

University College Dublin Science Centre

A Beacon for Global Innovation



Photography by Aengus McMahon

UCD
SCIENCE
CENTRE

- UCD educates the largest number of science and engineering graduates in Ireland, including 31% of science and engineering PhDs in the country, making it the national leader in 4th level education.
- UCD has an impressive track record of building major interdisciplinary research programmes. In recent years, UCD has fostered over 200 industry partnerships.
- Spread over five storeys, the Science Centre will contain 20 lecture theatres, 11 seminar rooms, 8 teaching and research laboratories and interactive learning facilities.
- The new Science Centre will be home to 2,000 undergraduates, 1,500 Masters and PhD students and 1,000 researchers.



As Ireland strengthens its economic status, science and technology will continue to play a vital role in creating jobs, attracting talent, and promoting Irish industry. UCD alumnus George Moore and his wife Angela, in partnership with The Ireland Funds, have enabled a leadership gift to University College Dublin's new Science Centre—a project that will result in a world class facility that will be home to 2,000 undergraduates, 1,500 Masters and PhD students and 1,000 researchers. *Connect* magazine visited the project in progress and met with students, administration and researchers to learn more about this exciting gift to Ireland, and to the worldwide scientific community. Special thanks to Aine Gibbons, UCD Vice-President for Development for her contribution to this article.

Few if any institutions have played as significant a role in the building of a nation and the preservation of its heritage as University College Dublin (UCD) Ireland. Beginning in 1854 with Newman's founding of the Catholic University of Ireland—UCD's antecedent institution—through the emergence and growth of independent Ireland, UCD and its graduates have always been central to the development of modern Ireland.

The current campaign for UCD, called Forming Global Minds, is a multi-million euro campaign to provide the infrastructure for a new and different education sector. The new Ireland will be created by the young people of today. UCD is at the vanguard of producing a new breed of entrepreneurial graduates embedding innovation and entrepreneurship as core skills.

The New UCD Science Centre

The new UCD Science Centre is the engine room at the heart of the University's science district. It is the boldest, most ambitious capital development project in the history of Irish third-level education—an iconic 67,000 square metre building with state-of-the-art teaching and research facilities. Continued investment in outstanding research and education in science and the building of the UCD Science Centre is critical to Ireland's future.

Whether it is investigating the relationship between food and our immune system, modelling the effects of natural disasters, understanding the mathematics behind trust, or exploring innovative ways to harness geothermal energy—the vision for the UCD Science Centre is to host a community of ground-breaking scientists working together in a world-class environment to provide innovative solutions to global challenges.

This Science Centre will support the lifecycle of the scientist—from the wide-eyed school children who will discover the joys of science, to the ambitious PhD students and technology entrepreneurs, who will innovate and work together to drive Ireland's economic future.

Collaborating to Transform Irish Science

Thanks to a number of leadership gifts, including a pace-setting investment by The Ireland Funds, UCD is able to focus on securing funds for the new building as well as for professors, researchers and students—the human capital to match its world-class science facilities. Success will:

- Help UCD attract and retain the very best teaching and research faculty;
- Enable UCD to compete on a more equal footing with international universities for the best and brightest students from Ireland and overseas;
- Strengthen ties between UCD and leading educational institutions world-wide, through joint research projects, visiting lecturers and faculty and student exchanges.

The UCD Science Centre will help educate and train the next generation of scientists, innovators and technology entrepreneurs. It will transform research, teaching, training and innovation in the sciences in Ireland for future generations. To realise the vision for the UCD Science Centre, the University must mobilise the support of its most successful and entrepreneurial alumni and that of the global Irish diaspora.

Phase 1 of this 3-phase development is complete. Additional private investment would help bring UCD closer to realising its vision to create one of the world's most dynamic science districts; an environment that will inspire future generations to engage in science.

In addition to the generous donation by George & Angela Moore and The Ireland Funds, the UCD Science Centre project has received funding from a number of Irish and EU agencies, including Ireland's EU Structural Funds, the European Regional Development Fund, the Department of Jobs, Enterprise and Innovation and the Higher Education Authority.

Dr. Hugh Brady

President of University College Dublin

"Science affects all aspects of our lives. In Ireland's case, high quality science and engineering is absolutely critical to the economic future of the country. If Ireland is to succeed, UCD must provide the pipeline of world class graduates and scientists to fuel that economy. We already have the largest concentration of scientists in basic and applied disciplines in the country. But the real question is: how do we propel Ireland to the next level of competitiveness on the world stage?"

UCD Science Centre will allow us to do that. It will transform the undergraduate experience and it will be the leading centre for post-graduate education. It will create a critical mass of the brightest scientific minds. It will mainstream innovation into the science and engineering curriculum. If we do all these things, it will underpin Ireland's scientific, academic and economic future. This is a priority for the University and it is totally aligned with Ireland's national needs. The UCD Science Centre will not just retain the best Irish scientific talent, but will work side by side with international science talent.

We have found the support that we have received from our alumni and indeed, from The Ireland Funds, to be a tremendous source of inspiration for us as we create a truly world-class resource for the island in the area of science and engineering."



Dolores O'Riordan

Professor of Food Science, University College Dublin

Professor O'Riordan and her team work to improve human health by developing functional foods that combine health, convenience and taste for consumers. Their work is supported by the Irish Government's Department of Agriculture Fisheries and Food, and involves collaborations with several universities in Ireland, Europe and the United States.

