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Dublin City University and Arizona State University

Transatlantic Partnership

Year in Review

November 2014



Ollscoil Chathair Bhaile Átha Cliath
Dublin City University



Transatlantic Higher Education Partnership between

Dublin City University and **Arizona State University**





Welcome – Fáilte

Dublin City University (DCU) and Arizona State University (ASU) have been collaborating since 2006, developing international cooperation in education, research and economic development, based on their shared values of innovation and entrepreneurship, technology-enhanced learning, research and discovery.

In September 2013, the Transatlantic Higher Education Partnership was signed by Presidents MacCraith and Crow. This partnership builds on the existing history of collaboration between DCU and ASU and promises to provide students with unique education and research experiences, while also having a positive impact on the economies and communities in Ireland and Arizona.

In November 2014, ASU will host DCU in a special Partnership Showcase event to celebrate the achievements and highlight some of the significant research from the first year of the Transatlantic Higher Education Partnership. During the event, the universities will make a number of announcements, including the launch of the world's first International School of Biomedical Diagnostics, a blended-learning collaboration, which gives students the opportunity to work with their transatlantic counterparts using the latest technologies. The event will also include a day of themed workshops, focused on issues of common concern in the areas of information/communications technology, health, water, sustainability and conflict resolution.

This book provides an overview of the collaborative projects underway and introduces the researchers involved. It also provides insight to the ambitions and the enormous potential of the Transatlantic Higher Education Partnership in the years to come.

For more information on the Transatlantic Higher Education Partnership, visit the website: dcu.asu.edu

Celebrating Transatlantic Higher

On behalf of Dublin City University and Arizona State University, we are pleased to welcome you to our first anniversary celebration of the Transatlantic Higher Education Partnership. Through the shared talent, energy and creativity of our university communities, we have forged a vibrant and multifaceted collaboration that leverages the strengths of our respective researchers, centers and institutes. In its inaugural year, our alliance has delivered meaningful, results-driven initiatives that underscore the importance of our joint endeavors and that serve to inspire future possibilities.

Our Partnership Showcase at ASU both commemorates our one-year milestone and provides an important opportunity to highlight specific successes that have been quickly realized in the areas including health technology, digital learning, water, “smart cities” and sustainability. Furthermore, we are marking the official launch of our joint International School of Biomedical Diagnostics. We are indeed proud and motivated by the progress of our institutional union and intent on sustaining the positive trajectory demonstrated to date.

We want to convey our sincere thanks to all who have contributed positively and enthusiastically to the partnership. The progress and achievements we reference would not be possible without your support, and we appreciate all you have done to make such tremendous strides over such a short period. We are genuinely excited to see what the future holds.

Sincerely,



A handwritten signature in black ink that reads "Brian MacCraith".

Brian MacCraith
DCU President



A handwritten signature in black ink that reads "Michael M. Crow".

Michael M. Crow
ASU President

Education Partnership

Dublin City University and **Arizona State University**

We are pleased to share with you the exciting research collaborations we have undertaken during the first year of the Transatlantic Higher Education Partnership. In year one of our partnership, successful workshops in both Tempe, Arizona and Dublin, Ireland, have brought together researchers across a variety of disciplines, particularly focused in the health domain.

As we enter year two of our partnership, we look forward to collaboration in areas such as information and communication technologies (ICT), sustainability, water, entrepreneurship, conflict resolution, journalism, age friendly initiatives and more. Our joint research portfolio also leverages our partnerships with industry including Ventana Medical Systems, Intel Ireland, Intel U.S., and others.

We would like to thank our vibrant research communities and researchers at both DCU and ASU who have helped to move these collaborations forward at a rapid pace. We look forward to the continued acceleration of our partnership in the year ahead. In the following pages you will find overviews of a selection of our major collaborative research projects.

Sincerely,



A handwritten signature in black ink that reads "Alan Harvey".

Alan Harvey
DCU Vice President for
Research and Innovation



A handwritten signature in black ink that reads "Panchanathan".

Sethuraman "Panch" Panchanathan
ASU Senior Vice President
Office of Knowledge Enterprise Development

Age-friendly university initiative

“In almost every country, the proportion of people aged over 60 years is growing faster than any other age group, as a result of both longer life expectancy and declining fertility rates.

This population ageing can be seen as a success story for public health policies and for socioeconomic development, but it also challenges society to adapt, in order to maximize the health and functional capacity of older people as well as their social participation and security.”

– World Health Organisation



The Age-Friendly University Initiative highlights the role that universities can play in responding to the challenges and opportunities associated with the ageing demographic of the 21st century. In 2012, DCU, having established the concept and principles of an Age-Friendly University, joined with ASU and Strathclyde University in Scotland to become the world's first officially designated Age-Friendly Universities (AFU). As AFUs, each university has set a strategic direction to promote an inclusive approach to healthy and active ageing through its research agenda, enhancement of learning opportunities for people across the generations via innovative curriculum development, and through a focus on innovation to address specific issues affecting older adults.

Our shared vision as AFUs is to be recognised internationally as leaders of age-friendly initiatives in education, research and innovation that, in turn, will promote a greater, more connected and productive quality of life for older adults. As part of our mission, we will seek to identify and harness collaborative links with like-minded universities internationally who wish to promote the principles of an Age-Friendly University.



Joint areas identified for collaboration include:

- Fostering opportunities and sharing best practices and research in intergenerational learning
- Building sustainable, affordable solutions to support independent living
- Harnessing digital technologies for older adults
- Joint interdisciplinary research on ageing and lifespan development in areas such as education, health, business and communications
- Understanding the role of universities in building pathways for abundant living among older adults



Dr. Richard C. Knopf

Director
Osher Lifelong Learning Institute

In addition to his role with the Osher Lifelong Learning Institute (OLLI), Dr. Knopf serves as director of the Partnership for Community Development and is a professor of community resources and development at ASU. His expertise rests in advancing community quality of life by building innovative partnerships among businesses, government, non-profit and community service organizations. He has formulated a vision for OLLI at ASU that fuses adults 50 and over with the intellectual and cultural resources of Arizona State University, while providing meaningful pathways for civic engagement.

In addition to leading the Age-Friendly University Initiative at ASU, Dr. Knopf directs a wide-ranging set of multidisciplinary research programs on abundant ageing and longevity. His primary research focuses on the role of community formation in optimizing life experiences of older adults. His unique ability to translate theory into practice is recognized by public policy-makers aspiring to design sustainable, age-friendly communities.

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Ms. Christine O’Kelly, M.A.

Project Coordinator
Age-Friendly University Initiative

Ms. O’Kelly recently joined DCU in the newly established post as DCU’s Age-Friendly University Initiative project coordinator. She will have a key role in driving the Age-Friendly agenda and in progressing DCU’s wide-ranging age-friendly initiatives.

Ms. O’Kelly has an extensive background in working with a range of agencies and networks engaged with enhancing the well-being of older adults. She is former CEO of an Irish non-profit organisation and part of a global network working with older women. She has contributed to and informed policy on ageing and was a member of the Working Group on the National Positive Ageing Strategy and the celebrations for the Year of Intergenerational Learning and Solidarity. She has served on the board of the Older and Bolder Campaign, the Ageing Well Network (Ireland) and the AGE Platform Europe.

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The CHAnge Project

– Center for Healthy Aging

What if we could develop wearable sensors to monitor your heart health at home?

What if we could develop technology to enhance memory in early-stage dementia?

What if we could revolutionise rehab programmes for managing cardiac and respiratory disease?

What if our youth educated our ageing relatives about at-home technology for improving health?



Innovative health technologies and behaviorally focused programs being developed in the CHAnge project will make these a reality.

One of the biggest global challenges is the higher incidence in chronic disease due to an increasing aging population. The economic costs of managing chronic diseases, such as cancer, dementia, diabetes and cardiovascular disease, are unsustainable and even the most modern healthcare systems cannot cope with the rising number of patients. Of equal importance is the societal cost that extends beyond healthcare as chronic disease decreases independence and increases the reliance on family members and social infrastructure.

ASU and DCU's solution to this challenge is to focus on developing innovative disease intervention and management strategies that improve the quality of life of those living with chronic disease. This requires the combination of sensor technology, health data acquisition, data analytics, and behavioral/lifestyle intervention and education. The two universities propose developing unique infrastructures on our campuses that will facilitate the creation of health technologies and the examination of the sociocultural context and health-related behaviors of those who will benefit from the technology. Integral to our plans are collaborations with the local community across all generations, leading to the founding of The Center for Healthy Aging (CHAnge).

The CHAnge project will focus our cutting-edge sensor and information and communications technology to real-life, personalized, person-focused applications in our diverse societies. The objective will be to create an

environment where we can collect and analyze health data from our communities (old and young) and will act as a living lab on both university campuses.

