activity and must be subsidized by other activities of the University.
- Research infrastructure limitations and deficiencies.





STRATEGIC ACTION 1: FOCUS ON BUILDING RESEARCH EXCELLENCE AND IMPACT

2017-2022 will be period of consolidation with regard to research inputs but with a renewed focus on increasing the excellence and impact of UCC research outputs. UCC's academic and research community must be supported in the pursuit of academic excellence and to develop to their full potential, recognizing high impact publication and research excellence across all disciplines, including research undertaken by interdisciplinary clusters and individual researchers. Appropriate incentivisation strategies should be developed including embedding the principle of research excellence and impact as a core component of academic promotion criteria.

- 1.** Increase overhead income, as percentage of overall externally-secured research income of the institution. As externally secured research income increases, and the percentage of total institutional income attributable to research funding also grows, increasing % overhead income will be critical to ensure that there is sufficient system capacity to sustain existing research activity and support new activity.
- 2.** Commit to strategic academic appointments, at all career levels and with ERC awardee potential, that are aligned with key research areas and Units, existing and new.
- 3.** Ensure that pathways from knowledge creation through research to impact and external engagement are optimized and recognized, and that all researchers are supported in articulating the impact of their research within the context of disciplinary norms.
- 4.** Ensure that the environment in UCC supports the conduct of research to the highest standards, and UCC researchers are appropriately trained in the good conduct of research.
- 5.** Ensure mechanisms are in place to support the effective dissemination of research expertise and to maximise impact through engagement with Open Access and Open Science.
- 6.** Enhance research excellence and impact by integrating gender equality and diversity into the design, execution and monitoring of research activity.
- 7.** Ensure that UCC's academic, teaching and research missions are effectively aligned, and that the excellence, expertise and reputation achieved in these core institutional areas support the synergistic delivery of all missions.
- 8.** Ensure that appropriate, well-defined and intelligent metrics are employed to assess institutional performance in the area of research excellence and impact, understood in its broadest sense to include the full social, cultural, medical, educational, academic, organisational and economic contribution made by research within the University, and that targets set against these metrics are explicit, ambitious and also sensitive to developments in interdisciplinary practice (such as practice-as-research).
- 9.** Ensure appropriate resourcing for the management and acquisition of high quality library and information resources, both paper and electronic, to underpin excellent research across disciplines

**STRATEGIC ACTION 2:
FOCUS ON SUPPORTING THE NEXT
GENERATION OF UCC RESEARCH LEADERS**

Much of the recent growth in UCC research activity has been undertaken by a limited number of Principal Investigators and Research Units, and their capacity to drive future growth is restricted. In this regard, and also in the context of succession planning, it is critical that the new Research & Innovation Strategic Plan focuses on nurturing, supporting, and ensuring UCC is a location of choice for, the next generation of research leaders.

1. Ensure UCC is perceived as a location to attract and retain the most talented researchers at all career stages from early career PhD students to world leading PIs. This includes the implementation of career progression pathways for all research-active staff, with sufficient contract durations, that attract and retain high performing researchers and by developing measures that address gender inequalities in research careers and gender imbalances in research leadership.

2. Develop a series of research and infrastructural supports that empower UCC researchers to achieve their ambition and to nurture a new generation of Research Leaders. This includes providing 'up-and-coming' Researcher Leaders with the time and space to develop their careers including the provision of proactive support for their engagement with prestigious programmes like the ERC. As part of their career development, spending a period of time abroad in research centres of excellence should also be encouraged and incentivised.

3. Improve the international profile of UCC as a centre of excellence for researcher training via further enhancement of the quality of doctoral education by providing the best tailored structured training, support and environment to students including national and international linkages where appropriate, and by ensuring that UCC provides the best practices and quality of supervision possible.

4. Leverage the scale and diversity of research activity to provide leadership in researcher career development to include elements such as:

- a. Multidisciplinary exposure and opportunity within, and outside, the institution.
- b. Training to grow within the University and in the majority of cases, springboard to new destinations, whether in academia, industry or other research environments.
- c. Lifelong connectivity to an extensive research network.
- d. Developing new research designed to significantly and measurably advance a field of study.

5. Ensure that our doctoral graduates are prepared, through our training and support, for a wide range of high-level successful careers in society.

6. Support the professional development of research support and administration staff through the provision of training and career development opportunities.