"We have a research initiative underway to develop healthier products based on dairy-based ingredients. The importance of this for Ireland is that we have some of the largest dairy producers in the world here. These Irish dairy companies are working closely with us to create an advantage in their marketplace. We are able to give them access to research facilities that they would otherwise never have available to them. It is a fantastic opportunity to work closely with industry and our end-goal is that Ireland will become a world leader in this area.

The UCD Science Centre provides us with the perfect environment where the great diversity of talent at University College Dublin can work together towards a common purpose: the engineers; the nutritionists; the chemists; and the microbiologists."



Pat Guiry

Professor of Synthetic
Organic Chemistry,
University College Dublin

Professor Pat Guiry runs a research programme to develop new and efficient catalysts for synthetic chemistry with an emphasis on stereoselectivity and efficiency. The research team are also synthesising an important class of compounds, called lipoxins, which exhibit anti-inflammatory properties and have potential therapeutic and commercial value.

"I was an undergraduate here at UCD from 1982–1986 and I remember what it was like. Within five years? This place will be totally unrecognisable to what I knew when I was an undergraduate. When we designed this building we had two very important things in mind: the design of the lab module as well as the social environment. This is an important part of science because people working in different areas of science can interact. The design of the whole building supports collaborations between bio-pharmaceuticals, pharmaceutical chemistry, nutraceutical study and nano-biology.

It is important that we work on areas of science that are important for humanity. Chemistry has played a really important role in society in terms of drug development. The UCD Science Centre will properly train and enthuse the chemists and scientists of the future."



Gill Lee

Professor of Physical Chemistry, University College Dublin

Professor Lee and his team work in the emerging field of BioNanoTechnology, studying intra and intermolecular forces in biological molecules that are responsible for the diverse structural and functional behaviour of biological systems.

With his research team, he is developing novel techniques for sensing and separating multiple pathogens from complex samples such as blood, using magnetic separation. Recently, his team used a technique known as 'magnetophoretic sensing' to detect type 2 Dengue virus at tiny concentrations, which in principle could allow identification of this deadly disease when the symptoms first become evident.

"There is a tremendous amount of bio-pharma research going on that is relevant to Ireland. Relevant because Ireland wants to build high-technology jobs in order to keep their best and brightest. When I was recruited, it was the prospect of the UCD Science Centre that made it worthwhile for me to come here.

Here in this facility we have a laboratory and a BSL2 clean room, so we can go from micro-fabrication to testing with cells in a single facility. There are only a dozen or so facilities like this in the world today. At other universities, students literally have to run across campus with a petri dish from one scientific department to another. But here, it is integrated. What is happening here at the new UCD Science Centre is the future of research."



Caoimhe Keogh-Hansen

Post-graduate student in Synthetic Organic Chemistry at University College Dublin

"I decided to stay at UCD because the facilities are top in the country. I'm currently studying asymmetric catalysis. Collaboration is the driving force of my PhD and being able to interact with my peers and work in a facility like this helps drive my research forward."

David Coker

Professor of Physics and Director of Complex Adaptive Systems Laboratory (CASL) at University College Dublin

David Coker is a Professor of Theoretical Chemistry at Boston University, and is the Science Foundation Ireland Stokes Professor of Nano Bio Physics at University College Dublin. CASL is a major strategic investment within Ireland and is the flagship interdisciplinary research and educational Institute in Applied Mathematics, Computational Science and Informatics. CASL is a highly collaborative environment, collocating 30 Principal Investigators and 170 Postgraduates and Post Doctoral Researchers from nine different academic disciplines.

"In this day and age, you can't just do research by yourself. You must collaborate. We have research clusters that bring biologists together with mathematicians, computer scientists, and others to tackle big problems. It's a real synergy. The investment in a facility like the UCD Science Centre is massively important to the type of research we do. It's all contained in this new Centre and it's an inspiration for students, researchers, and companies we work with."



Ursula Redmond

PhD Student in Computer Science
at University College Dublin

"Being in the new UCD Science Centre will open up more avenues to my research in graph and network analysis. It is exciting for me to be able to work within a new Centre with scientists in other areas who might someday have an application for what I'm researching."



Michael Monaghan

Academic Director of the Science &
Development Project at
University College Dublin

"The original Science Centre was established in the 1960s and has had very little investment until the last three years. Today, the first phase is just coming to completion and the second stage is about to get underway. The scientists here will advance new business and industries, and will allow Ireland to meet and even surpass international standards in science. We are bringing such disparate groups of researchers together into this new Centre and it will be exciting to see what happens over the next five years when these groups start collaborating."

George & Angela Moore

Ireland Fund donors George and Angela Moore have made a gift of \$5.3 million to realize the dream of the UCD Science Centre. George, a graduate of UCD, explains their reasons for support.

"We live in information and technology economies—the tremendous productivity and affluence growth over the past 20 years has been fueled by great achievements in these areas. Ireland as a small nation must compete by excelling in the sciences and, just as importantly, compete for sharing in the commercial upsides. The UCD Science Centre will be a tremendous catalyst to achieving these goals and Angela and I are delighted that we helped 'pave the last mile' to make the Science Centre a world class institution."