DCU already has begun creating its living lab, which will operate as a direct outreach to the community through a community café on the ground floor, which will also serve as a primary data collection point. It will house a community clinical assessment facility for early detection of diseases such as dementia. There will be space on the first floor to showcase technology being developed for health intervention management and also to serve as an education and training facility for the older community. This showcase will also contribute to engaging with potential industry partners for funding of research and licensing of ASU and DCU technologies for use in the community.

ASU is exploring ways to bring a living laboratory to the ASU community. Drawing upon goals that complement those of DCU, ASU will seek use-inspired spaces that reflect the diversity of the population and capitalize on the social embeddedness that is a cornerstone of ASU's mission. ASU can also galvanize an array of resources, such as the College of Health Solutions, the College of Nursing & Health Innovation, the Biodesign Institute, Arizona Technology Enterprises and others, so that the CHAnge project has its desired impact.

The CHAnge project will be a catalytic activity that will leverage additional income, leading to a self-sustaining, international twinned-center of excellence that will provide solutions to the global challenge of aging.



Dr. David Coon

Associate Vice Provost & Professor
College of Nursing & Health Innovation

Dr. Coon designs and evaluates interventions, such as CarePRO and EPIC, that focus on culturally diverse groups of midlife and older adults facing chronic illnesses (e.g. Alzheimer’s disease, cancer, depression) and their family caregivers. Several of these empirically based treatments are recognized by the American Psychological Association, SAMHSA and other entities to help treat late-life depression and caregiver distress.

After receiving his Ph.D. from Stanford University, Dr. Coon was the associate director of the Older Adult Center of the VA Palo Alto Health Care System and Stanford University School of Medicine and research scientist at UCSF/Mt. Zion Institute on Aging. He is a fellow of the Gerontological Society of America. His work has been funded through federal and foundation grants and he and his community partners received the Rosalynn Carter Institute’s 2013 National Leadership Award in Caregiving for CarePRO.

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Professor Christine Loscher

Director and Associate Professor
Health Technologies and the Healthy & Ageing Society Hub

Professor Loscher directs the Health Technologies Research & Enterprise Hub, which focuses on the development and application of technologies to address the challenge of an ageing society in an innovative and holistic way.

Professor Loscher’s own research is in the area of immunology. Her main focus is on translating the modulation of the immune response into health benefits. She is a principal investigator in the Food for Health Ireland research consortium and also has a significant commercialisation programme in novel marine compounds as anti-inflammatories.

Professor Loscher also has significant expertise in commercial research working with many industry partners. Her research has impact in the area of inflammatory disease, diabetes and cancer. She is currently an associate professor in the School of Biotechnology at DCU, and holds a number of important leadership roles within DCU, including: director of the Nano-Bioanalytical Research Facility, director of the multi-institutional BioAnalysis & Therapeutic PhD programme, and academic coordinator of the Targeted Therapeutics & Theranostics training programme.

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Understanding the Online Strategies of Islamic State



ISIS, the “Islamic State in Iraq and Syria,” or lately just IS for the “Islamic State,” is best known in the West for its videotaped beheadings of Westerners and the fact that al-Qaeda and its supporters consider the group too extreme. In fact, despite steady air bombardment of their positions by the US and its allies, IS is now in control of large swathes of both Iraq and Syria, including major towns and cities such as Mosul, Iraq.

An additional distinguishing feature of IS is their Internet savvy. In some ways this is unsurprising given their membership demographic is heavily young, male, and tech-savvy. Young men between the ages of 18 and 29 are some of the Internet’s heaviest users and so IS reaches out to these where they increasingly hang out: online. IS has significant official and fan presences on most major social media sites, including Ask.fm, Facebook, Flickr, Twitter, YouTube and others.

An interesting and underexplored aspect of IS is its similarity to traditional street gangs. The latter are understood to attract angry young men seeking protection, purpose and status. IS fulfills a similar purpose for some young Muslims, including many Westerners and recent converts to Islam. Traditional street gangs have increasing online presences also.

The proposed research will explore the online intersections of jihadi and gang cultures. In particular, it will focus on jihadi-produced online content, particularly that associated with IS, that displays similar narratives, language, symbols and styles to traditional gang cultures. Key questions will focus on the instrumental and symbolic importance of gang culture for violent jihadis, particularly Westerners, and whether this is a particularly effective form of online outreach to disenfranchised Muslim youth in Europe and the United States.

This project will bring together the joint and complementary expertise of DCU and ASU in both detailed individual case study and field research and also large-scale data analysis of Internet sources. This draws on DCU’s Institute for International Conflict Resolution and Reconstruction and in particular the VOX-Pol European Union-funded network focused on violent online political extremism and responses to it, as well as ASU’s world-class School of Criminology and Criminal Justice.

Websites: ccj.asu.edu
voxpath.eu
dcu.ie/iicrr



Dr. Scott H. Decker

Foundation Professor
School of Criminology and Criminal Justice

Dr. Decker earned his PhD in Criminology from Florida State University in 1976. His main research interests are gangs, violence, criminal justice policy and the offender's perspective. He is a fellow of the American Society of Criminology and the Academy of Criminal Justice Sciences. Dr. Decker is currently engaged in a study of the use of technology by offenders funded by Google Ideas and a study of long-term gang desistance over the life course funded by the Office of Juvenile Justice and Delinquency Prevention.

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Professor Maura Conway

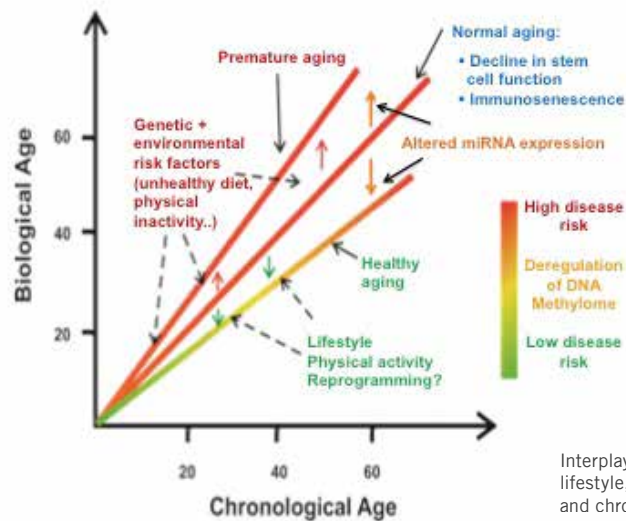
Associate Professor
School of Law and Government

Professor Conway is the principal investigator on VOX-Pol, a five-year European Union-funded project on violent online political extremism that began in January 2014. Dr. Conway's principal research interests are in the area of terrorism and the Internet, including academic and media discourses on cyberterrorism, the functioning and effectiveness of violent political extremist online content, and violent online radicalisation. She has presented on these issues internationally, including before the United Nations in New York and the Commission of the European Union in Brussels.

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New approaches in the prevention and management of cardiovascular disease



Poor lifestyle choices such as inactivity and diet are rapidly becoming a global pandemic, with a deleterious impact on many chronic illnesses such as cardiovascular disease (CVD), metabolic disorder, diabetes, Alzheimer's disease and cancer. Understanding their pathophysiology is important for the development of future therapeutic interventions, stratification of clinical trials and engagement of cost-effective measures such as lifestyle management. Because there is a lag between the onset of CVD and clinical manifestation of the disease, there is a window of opportunity for implementing intervention strategies to reduce the disease burden.

The focus of this programme is microRNA (miRNA). miRNAs regulate important biological processes, such as development and morphogenesis. Their dysfunction has also been observed in the establishment of other major diseases, including neurodegenerative disorders, CVD, cancer and diabetes.

The project aims to develop tools necessary to discover and map the molecular pathways targeted by selected miRNAs implicated in CVD. Of particular focus we are investigating the role of two miRNAs that have been identified to play a role in vascular smooth muscle cell dysfunction and the initiation and progression of atherosclerosis.

Dr. Murphy (DCU) has implicated the role of miRNA gene regulation in vascular smooth muscle cell migration, adhesion and proliferation, as well as extracellular matrix dynamics (production and degradation). All of these behaviors are hallmarks of vascular disease, especially atherosclerosis. Through this work, Dr. Murphy identified specific miRNAs whose expression changes throughout the progression of the disease. However, miRNAs have no biochemical function on their own, instead functioning solely by regulating a large number of specific target genes. Without identifying these targets, the precise mechanism by which these miRNAs contribute to cardiovascular disease remains unknown. Characterizing these networks can significantly expand our mechanistic understanding of cardiovascular disease, and represents potential novel therapeutic targets. An additional benefit of this collaborative project is that the technology developed will provide a platform by which to elucidate the role of miRNA in additional vascular cells such as endothelial cells and platelets.