STRATEGIC ACTION 3: FOCUS ON INNOVATION TO DELIVER ECONOMIC, SOCIETAL, CULTURAL, EDUCATIONAL & ENTREPRENEURIAL IMPACT

UCC plays a key role in the development of Ireland's knowledge-based economy and, since the 1980's, the University has been to the fore, nationally, in developing capacity for the commercialisation of its research outputs and supporting the enterprise sector. Furthermore, UCC has a strong track record in creative, community and policy engagement, with a wide range of policymakers, partners, stakeholders and audiences, locally and globally. In recent years, UCC has significantly enhanced its potential to further support entrepreneurship, innovation and collaborative R&D through the establishment of, and dedication of resources to, the *gatewayUCC* Innovation & Enterprise Centre and the *IGNITE* program. To meet national economic, societal and cultural development and job creation needs through the coherent delivery of innovation, co-creation and entrepreneurship initiatives, UCC will:

- 1.** Lead a national consortium of strategic partners in the Bridge Network Consortium to deliver excellence in knowledge transfer for UCC and its our partners.
- 2.** Create incentives and sustaining supports to facilitate UCC staff engagement with dissemination and commercialisation of research innovations to maximise their potential impact to the economy, culture and society for the public good.
- 3.** Drive a culture of innovation throughout the University, defining relevant support initiatives and ensuring coherence between all elements of innovation across the University, including knowledge transfer and commercialisation, education, entrepreneurship (economic and cultural), creative practice, community engagement and consultancy.
- 4.** Partner, at all levels, with Irish and international institutions to deliver excellence in research, commercialisation, entrepreneurship, creative practice, community engagement and knowledge transfer.

5. Increase capacity for start-up company formation and job creation by:

- a. Embedding entrepreneurship as an integral part of undergraduate and postgraduate education.
- b. Developing additional incubator capacity and capability and follow-on space within UCC.
- c. Increasing the level of engagement between university and industry in order to foster a better understanding of capabilities and co-creation opportunities.
- d. Developing a more cohesive approach to the University's entrepreneurship activities in terms of strategy, branding, co-ordination and resourcing

6. Develop incentives and support initiatives that enable our research community to proactively engage with government, professional organisations and community engagement initiatives, including CARL and Campus Engage, to deliver social, cultural and policy-relevant impact.

7. Develop UCC's national and international network of industry licensing professionals, business mentors, entrepreneurs and advisors (particularly from our network) with a view to adding to the quality of advice and support available to UCC entrepreneurs.

8. Instil a strong culture of entrepreneurship and innovation throughout the University and ensure coherence between all elements of innovation across the University, including entrepreneurship, commercialisation, knowledge transfer, education, community engagement, creative practice and consultancy.

9. Improve UCC's position as a provider of choice for consultancy services based on research excellence in key areas.

ENABLING ACTION: FOCUS ON STRATEGY AND POLICY TO EXPLOIT UCC'S RESEARCH & INNOVATION POTENTIAL

The sustainability of research and innovation activity in UCC is dependent on both internal and external drivers. As the focus continues to shift from exchequer funding sources, which are increasingly dependent on performance and outcomes, to that of non-exchequer sources, including industry, UCC must prepare to be best-placed to exploit these opportunities.

- 1.** Develop and implement an institutional engagement strategy so that UCC is better positioned to shape relevant national and international policies rather than react to policies developed externally – UCC's Research & Innovation mission must focus on issues of local, national and international importance, and extend beyond constraints introduced by market demands or political imperatives. In this regard, national leadership should be sought and achieved in our key strategic research areas, as defined by measures of research impact, according to disciplinary norms.
- 2.** Consolidate cognate research activities through clustering to support existing research strengths and facilitate the growth of new interdisciplinary and transdisciplinary themes, while also fully supporting and enabling the individual researcher. (See 'Key Research Priorities' Box).
- 3.** Align identified research areas with key internal, national and international stakeholder priorities, in which UCC has a significant competitive advantage and enjoys an international leadership position. Institutional focus on interdisciplinary thematic areas will also be informed by UCC's 2015 Research Quality Review, as well as external drivers including the United Nation Sustainable Development Goals. While it is imperative that UCC is sufficiently resilient to manage transient external pressures, it is also clear that the international competitiveness of the institution will require appropriate agility and flexibility with regard to national and international research priorities.
- 4.** Promote and support large scale interdisciplinary research projects and new emerging areas of research at the interfaces between STEM, the Humanities, Social Sciences, Business and Law. To support this agenda and the needs of the individual researcher, it is important research infrastructural support for the Arts, Humanities, Social Sciences, Business and Law are enhanced and consolidated.
- 5.** Leverage national investments in research through participation in, and leadership of, large research projects at European level.