Dr. Marco Mangone's laboratory at ASU has recently developed a novel high-throughput technology that detects miRNA targets in an unbiased fashion. This technology is adapted from the well-characterized dual luciferase reporter assay, and performed in high-throughput using robotics present on site at ASU.



Dr. Marco Mangone

Assistant Professor
Virginia G. Piper Center for Personalized Diagnostics
The Biodesign Institute



Dr. Ronan Murphy

Lecturer in Cell & Molecular Physiology

Dr. Mangone joined the faculty of ASU in August 2011 after completing his post-doctoral fellowship in the Center for Genomics and Systems Biology at New York University. In addition to his role in the Biodesign Institute, he is an assistant professor in the School of Life Sciences in the College of Liberal Arts and Sciences.

Dr. Mangone's approach combines high-throughput genomics, bioinformatics, genetics, biochemistry and systems biology to answer several fundamental questions.

Dr. Mangone studies how eukaryotic RNA transcription is terminated and how the messenger RNA is regulated on its way to the expression into proteins, he uses human cell lines and the roundworm *C. elegans* as model systems.

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Dr. Ronan Murphy is a lecturer in cell and molecular physiology with the School of Health & Human Performance and principle investigator with the Centre of Preventive Medicine, DCU. He earned his PhD in Cancer Genetics from the National University of Ireland, Galway. He started his research career as a Clinical Research Scientist and Core Facilities Director (Molecular Genetics) in the Centre for Cardiovascular Science, Royal College of Surgeons in Ireland (1996-2000). He specialised in pharmacogenomics, stratification of clinical trials and personalization of therapeutic intervention. He was a member of a working group that established the first Irish national DNA Bio-Bank and Pharmacogenomics Company- Surgen and developed proprietary high throughput genotyping assays specific for various clinical trials and the EU salmon genotyping project.

In 1998, Dr. Murphy was awarded a prestigious Health Research Board Post-Doctoral Fellowship to study the genetics of the bleeding disorder Glanzmanns Thrombasthenia, which led to the characterization of a new compound heterozygote form of the disease.

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Designing Education for the Future



Both ASU and DCU are committed to (re)designing education for the future. DCU and ASU already provide students with a strong future-focused curriculum and rich digital learning experience for the 21st Century. DCU offers through 'DCU Connected' [[http:// connected.dcu.ie](http://connected.dcu.ie)], a growing suite of online courses and programs to students living throughout Ireland and beyond, and ASU offers a comprehensive range of fully online degree programs through ASU online.

DCU also hosts the recently established National Institute for Digital Learning (NIDL) which aims to be a world leader at the forefront of Education, Research and Innovation in contemporary models of teaching and learning that help to transform lives and societies. Building on over 30 years experience at DCU in offering flexible learning, the NIDL's mission is to design, implement and evaluate transformative models of education by providing strategic leadership, enabling and contributing to world-class research, and promoting academic and operational excellence.

The NIDL has particular expertise in policy and strategy development, contemporary models of learning design, supporting instructors to develop effective online education, and the successful pedagogical implementation of rich digital learning environments. Many of these interests are similar to those responsible for leading the development of ASU Online.

To further these common interests in May 2014 the NIDL hosted a visiting delegation from ASU led by Assistant Vice President Sean Hobson and Assistant Vice President Marc Van Horne. Part of this visit was designed to exchange ideas and help support the development of the new Masters in Biomedical Diagnostics. This exchange also seeded a number of follow up discussions on further opportunities for joint ventures and new online program offerings.

The partnership between ASU and DCU has the potential to help both institutions expand the number of courses available to students living throughout the world. In this respect both universities can play a leading role in shaping the future of higher education and expanding access to life-long learning consistent with the mission of transforming lives and societies. Expert staff involved in these initiatives are already providing specialist consultancy services to developing countries in the areas of online, blended and digital learning.

Researchers from both universities are also active and play key leadership roles on relevant national and international professional bodies. Notably, the NIDL, through the leadership of Dr. Mark Brown, is well connected to leading research and technology-enhanced learning centers around the world. A group of highly acclaimed researchers in the field of digital learning serve on its International Advisory Board, including professors Grainne Conole, Terry Anderson, George Siemens, Norm Vaughan, and Martin Weller. In recognition of the growing relationship between the two institutions a representative from ASU will be invited to join this International Advisory Board.

In summary, the expertise available through the NIDL coupled with the impressive knowledge and experience of ASU Online brings together a powerful group of researchers, learning designers and educational practitioners. Together through this unique partnership we are capable of supporting leading-edge research, developing future-focused models of digital learning, and (re)designing education for an exciting future.

International M.Sc. Biomedical Diagnostics



Mr. Sean Hobson

Assistant Vice President
Instructional Design and Educational Technology
ASU Online

Mr. Hobson applies his background in instructional design, educational technology, strategic planning and design thinking to solve interesting problems in higher education. During his time at ASU, he has served as the lead designer or project manager for some of ASU's most impactful course redesign efforts including ASU's recent adaptive learning initiatives.

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Professor Mark Brown

Director and Professor
National Institute for Digital Learning

Before taking up leadership of the NIDL and serving as Ireland's first chair in digital learning at DCU, Professor Brown was director of the National Centre for Teaching and Learning at Massey University in New Zealand. He has played key leadership roles in the implementation of several major university-wide digital learning initiatives, including the enterprise-wide deployment of Moodle, the original development of the Mahara e-portfolio system, and New Zealand's first implementation of a Massive Open Online Course (MOOC) platform, Open2Study.

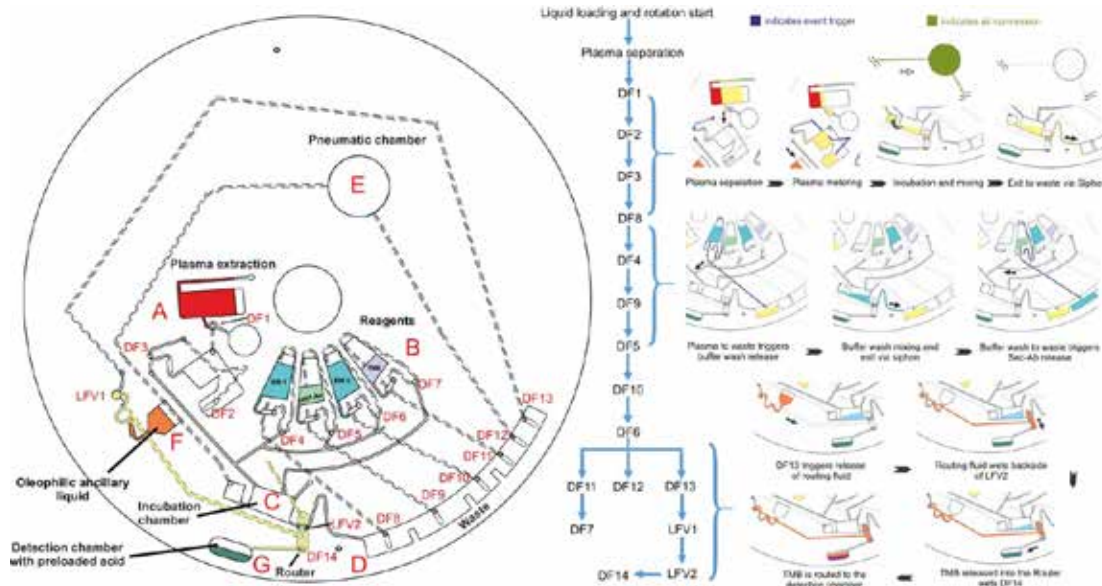
Professor Brown has produced over 300 scholarly works and serves on several international journal editorial boards. His main research interests are in digital learning, academic development, policy development and the societal benefits of higher education.

Professor Brown chairs the Teaching and Learning Working Group for the European Consortium of Innovative Universities. Prior to his arrival at DCU in February 2014, he was president of the New Zealand Association for Open, Flexible and Distance Learning. He is also a recipient of a National Award for Sustained Excellence in Tertiary Teaching.

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Development of Point-of-Care Programmable Diagnostic Tools



Integrated centrifugal microfluidic Lab-on-a-Disc (LoaD) platform with event-triggered flow control for fully sample-to-answer detection of anti-p53 markers. The miniaturized LoaD automates all assay steps ranging from plasma extraction to the eventual absorbance measurement for quantification.



There is a clinical need for robust, rapid, point-of-care serologic assays for the detection of infectious diseases and cancer. This project leverages two existing and complementary technologies towards the development of a cost-efficient, robust and analytically flexible point-of-care device for serologic measurements of any target antigen.

The Ducree Labs at DCU established centrifugal microfluidic platforms for a wide range of applications. These “Lab-on-a-Disc” systems feature user-friendly “sample-to-answer” automation as well as cost efficiency. So-called “event-triggered” centrifugopneumatic flow control schemes were pioneered by the DucreeLabs and allow an unprecedented level of process integration, programmability and automation encompassing on-board reagent management, sample preparation and detection. All reagents and waste products are sealed inside the disc, reducing the chance of contamination and decreasing biohazard concerns.

The Anderson Lab at ASU has established platforms for the rapid and flexible expression of target proteins for clinical immunoassays. The system is flexible for serologic measurements to any antigen which can be expressed from cDNA (i.e. HIV, hepatitis, cancer proteins, etc.), only by switching the DNA used (no change in the microfluidic design or materials). By combining the programmable serological assay with the innovative event-triggered lab on a disc system, we have created a unique, innovative, and accurate laboratory device that requires little user intervention, making it ideal for point-of-care healthcare delivery.



Dr. Karen Anderson

Associate Professor
Virginia G. Piper Center for Personalized Diagnostics
The Biodesign Institute

Dr. Anderson is an associate professor in the School of Life Sciences at ASU and an associate professor of medicine at Mayo Clinic Arizona. The main focus of her research is understanding how the immune response can be used to detect cancer. Antibodies to tumor antigens can be detected in the blood of cancer patients and be used as biomarkers for early cancer detection. Dr. Anderson's team uses custom protein microarrays and bead-array assays to detect these antibodies across the proteome and has identified novel biomarkers for the detection of breast, ovarian and human papillomavirus-associated cancers. These biomarkers are being tested in national trials for early detection of cancer.

Dr. Anderson is board certified in internal medicine and medical oncology, and has published more than 40 peer-reviewed articles, reviews, book chapters and editorials. Dr. Anderson serves as committee co-chair of the National Cancer Institute's Early Detection Research Network Breast/Gyn Cancers Collaborative Group and is a member of NCI's Cancer Biomarkers Study Section.

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Professor Jens Ducreé

Professor of Microsystems
School of Physical Sciences

Dr. Ducreé is a principal investigator for Microfluidic Platforms at the Biomedical Diagnostics Institute at DCU. The main part of his research is directed towards novel microfluidic platforms and associated actuation, detection, fabrication and instrumentation technologies for the integration, automation, miniaturization and parallelization of sample preparation and detection of bioanalytical assays (e.g. immunoassays, nucleic acid testing, general chemistry, cell counting). Typical applications are sample-to-answer systems for biomedical point-of-care and global diagnostics, liquid handling automation for the life sciences (e.g. concentration/purification and amplification of DNA/RNA from a range of biosamples), environmental monitoring and food safety.

Dr. Ducreé has published widely in peer-reviewed journals and presented multiple times at all major international conferences of his research field. His application-focused approach is documented by a comprehensive intellectual property portfolio.

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Hometown: Local Places, Then and Now

“Population Ageing presents social, economic and cultural challenges to individuals, families, societies and the global community. It is how we choose to address the challenges and maximize the opportunities of a growing population that will determine the future of humankind.”

– Ageing in the Twenty-First Century: A Celebration and a Challenge
(United Nations Population Fund Report, 2012)

In response to the challenges and opportunities associated with the ageing demographic of the 21st century, the DCU Intergenerational Learning Programme together with the ASU Office of Gerontological & Interprofessional Initiatives are developing collaborations that promote the positive aspects of ageing in an innovative teaching, learning and research environment, inclusive of all generations in higher education.

Our initial collaboration is “Hometown: Local Places, Then and Now,” which follows from the successful DCU “Collaborating on Intergenerational Stories.” DCU was one of only nine universities worldwide to receive a Photowings and AshokaU Insight Grant Winner for this project in 2013. The Hometown project will bring older and younger people together to engage in dialogue and share their stories of local places past and present. Shared stories of heritage and culture, and stories of rural and urban places past and present are explored through videography and other multimedia.

Through conversation and sharing photographs and stories, the project highlights the benefits of collaboration between universities in an international context. This is chiefly through engaging university students across all fields of study with older people in a reciprocal learning experience that values the potential of both generations in our communities and in helping to develop our economies.



This collaboration, as part of the wider Age-Friendly University Initiative between our institutions, offers other benefits, including:

- Promoting opportunities and sharing best practices in intergenerational learning at the national and international level
- Developing new pathways for teaching, learning, and research in universities that embrace abundant ageing and the longevity dividend as a key initiative
- Fostering an international university partnership approach which embeds an awareness of the need to eliminate ageism and stereotyping
- Promoting the positive dimensions of the engagement of older people in higher education for the greater good of society



Dr. Teri Kennedy

Director
Office of Gerontological &
Interprofessional Initiatives
School of Social Work



Dr. Trudy Corrigan

Director and Founder
DCU Intergenerational Learning Programme

In addition to her role at ASU, Dr. Kennedy is core faculty with the Arizona Geriatric Education Center, University of Arizona, and an international Age-Friendly University Initiative team member. She has 17 years of direct practice and administrative experience serving elders and their families through the provision of health, behavioral health and social services in home, community-based, in-patient and skilled nursing facility settings.

Dr. Kennedy is recognized nationally as a leader in gerontological social work education and promotes the development of interprofessional education and practice competencies in students, faculty and healthcare professionals. Her research on geriatric education centers resulted in the development of strategies to foster sustainability of educational initiatives and has been subsequently published as a book. Her research interests include the sustainability of educational initiatives, interprofessional education and practice, and the cultural construction of happiness.

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Dr. Corrigan is a researcher and lecturer in the School of Educational Studies. Her research interests are in adult education and lifelong learning and, in particular, in researching intergenerational learning across generations. She is currently engaged in an EU project that evaluates the benefits of intergenerational solidarity in societies across Europe. She is also interested in promoting the benefits of ageing and breaking down stereotyping related to ageism. Her doctoral thesis explored intergenerational learning as an emerging pedagogy. This was the basis for the current DCUILP, which began in 2008.

Dr. Corrigan is vice chair of the DCU Age-Friendly University Initiative, which is part of the wider International Age-Friendly University Initiative team in collaboration with ASU and the University of Strathclyde.

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Website: dcu.ie/agefriendly

International School of Biomedical Diagnostics



Diagnostics are an increasingly important part of the health care and life sciences industries - both in the clinical and research realm. In fact, diagnostics are involved in more than 60 percent of clinical decision-making, but account for only 2 percent of overall health care spending in developed nations. As such, there is a growing need to educate the next generation of scientists, technicians, clinical professionals and healthcare executives focused on diagnostics.

The International School of Biomedical Diagnostics (ISBD) brings together the expertise of ASU and DCU to offer a Master of Science in Biomedical Diagnostics. With this master's degree, the two universities are pioneering the establishment of diagnostics as an independent discipline.

The new degree is a one year, 30-credit U.S./90-credit E.U. degree programme with shared curriculum and courses offered by both ASU and DCU. The programme is delivered through a global classroom experience, focusing on the technology, science, business and practical application of diagnostics. The programme culminates in an applied practicum project which each student completes with industry and academic partners.

Students will be able to learn from top industry experts around the world in a place and format that sparks and supports innovation. The programme is designed to prepare students to take on roles of greater responsibility and impact within biomedical diagnostics and related health care fields. Diagnostics influences every facet of health care including pharmaceutical and technology development, patient management, health care finance and health care policy. Graduates from this program will be better prepared to transform health.

The ISBD reflects ASU and DCU's shared values of innovation and entrepreneurship, technology-enhanced learning, and research and discovery. ISBD draws from several assets of each institution. At DCU, the school is building upon the award-winning Master's of Science in Biomedical Diagnostics programme based at the Biomedical Diagnostics Institute, and utilises expertise from faculty in its Science and Health, Engineering and Computing, and Business Schools.

ASU involves faculty from a number of units, such as the Biodesign Institute, College of Nursing & Health Innovation, Sandra Day O'Connor College of Law, College of Health Solutions, and the Ira A. Fulton Schools of Engineering. The school also leverages ASU's relationships with the National Biomarker Development Alliance and Mayo Clinic.



Dr. George Runger

Chair
Department of Biomedical Informatics

Dr. Runger is a professor in the School of Computing, Informatics, and Decision Systems Engineering at ASU. He has been an affiliated faculty member with the Department of Biomedical Informatics and the Center for Health Information & Research for several years.

He researches analytical methods for knowledge generation and data-driven improvements in systems. He focuses on machine learning for large, complex data, and real-time analysis, with applications in surveillance and decision support.

Previously, he was a senior engineer and technical leader for data analytics projects at IBM. He holds degrees in industrial engineering and statistics. He has published widely in research journals. He reviews for many journals in the area of machine learning and statistics and he is currently the department editor for healthcare informatics for IIE Transactions on Healthcare Systems Engineering.