- 6.** Ensure UCC's undergraduate and postgraduate community have opportunities to benefit from UCC's research activity, expertise and environment, through the involvement of leading researchers, in all disciplines, in developing programmes, curricula and modules based on their own research. In addition, it is important to ensure that there are greater levels of public and external stakeholder engagement in research priority setting and project planning.
- 7.** Build on the successes achieved through implementation of the principles of the *European Charter and Code for the Recruitment of Researchers*, and securing an *Athena SWAN Bronze Award* by:
 - a. Ensuring that UCC retains the '*HR Excellence in Research Award*' accreditation achieved in 2013
 - b. Roll-out of *Athena SWAN* accreditation to Colleges and Units.
 - c. Enhance gender equality in research by developing and implementing a series of measures focusing on gender equality in academic/research careers, gender balance in research leadership, gender-aware research excellence standards and integration of gender-awareness in research projects and research support activity.

Retention of the *HR Excellence in Research Award* and *Athena SWAN* accreditations will be essential if UCC's is to maintain its competitiveness in securing funding national and European Commission research programmes. Research excellence can also be enhanced by integrating gender equality into the design, execution and monitoring of research activity.
- 8.** Ensure full implementation of the approved RICU Governance Policy and embedding the actions at College level is critical, to ensure provision of a supportive environment that enables RICUs achieve their full potential. Full delivery of this action will help address two ongoing issues that have the potential to significantly impact on the effective delivery of an RESEARCH & INNOVATION Strategic Plan:
 - a. Maintenance of a mutually beneficial relationship between RICUs and their affiliated Schools that ensures no entity is disadvantaged.
 - b. Ensuring that RICUs are part of the College decision-making process.

STRATEGIC RESEARCH PRIORITIES

Recognising that the foremost global challenges require interdisciplinary solutions, UCC will target areas of major opportunity where the institution has the expertise, infrastructure and the network to lead internationally.

A period of extensive consultation, with internal and external stakeholders, was undertaken to define research priority areas in which UCC has excellence, scale, competitive advantage and network to deliver significant impact.

The identification of priority areas was also informed by the second UCC Research Quality Review, undertaken in 2015, as well as national policy drivers including the *National Strategy for Higher Education to 2030*¹, *National Skills Strategy 2025*², *Innovation 2020*³, *Higher Education System Performance (2014-2017)*⁴, and the *Review of the Allocation Model for Funding Higher Education Institutions*⁵. International policy drivers that informed the identification of priorities included the *United Nation Sustainable Development Goals*⁶, and the *Report of the Independent High Level Group on Maximizing the Impact of EU Research & Innovation Programmes*⁷.

Following this process, ten Research Priority Areas were identified, which have been grouped under six Strategic Research Priorities:

RESEARCH PRIORITY AREAS	STRATEGIC RESEARCH PRIORITIES
Chronic & Infectious Diseases	Health & Wellbeing
Human Health, Activity & Social Wellbeing across the Lifespan	
Food & Health	
Food & Health	Food & Nutrition
Future & Emerging Technologies	Future & Emerging Technologies
Innovation in Teaching & Learning	
Sustainability & Climate Action	Sustainability & Climate Action
Creative & Engaged Citizenship	Culture, Society, Rights & Identities
Culture, Society, Rights & Identities	
Gender, Equality & Diversity	
Financial & Business Services	Financial & Business Services

These priorities will be subject to regular review and amendment, based on the excellence criterion and as new opportunities emerge over the period of the Strategic Plan.

- http://www.heai.ie/sites/default/files/national_strategy_for_higher_education_2030.pdf
- https://www.education.ie/en/Publications/Policy-Reports/pub_national_skills_strategy_2025.pdf
- <https://www.djei.ie/en/Publications/Innovation-2020.html>
- <http://hea.ie/assets/uploads/2018/01/Higher-Education-System-Performance-2014-17-report.pdf>
- <http://hea.ie/assets/uploads/2018/01/HEA-RFAM-Final-Report-for-Publication.pdf>
- <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- <http://ec.europa.eu/research/evaluations/index.cfm?pg=hlg>



Research & Innovation Strategic Plan (2017–2022): Targets

- Increase measures of research output, including citation impact performance, monographs and non-traditional outputs in all areas of research activity. Performance in key strategic activities to be increased to a level greater than the average global impact for the relevant disciplinary areas.
- Maintain research income at greater than **€90m** per annum and funding from non-exchequer sources at greater than **30%**.
- Enhance the sustainability of the significant levels of research income and the proportion secured from non-exchequer sources by:
 - a. Increasing the diversity of funding sources that support UCC research activity with a continuing focus on non-exchequer opportunities.
 - b. Increasing the proportion of UCC researchers securing research funding at significant levels in the context of the relevant discipline norms.
- Horizon 2020 funding success rate to continue to perform above the EU average.
- Supporting the enhanced excellence agenda, increase the number of ERC awards secured by UCC researchers. In the period of the Strategic Plan — **4 X** Starter Grant Awards, **3 X** Consolidator Grant Awards and **2 X** Advanced Grant Awards.
- Graduate **250** doctoral students annually.
- Establish **20** investment-ready high potential spin-out companies from UCC's research activity.
- Establish **100** graduate-led companies through the Ignite Programme.
- Provide assistance to **125** commercial ventures through the Blackstone Launchpad.
- Ensure continued commitment to UCC's researcher community by retaining the European Commission's *HR Excellence in Research Award* accreditation.