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Professor Richard O'Kennedy

Director and Professor
Applied Biochemistry Research Group

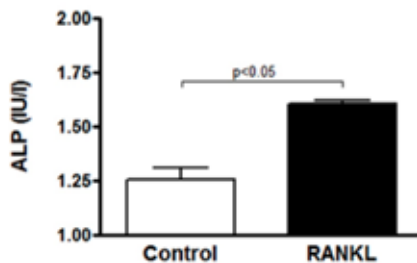
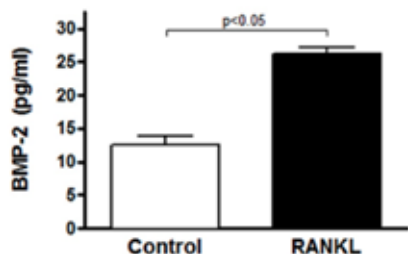
Professor O'Kennedy is professor of biological sciences and director of the Applied Biochemistry Research Group, internationally recognised for its expertise in immunoassays, antibody generation, education and training. Since 2004, he has been a principal investigator and leader in education and outreach at the Biomedical Diagnostics Institute (BDI). From 2009 to 2012, he was vice president for learning innovation of DCU. In 2013, he was appointed scientific director of the BDI.

He has published extensively and has worked closely with many Irish and international companies and has been involved with various spin-out companies. Since 2006, Dr. O'Kennedy has been programme chair of the M.Sc. in Biomedical Diagnostics.

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Early Detection for Risk of Diabetes and Cardiovascular Disease



RANKL induces SMC pro-calcification phenotype
RANKL-induced endothelial BMP-2 release is pivotal



Within the United States, diabetes mellitus (DM) affects over 9% of the population, annually costing in excess of \$250 billion in healthcare and reduced productivity. Type-2 DM (T2DM) accounts for over 90% of newly diagnosed diabetes cases. Research is increasingly focusing on validating novel circulatory biomarkers which may help to identify and stratify individuals across the T2DM spectrum – from pre-diabetic, at-risk individuals to more serious type-2 sufferers with underlying cardiovascular diseases (CVD).

CVD remains the leading cause of death in T2DM. One important risk factor for the increased CVD mortality in T2DM is the high incidence of vascular calcification, also known as arterial hardening. This hardening of blood vessels can cause premature ageing of arteries, damage to the heart ventricles, and rupture of fatty plaques that may have built up in blood vessels, all collectively leading to elevated blood pressure and heart attack.

Understanding of vascular calcification is still very unclear, but it is known to involve a complex interplay between a unique triad of circulating proteins, namely osteoprotegerin (OPG), receptor-activator of nuclear factor kappa B ligand (RANKL), and tumour necrosis factor-related apoptosis-inducing ligand (TRAIL). Unsurprisingly, all three proteins are now receiving considerable attention as predictive circulatory biomarkers of T2DM and CVD.

This study will investigate, for the first time, the various modified versions of these proteins that may exist within the blood stream (a process also known as “microheterogeneity profiling”). This will help to create multi-dimensional biomarker views for OPG, RANKL and TRAIL that could potentially improve diagnosis of an individual’s risk status for T2DM and CVD. To achieve this, this research project will initially entail the development of mass spectrometric immunoassays to analyze microheterogeneity in these three target biomarkers in human blood samples.

By expanding our basic biochemical knowledge on clinically relevant circulatory calcification markers such as OPG, RANKL and TRAIL, their value as novel biomarkers will be greatly increased. This will enhance the clinical decision-making capacity of health care professionals. Given the strong global demand for improved predictive biomarkers of diabetes and CVD, we believe this project represents a clear starting point for more advanced studies and collaborations in the future.



Dr. Randall Nelson

Director
Molecular Biomarkers Laboratory
The Biodesign Institute

The Molecular Biomarkers Laboratory applies advanced mass spectrometric immunoassay (MSIA) technologies in the discovery and validation of changes in protein microheterogeneity related to disease (packaged as biosignatures), and translates these technologies and findings through collaborative industry relationships. Dr. Nelson's research is currently focused on understanding changes in biosignatures as an individual transits from healthy to Type 2 diabetes to cardiovascular disease. This research is directed at integrating biosignatures into drug discovery and is undertaken as part of a research network including the Veterans Administration, the University of Arizona, and pharmaceutical partners such as Pfizer Inc.

Dr. Nelson received his doctorate in analytical chemistry from ASU in 1990 and is now a research professor in the Biodesign Institute and affiliate professor in the Department of Chemistry and Biochemistry. He has published more than 110 peer-reviewed manuscripts, and given more than 100 invited talks at national and international conferences, all regarding biological mass spectrometry and biomarker development/translation. He is inventor or co-inventor on 33 issued and 10 pending patents covering mass spectrometric technologies/methods and protein biosignatures related to disease. Prior to coming to the Biodesign Institute, Dr. Nelson founded and served as President and CEO of Intrinsic Bioprobes, Inc., a biotechnology startup company in Tempe, AZ, that specialized in MSIA technologies applied in biomarker development.

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Dr. Phil Cummins

Principal Investigator
School of Biotechnology/
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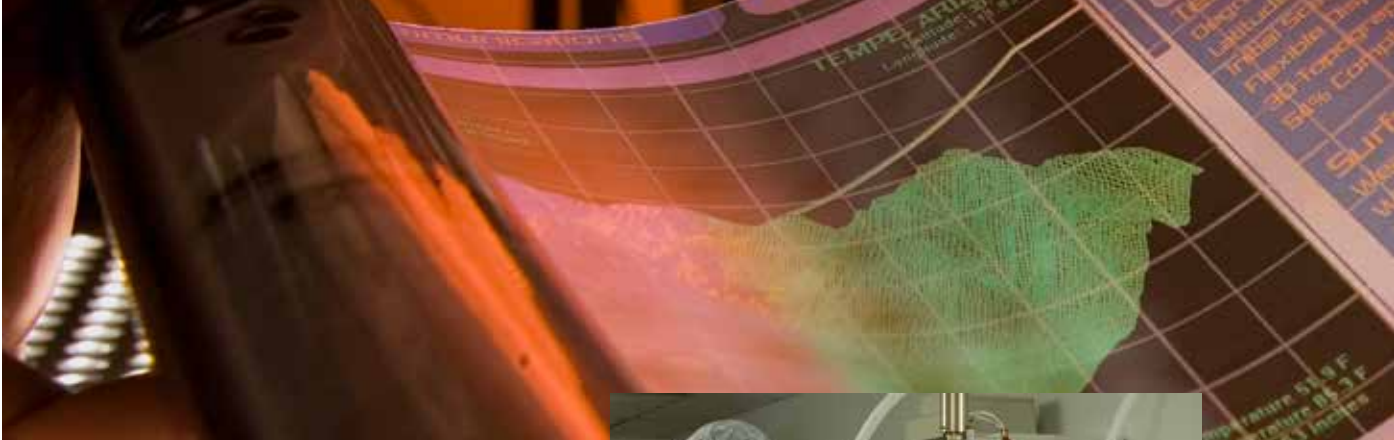
Dr. Cummins is a principal investigator in cellular biology and physiology and a lecturer and programme chair for the BSc in Biotechnology, as well as a founding member of the DCU Centre for Preventive Medicine. Following a PhD in Biochemistry at DCU (1995), he continued his postdoctoral training at the Mount Sinai School of Medicine in New York where he conducted a successful NIH-funded study into the biochemical/biophysical properties of recombinant thimet oligopeptidase, a peptide hormone-degrading metalloenzyme known to regulate MHC1 dynamics in antigen-presenting cells.

Dr. Cummins returned to DCU in 2000, where, as lead PI of the Endothelium Biology Group, he has trained 13 PhD students, 2 postdocs, and 2 clinical fellows. His team is currently engaged in a range of basic and translational projects, with specific focus on: vascular cell physiology and signaling, endothelial dysfunction, blood-brain barrier physiology, diabetic retinopathy, models of cardiovascular infection, vascular cell mechanotransduction, vascular calcification and biomarkers for type-2 diabetes.

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Nanofabrication – Advancing Surface Engineering Methodologies



As devices diminish in size, fall in price and decline in energy consumption, the challenges for manufacturing increase. The ability to routinely fabricate devices with high-fidelity nanoscale structure enables us to realise modern integrated circuits, energy harvesting and storage devices, sensors and medical components. Researchers at ASU and DCU have teamed up to further extend our nanofabrication capability and are working on next-generation surface removal processes (etch and deposition) for the precise engineering of surfaces and devices that will underpin the sustainable development of our economies.

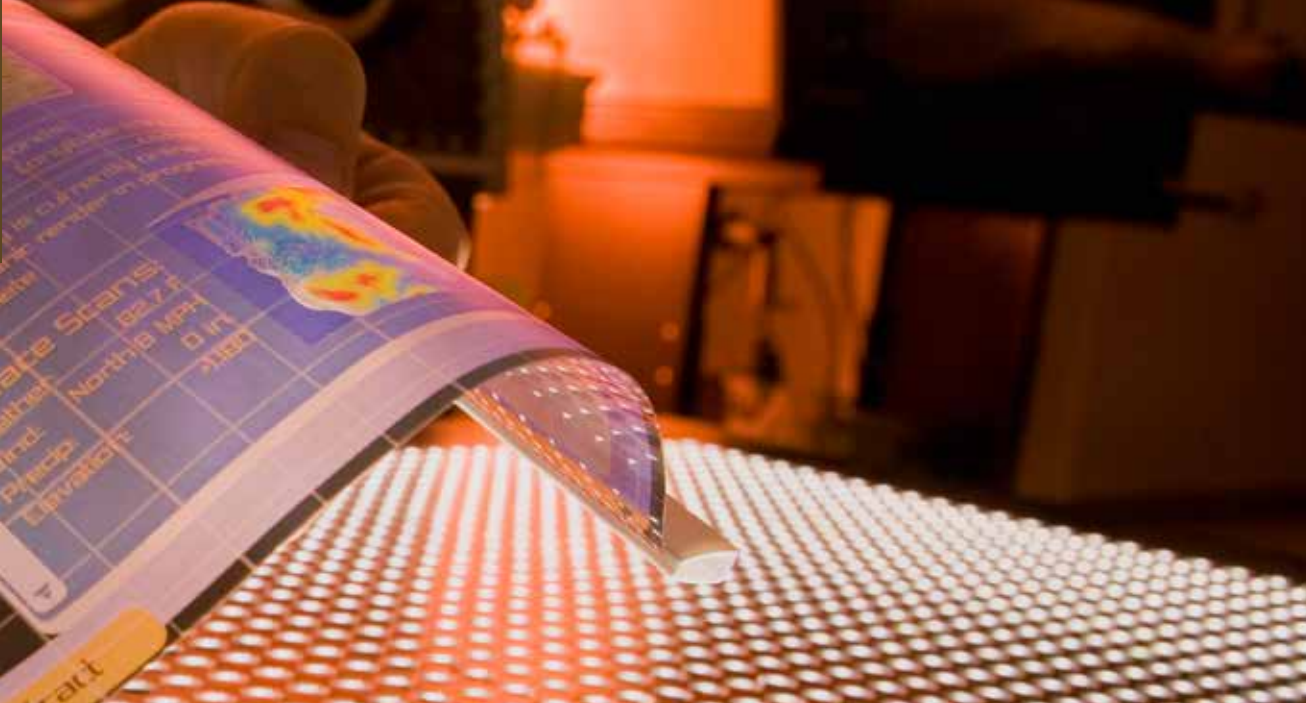
The primary focus of the work is on the nanostructuring of silicon surfaces, with the DCU team addressing fundamental issues in gaseous plasma based processing, including plasma-surface interactions, process control and diagnostics, and plasma physics. The ASU team is addressing fundamental questions relating to the evolution of the structure topography on the surface as a function of process parameters and plasma condition.

For integrated circuits in particular, the development of ultra-small dimension devices and interconnects has been based on continual improvement of photolithography. Plasma chemistries and processes have been much less researched. However, the use of reactive ion (plasma) etching to transfer the defined resist pattern to the substrate is becoming ever more critical as feature size decreases due to edge and shape effects, surface chemistry, angular effects and the thickness of the resist layers. It is clear that a detailed understanding of etch and deposition chemistries and methods is now a pre-requisite.



A unique feature of our work is interaction between the plasma chemistry and the surface chemistry. Surface chemistry becomes critical, especially in terms of the modification of surface activity at the high density of edges and interfaces defined by the nanodimensions of the pattern. This nanosurface structure can lead to defects such as undercut and ill-defined shape. Physical topography becomes important due to local trapping of reactive species and even the mechanical strength of the substrate materials and developing topography can be limiting.

This joint project leverages complementary expertise in both universities and has potentially significant impacts on a number of important industry sectors in both Arizona and Ireland, including semiconductor manufacturing, energy systems, and environmental technologies. Additionally, the initiative provides a great opportunity to establish synergies between large research infrastructures and initiatives in both universities, including the Flexible Electronics and Display Center at ASU and the National Centre for Plasma Science and Technology and the newly established Nano-Bio Analytical Research Facility at DCU.



Dr. Gregory Raupp

Director
MacroTechnology Works

Dr. Raupp directs the MacroTechnology Works (MTW) Initiative out of ASU's Office of Knowledge Enterprise Development. MTW drives large-scale, multi-institutional and typically multi-national advanced technology development ventures, with an emphasis on large area and flexible electronics and next-generation electro-optic devices. Dr. Raupp's technology expertise and professional experience span many disciplines from engineering of microelectronics thin film processes, materials science, manufacturing and product design to ultra-biocompatible implantable medical devices and chemistry of sustainable green processes.

He became the founding director of the Flexible Display Center at ASU in 2004 through a 10-year cooperative agreement with the U.S. Army Research Laboratory. Under Dr. Raupp's leadership, a world-class, industry-government-university partnership model was created, one that enabled organizations with dramatically different missions and scales to collaborate effectively to advance science and technology on a broad front and create a portfolio of enabling commercial manufacturing technologies.

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Dr. Stephen Daniels

Director
Sustainable Economies and Societies
Research & Enterprise Hub

Dr. Daniels is director of the Sustainable Economies and Societies Research & Enterprise Hub, which drives scientific and social science research, technology development and innovation and supports sustainable development in both industry and the environment. His expertise includes advanced manufacturing, environmental monitoring, water technologies and energy systems.

Dr. Daniels also directs the Energy Design Lab, the Nanomaterials processing lab and the National Centre for Plasma Science & Technology at DCU. His primary research areas cover advanced plasma process control, measurement and diagnostics for IC manufacturing, plasma-enhanced CVD and surface engineering, plasma-based decontamination and sustainable energy systems. As an electronic engineer his experience covers team management and product design and development. He worked for a number of years in the semiconductor industry and has also been responsible for numerous technology start-ups.

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Human Computer Interaction and Physical Rehabilitation through Serious Gaming

The growing prevalence of physical inactivity is a global problem with impact across the entire healthcare sector. Physical inactivity is the fourth leading risk factor for global mortality. According to the World Health Organization, 1.5 billion adults worldwide are insufficiently active and as a result suffer from heart disease, diabetes, obesity and other preventable diseases. At the same time, the significant benefits of integrating exercise into rehabilitation are well recognized for a broad range of medical conditions.

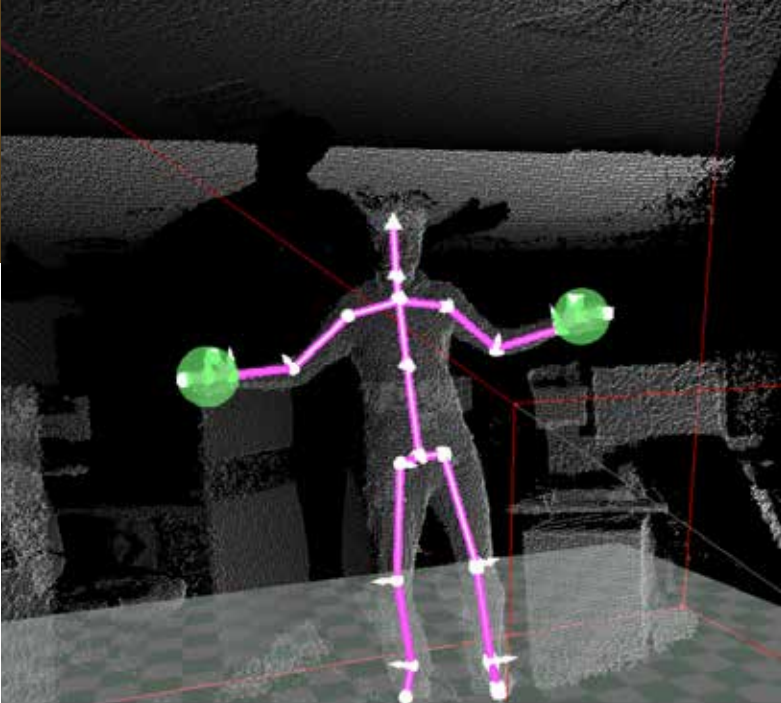
Patient adherence to prescribed exercise is crucial in both disease prevention and rehabilitation. The development of intuitive, low-cost and personalized home-based exercise monitoring technologies can help address these issues by increasing a person's level of physical activity and by encouraging exercise adherence through a captivating "serious game."