Appendix: Selected UCC Research Support Services Initiatives 2013-2017

- In response to the increasing complexity of the national and international research funding environment, coupled with a massive increase in the scale and diversity of funding being secured by UCC researchers (Figure 3), a revised UCC Research Support Organizational Structure was implemented in 2013.

- Implementation of a comprehensive Post-Award Contracts Management Framework, developed in response to a massive increase in industry research engagement following UCC's success in the SFI Centre Programme. Specific initiatives included:

- Development of contract templates & supporting SOPs
- Establishment of a multi-office Contract Review & Support Team



- In May 2013, UCC was awarded the European Commission's *HR Excellence in Research* logo for successful implementation of the EU Human Resource Strategy for Researchers (HRS4R). This award also recognized the major progress that has been made by the University in providing a comprehensive support and policy framework for UCC's research community including the Researcher Career Management & Development Structure, one of the most significant policy initiatives implemented by the institution in recent years.

- Implementation of a comprehensive range of support initiatives to facilitate European/Horizon 2020 engagement by UCC's research community. Examples of initiatives undertaken included:

- Development & implementation of the Horizon 2020 Action Plan to support the achievement of UCC's institutional funding draw-down target for Horizon 2020
- The recruitment of the UCC RSS Horizon 2020 Support Team
- The development and implementation of a Mentorship Programme (with Hyperion Ltd), and a research support matrix targeted at different cohorts of UCC researchers
- In November 2013, *Prime-UCC*, Ireland's first research project management service, was launched to support researcher engagement in the Horizon 2020 programme. The service also works with the local and regional SME community to foster University-enterprise engagement and facilitate their access to EU funding supports.



- The roll-out of UCC's new Institutional Research Information System (IRIS) was completed in 2011 and is currently under review. IRIS is a web-based application that allows UCC researchers to maintain, update and publicize their research profiles. In addition, by accurately capturing the research output of the University and significantly enhancing the efficient and timely dissemination of our research strengths and activities, (including interfacing with CORA, UCC's open access repository), IRIS performs a vital outreach function for the UCC research community. Significant, subsequent improvements to IRIS functionality included:

- Online Proposal Review & Sign-Off Process
- Grant Management & Sign-Off Process (currently in development)
- Recognition of Contract Researcher Contribution to Proposal Writing
- Animal Facilities Costings Section
- Online Annual Consultancy Declarations

- Major policy development initiatives pertinent to the Research & Innovation mission of the institution include:
 - Governance of Research Centers, Institutes & Units
 - Researcher Career Management & Development Structure (with HR)
 - Research Overhead Rates
 - Consultancy & Other Remunerated Activities
 - Research Professorships
 - Over 70 Secondment
 - Industry Debt Management
 - Research Integrity & Code of Good Conduct
 - Gender Equality through the *HR Excellence in Research* and *Athena Swan* processes.

- The *UCC Strategic Research Fund (SRF)* was launched in 2012 to support excellence in new and existing research and innovation activities. Priorities of the SRF are dynamic, reacting to evolving areas of prioritized strategic importance, to stimulate new initiatives and to provide strategic resourcing of equipment and facilities. The fund is accessible on a competitive basis to all UCC researchers. In addition, the SRF supports:
 - The PhD Scholars Programme, which provides annual fees and stipend payments for 3 years
 - Urgent repair of strategically important equipment
 - The development of applications for UCC researchers wishing to engage in ERC programmes.

Since the launch of the SRF in 2012, 166 projects of strategic value to the institution with a value of €1,326,249 have been supported by the main SRF Fund. In addition, 25 PhD students were supported to the value of €850,000 through the PhD Scholars Programme.

- The implementation of the annual *UCC Research Awards* programme to recognize and acknowledge the achievements of our research community. The UCC Research Awards recognizes excellence across the following categories:
 - Early Stage Researcher of the Year
 - Research Communicator of the Year
 - Research Supervisor of the Year
 - Research Support Person of the Year
 - Research Team of the Year
 - Researcher of the Year
 - Career Achievement Award.

- Communication & Outreach Initiatives:
 - Website development
 - IRIS/CORA/Incites
 - Research View Quarterly Newsletter
(www.ucc.ie/en/research/news-events/researchnewsletter/)