A serious game is any game-based interface that has been designed for a purpose other than entertainment. Inspired by the success of video games and their inherent ability to capture and keep a person's attention, serious games have grown into a significant research focus in areas such as military, health, government and education.

At ASU, researchers are focused on ubiquitous computing for the healthcare domain and the design of video games to generate learning and to impact people in transformative ways. At DCU, there is a current focus on big data analytics, data mining and multimodal sensor applications for connected health. There is a clear synergy of ideas, motivations and thought surrounding the research aims and motivations of both ASU and DCU in striving to have a significant impact on healthcare through low-cost motion capture technology.



The focus of this collaborative project is to research computer gaming technology and its application to physical rehabilitation adherence, with particular focus on human-computer interaction technology. A unique, story-based gaming scenario will feature problems and tasks that keep the patient interested and absorbed. The game will incorporate human-computer interaction technology that utilises intuitive gesture and motion control. The underlying technological hardware interfaces will be explored, with an emphasis on low-cost and widely available technologies. Having an intuitive front-end and control platform on a game is absolutely crucial to the ease of use, enjoyment and therefore the overall adherence rates.



Dr. Troy McDaniel

Assistant Research Professor
School of Computing, Informatics, and
Decision Systems Engineering

Dr. Troy McDaniel is an assistant research professor in the School of Computing, Informatics, and Decision Systems Engineering, and the School of Biological and Health Systems Engineering at ASU. He is the associate director of the Center for Cognitive Ubiquitous Computing, and the research director of the IGERT project, “Alliance for Person-centered Accessible Technologies” (APACT). Dr. McDaniel’s research interests include human-computer interaction, haptics, assistive technology and rehabilitative technology. For almost a decade, he has explored how our sense of touch can be better utilized by technology as a communication channel. He has published over 25 peer-reviewed papers on the topics of premier haptics and human-computer interaction. He is an IEEE, ACM and SPIE member.

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Dr. David Monaghan

Post-Doctoral Researcher
Insight Centre for Data Analytics

Dr. Monaghan is a Fulbright Scholar and team leader of the Multi-Modal Human Sensing Research Group, working in the fields of human motion analysis, machine learning, data mining and data/video analytics at Insight DCU. He has a degree in electronic engineering and a PhD in optical cryptography and statistical simulations.

Dr. Monaghan is an excellent communicator with over 10 years experience in innovative research, publishing and scientific dissemination. He has published over 40 peer-reviewed publications in journals and conferences, and has acted as an expert reviewer for the Natural Sciences and Engineering Research Council of Canada (NSERC) and for the EU’s Horizon 2020. Dr. Monaghan has been on the programme committee for seven international computer science conferences. He has worked as the technical functional manager on several major EU projects including 3DLife NoE, EMC2, REVERIE and FI-Star.

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Smart Stadium Project / Smart Living

Have you ever been to a game and wished you could view a touchdown or goal from a better angle?

Have you ever wondered what your friends in other parts of the stadium are saying about it?

How about ordering a hot dog or a team shirt from your seat?

Have you ever been sitting in traffic after a game and wondered which would be the quickest route home?

If only you had an app for that! The technologies that will one day allow all of these are currently being developed by ASU and DCU teams in collaboration with Intel.



This initiative will use ASU's Sun Devil Stadium renovation project and Ireland's Croke Park Stadium as the venues for deploying pilot technologies like these and demonstrating their capabilities. As venues managing several tens of thousands of people, they provide unique opportunities for exploring innovative projects through which large, medium and small companies can beta test and pilot new ideas and solutions. It will also facilitate collaborations for start-up companies and entrepreneurs to realize their own ideas.

Sun Devil Stadium, home of the Arizona State Sun Devils, has a seating capacity of 68,000. As a leader in sustainability education, research and leadership, ASU will be exploring ways to ensure that Sun Devil Stadium's renovation project not only embeds sustainability practices but also engages the stadium as a live-in laboratory to research, design, test, validate and deploy new sustainability technologies and practice.

DCU has close ties with the Croke Park Stadium through a number of high profile ICT research projects currently in progress with Ireland's Gaelic Athletic Association (GAA), headquartered at Croke Park. The GAA has also established its National Development Centre at DCU. Croke Park Stadium holds 80,000 spectators and is the third largest stadium in Europe. This project offers a unique opportunity for Croke Park Stadium to provide a rich spectator experience through retail options, fan engagement and connections, and the promotion of sport and healthy behaviours for younger spectators, all delivered in a secure environment.

This joint project will focus on enhanced fan experience via smart-stadium applications based on personalised, social-media enabled and context-aware principles and research on multi-modal sensing and analytics for understanding crowd behaviour. Intel will provide selective components of its IOT end-to-end architecture to facilitate the research and pilot deployments.



Dr. Sethuraman "Panch" Panchanathan

Director
Center for Cognitive Ubiquitous Computing

Sethuraman "Panch" Panchanathan is the senior vice president for Knowledge Enterprise Development at ASU. He is also a foundation chair in Computing and Informatics and a professor in the School of Computing, Informatics, and Decision Systems Engineering in the Ira A. Fulton Schools of Engineering.

His research interests are in the areas of human-centered multimedia computing, designing ubiquitous computing environments for enhancing quality of life for individuals with disabilities, health informatics, human-centered multimedia computing, and haptic (touch-based) user interfaces. He has published more than 400 papers and has mentored more than 10 graduate students, post-docs, research engineers and research scientists who occupy leading positions in academia and industry. In addition to being appointed to the National Advisory Council on Innovation and Entrepreneurship, Dr. Panchanathan has been appointed by President Obama to serve on the U.S. National Science Board.

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Professor Noel O'Connor

Director and Professor
Information Technology and Digital Society
Research & Enterprise Hub

Professor O'Connor is director of the Information Technology and Digital Society Research & Enterprise Hub that targets the translation of DCU's ICT-based research outputs into the digital economy, leveraging a diverse expertise base that covers data analytics, cloud computing and intelligent content, among many other areas. He is also a funded investigator in the Insight Centre for Data Analytics, an Irish Research Centre funded by Science Foundation Ireland that mobilises over 300 researchers across six different institutions.

Dr. O'Connor's area of research covers multimedia content analysis, content-based information retrieval, multi-modal visual processing and low-power hardware architectures for media, and in particular audio-visual processing which is a key enabler for next-generation context-aware multimedia sensors. He has edited three books of proceedings, six journal special issues and published over 180 peer-reviewed papers.

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DNA Origami Nanorobots for Early Cancer Detection

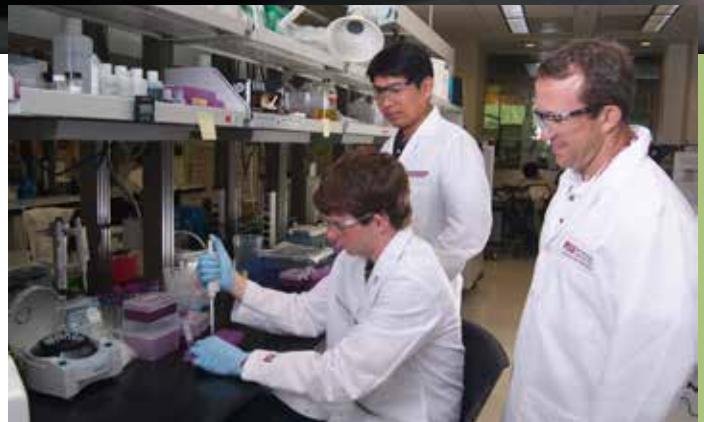


The goal of this research is to develop DNA-origami-based nanorobots, decorated with antibodies, aptamers and high-brightness nanoparticles, for cancer cell detection. The devices will have the capacity to carry therapeutic and biochemical fingerprinting technologies for in-cell theranostics—the combination of therapeutics and diagnostics.

The nanorobots will be autonomous, nanoscopic devices capable of analyzing multiple biomarkers that signal the presence of disease (diagnostic), and initiate corrective actions when needed (therapeutic). We intend to focus on 3-D objects made of DNA that we refer to as nanobots; these nanobots will be held in a closed conformation by molecular locks and then opened (unlocked) by external cues transduced by molecular sensors. The main focus of our initial research efforts are to develop engineering strategies to construct the nanobot framework.

We will engineer the most desirable nanorobot form using DNA origami technology, exploring the ideal size, shape, and arrangement of the shell to facilitate decoration by molecular sensors. We will develop the conjugation chemistry necessary to functionalize the DNA nanobots with antibodies and aptamers for molecular detection of desired cancer biomarkers.

One of the overarching goals of the larger project is to monitor targeted delivery of the drug payload to cancer cells. We intend to achieve this by incorporating a DNA aptamer that recognizes and binds to galladium, an MRI contrast agent, into the nanobots. The fate of the galladium tagged nanobots will be monitored by MRI.



The Yan lab at ASU has extensive experience designing and constructing DNA origami based nanostructures and molecular devices. They have been utilizing and developing DNA origami technology since its inception in 2006, and are ideally suited to exploit the highly desirable and adaptable properties of DNA origami nanostructures for device construction. For example, the team successfully constructed a DNA nanobox with a molecular lock mechanism that is unlocked by an external DNA key. In other work, they demonstrated that protein molecules can be efficiently captured within rectangular shaped nanocontainers. The team offers a solid foundation for the development of theranostic nanorobots based on DNA-directed self-assembly.



Dr. Hao Yan

Director
Center for Molecular Design and Biomimicry
The Biodesign Institute

Dr. Yan earned his bachelor's degree in chemistry at Shandong University, China. He obtained his PhD in chemistry from New York University in 2001, working on design and construction of sequence-dependent DNA nanomechanical devices. He then moved to Duke University, where he continued to explore his interests in DNA-based molecular computing and programming. Following a three year period as an assistant research professor at Duke, he joined ASU as assistant professor in the Department of Chemistry and Biochemistry in 2004. In 2008, he was promoted with early tenure directly to full professor and he is currently the Milton D. Glick Distinguished Professor in Chemistry and Biochemistry. The theme of his research is to use nature's design rules as inspiration to advance biomedical, energy-related, and other technological innovations through the use of self-assembling molecules and materials.

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Professor Richard O'Kennedy

Director and Professor
Applied Biochemistry Research Group

Professor O'Kennedy is professor of biological sciences and director of the Applied Biochemistry Research Group, internationally recognised for its expertise in immunoassays, antibody generation, education and training. Since 2004, he has been a principal investigator and leader in education and outreach at the Biomedical Diagnostics Institute (BDI). From 2009 to 2012, he was vice president for learning innovation of DCU. In 2013, he was appointed scientific director of the BDI.

He has published extensively and has worked closely with many Irish and international companies and has been involved with various spin-out companies. Since 2006, Dr. O'Kennedy has been programme chair of the M.Sc. in Biomedical Diagnostics.

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Exchange & Study Abroad Programmes



Students are the lifeblood of any university and will become the lifeblood of other institutions when they join the workforce or move on to the next stage of their careers. We live in a globally engaged world where oceans, land masses and time-zones are no obstacle for communication between individuals. Companies are multi-national and working on projects across time-zones is the norm.

As progressive universities, both DCU and ASU are committed to developing globally engaged students. To give our students the best chances in the workforce, we need to give them experiences that will help them integrate into these ways of thinking. This is done through our internationally linked graduate

and undergraduate programs and also through our international research collaborations.

DCU and ASU both offer students the opportunity study at other international locations for a semester or longer. Since 2006, an exchange programme between these two universities has existed. Here's what some of the exchange students have to say:



“If I could repeat my year studying at DCU through CIEE, I would do it in a heartbeat. The friends I have made and the experiences I have had studying at DCU will stay with me forever and I know that I will always have a home to return to in Ireland”.

– Baylee Murphy, Arizona State University

“I spent an academic year at Arizona State University. I can safely say that it was the best year of my entire life.

The contacts that I made from my trip will greatly benefit me for the future. The old saying of “In America it’s not about what you know, it’s who you know,” is a very accurate portrayal of the country. I have gotten some fantastic contacts as a result of my exchange. Whether I go to L.A, Miami, Boston, New York or Chicago I know that I will have a place to stay and good employment contacts.”

– Gavin O’Connell, Dublin City University



Since the establishment of a student exchange agreement in 2006, DCU and ASU have enjoyed a very fruitful partnership which has seen almost 50 students exchanged. These students have typically been humanities students focusing on international relations and political science. In all cases, returning students have reported their experience abroad as “life-changing” and “unforgettable.” It is DCU’s intention to send our high-calibre students to ASU to attain the level of academic and personal excellence required to take their place on the global stage. In return, we offer ASU students the same level of academic excellence and dedication that has earned DCU its “University of Enterprise” status. The strong commitment to the Student Exchange Programme that exists between both institutions has been fundamental to its resounding success.

DCU’s vibrant student union ensures the student population is well served with a myriad of clubs, societies and social events, all of which are available to be enjoyed by ASU students. All students are actively encouraged to participate in any of the wide range of sporting and social organisations which have been established to cater to all tastes. By comparison, DCU returning students have reported similar opportunities for self expression and enjoyment at ASU and in some cases these returning students have set up clubs specifically as a result of their involvement in a similar one at ASU.

Study Abroad Programme at DCU

Sometimes, an exchange arrangement may not be a viable option for ASU students to study at DCU. In this event, approved students may register at DCU through the Study Abroad Programme. Students may apply directly to DCU (with the assistance of their study abroad coordinator at ASU) or through a third party provider such as CIEE (<http://www.ciee.org/>), a non-profit, non-governmental organisation dedicated to the provision of relevant international education.

Studying abroad gives students a chance to broaden their horizons and gain unique experiences which will give their resumes the edge required in the future. On a personal level, students mature, develop new skill sets and meet their peers from around the world.

Students can choose from four areas of study (streams) in DCU: Science and Health, Engineering and Computing, Global Business, or Humanities and Social Sciences. The beauty of the programme is the flexibility provided. Students may choose modules/classes outside of their streams if they wish to experience an alternative discipline within a university setting.

For further information, contact study.aboad@dcu.ie or visit <http://www.dcu.ie/international>



The ASU Study Abroad Office is committed to enriching the academic experience at ASU by affording students the opportunity to develop the intercultural competence, transnational understanding, and leadership skills required to face global challenges. Our vision is to guide student development through international experiences for lifelong global engagement and impact. The exchange between ASU and DCU epitomizes the ASU Study Abroad Office's commitment and vision to student experiential learning.

ASU students who study at DCU are mainly justice studies or criminal justice and criminology majors. However, other majors include biochemistry, political science, psychology, sustainability, nutrition and business. While studying at DCU, ASU students are able to enroll in courses at DCU's Faculty of Humanities and typically stay for one semester (either fall or spring). In contrast, all DCU students come to ASU for the full academic year and are typically students from DCU's cutting-edge School of Law & Government.



DCU students take advantage of the U.S. perspective while studying at ASU, as they often enroll in ASU classes such as "Death Penalty in the U.S.," "National Security, Intelligence, and Terrorism," "Business, Law and Society," and "Law, Culture and Community," to name a few. DCU exchange students can enroll in any ASU class in which they have applicable prerequisites. Outside of the classroom, DCU students can take part in Sun Devil traditions such as wearing their Maroon and Gold with pride, hiking "A" Mountain, or participating in the ASU Homecoming parade.

With more than 80,000 undergraduate and graduate students, ASU is among one of the largest universities in the U.S. ASU is consistently one of the top-ranked public research universities in the country, offering academic programs and majors led by expert faculty and top researchers in first-class facilities.



“There are not enough words to describe how amazing my experience was at DCU. I immediately fell in love with the school and made it my new home. My roommates I was assigned to live with turned out to be one of the best things to ever happen to me. I was lucky to be a part of the CIEE program because I had the best group to enjoy Ireland with—the funnest leaders and the greatest friends. It was the best time of my life; I wish I could do it again.”

– Jessie Evers, ASU Study Abroad student at DCU 2013-14



Ms. Erin Piper

International Coordinator
ASU Study Abroad Office

Ms. Piper works with students pursuing Partnership & Exchange program options in the United Kingdom, Ireland, Australia and New Zealand. She joined the ASU Study Abroad Office in the summer of 2012. Ms. Piper completed her master’s degree coursework in intercultural relations at Lesley University. While a graduate student in Boston, she worked at WorldTeach and as a study abroad advisor at Emmanuel College. Prior to her graduate studies, Erin studied abroad in Spain while in high school, participated on a faculty directed study abroad program in Merida, Mexico, and a 3-month language study in Argentina. Her experiences abroad enabled her to travel extensively through Europe, Australia, New Zealand, South America and Asia.

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Ms. Audrey Byrne

International Officer
DCU International Office

Ms. Byrne has been an International Officer at DCU International Office since 2006. She is responsible for all incoming and outgoing students on the Exchange Programme. She also administers all student exchange bilateral agreements and ensures good relations with all DCU’s partners. This position allows Ms. Byrne to travel globally and meet current and prospective partners and students.

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For more information on the DCU ASU Partnership,
please visit dcu.asu.edu

For general enquiries and how to get involved, please contact
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