

MDBSNews

School of Medicine, Dentistry and Biomedical Sciences



CENTRE FOR INFECTION AND IMMUNITY SCIENTIST LEADS BID TO TACKLE SUPERBUGS

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Queen's Researchers helping
to make the 'big C' smaller



MDBSNews

School of Medicine, Dentistry and Biomedical Sciences

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About MDBSNews

Welcome to Issue 7 of the School of Medicine, Dentistry and Biomedical Sciences newsletter *MDBS News*.

Comments on the newsletter or suggestions for future editions should be forwarded to the School Office: l.mcdonald@qub.ac.uk

More information on the School and latest developments can be accessed through the School website: www.qub.ac.uk/schools/mdbs

Professor Tim Dornan

Centre for Medical Education

Although I was born and brought up in England, I am proud to come from an Irish medical family. I studied medical sciences at Cambridge and clinical medicine in Oxford and did my postgraduate training in Stoke-on-Trent, Oxford, and Nottingham.

I specialised in internal medicine with a subspecialty interest in diabetes and endocrinology, taking 4 years out to conduct research in Oxford and Seattle, USA. I went to Salford Royal Hospital, Manchester as a consultant, where I was fairly quickly drawn into medical education as clinical sub-Dean. I was actively involved in curriculum reform, interprofessional education on behalf of Diabetes UK, and continuing professional development on behalf of the Royal College of Physicians and the two diabetes/endocrinology specialist societies. Given my research background, it was logical to evolve from education leader to education researcher. I completed first a Masters and then a PhD in Maastricht University, the Netherlands, both with distinction. I was Director of Medical Education in Salford Royal Hospital and Professor of Medical Education in the University of Manchester until 2009, when I left employment in the UK to be Professor of Medical Education in Maastricht University. Maastricht is an internationally leading powerhouse of education research so I have spent 5 happy years consolidating and expanding my portfolio of research and doctoral supervision. It has given me the opportunity to supervise research in five continents, form a very strong international network of collaborations, and progressively increase my published output.

I will change to an Emeritus position in Maastricht in 2015 and my career as an education researcher is still young so taking up a post in Queen's University Belfast presents new and exciting opportunities. Looking at the UK health professions from outside, it is striking to see the toll taken by fiscal pressures, the politicisation of education, and regulation. There is a real risk that leaders of health professions education and education researchers are worlds apart and we cannot afford to let that happen.

Queen's is an excellent place to be an education researcher because both delivery of and research into education are outstanding and there is harmony between the two. World-class education research, particularly in simulation and

assessment, is already going on. There is scope for us to be nationally leading and internationally eminent. I plan to conduct research, which builds on Queen's strength in interprofessional education. I intend to pursue my interest in workplace learning – particularly prescribing education. I am interested in medical humanities, both as a practising musician and an education researcher. I recognise the strength of Arts Care Northern Ireland and look forward to working with it.

Professor Tim Dornan



Professor Paul Moynagh

Centre for Infection and Immunity

I have been appointed to (initially part-time) as Professor of Immunology in the Centre for Infection and Immunity (CII) at Queen's University Belfast.

I obtained my B.A. (Mod) and PhD from Trinity College Dublin and took up a lectureship in UCD Department of Pharmacology in 1995. During my time in UCD I became Associate Professor of Immunology and held the position of founding Head of the UCD School of Biomolecular and Biomedical Science. In 2006, I joined National University of Ireland, Maynooth as Director of its Institute of Immunology and also became Head of Department of Biology in 2012. I have published extensively in the area of immunology-related research and in 2009 was awarded NUI Centennial prize for Academic Publishing in Medical and

Health Sciences. I have also recently been selected to be awarded the 2014 Irish Area Section Biochemical Society (IASBS) medal. This medal is awarded annually to an Irish-based researcher who has made an outstanding contribution during his/her career in the broad area of Biochemistry. My research focuses on innate immune signalling and the identification of novel regulators of inflammatory pathways with my most recent findings revealing immunomodulatory roles for the E3 ubiquitin ligase Pellino3 in an anti-viral immunity (Siednienko et al; Nature Immunology (2012)) and controlling intestinal homeostasis (Yang et al; Nature Immunology (2013)). I am currently exploring how innate immune signalling pathways can integrate with cell death pathways and metabolism to regulate diseases such as cancer

and type 2 diabetes. I have generated >€10M of independent research funding and have directed a number of major research initiatives including the co-ordination of European Commission-funded research programmes. I have also played a leading role in the training of PhD students and have directed 2 large structured PhD programmes including a Health research Board (HRB) PhD scholars programme in Immunology that partnered the Centre for Infection and Immunity in Queen's University Belfast with NUI Maynooth and Trinity College Dublin.

I am very excited about the opportunities to interact with colleagues within CII but also with other leading researchers in the Centre for Cancer Research and Cell Biology (CCRCB) and Centre for Experimental Medicine (CEM). The school of medicine, Dentistry and Biomedical Sciences, at Queen's University Belfast provides a unique opportunity to integrate basic research in the area of innate immunity with clinical research in disease areas spanning Infection, Cancer and Metabolic.



Professor Paul Moynagh



Roisin Foster, Chief Executive of Cancer Focus NI, is pictured at a round table discussion on the issue with (l-r) Geoff Hill, Cancer Focus NI Board Member, Professor Mark Lawler, European Cancer Concord CCRCB, Dr Richard Wilson, Consultant Oncologist and Clinical Director of NI Ireland Cancer Trials Centre and Network, and Professor Manuel Salto-Tellez, Professor of Molecular Pathology, CCRCB.

CALL FOR EQUALITY IN ACCESS TO CANCER DRUGS

In May 2014, academics from the School's Centre for Cancer Research and Cell Biology (CCRCB) took part in a round table event to discuss the inequality of access to specialist drugs for local cancer patients.

Consultant Oncologist and Clinical Director of NI Ireland Cancer Trials Centre and Network, Dr Richard Wilson, and Professor Mark Lawler, member of the Steering Committee of the European Cancer Concord (ECC) attended the discussion along with key clinicians, politicians and health professionals to discuss the inequality of access to specialist drugs for local cancer patients. The meeting was chaired by Roisin Foster, Chief Executive of Cancer Focus Northern Ireland.

The cancer charity, Cancer Focus Northern Ireland, is calling for an overhaul of the current process to fund life-extending cancer medicines in Northern Ireland.

Cancer Focus NI Chief Executive, Roisin Foster said: "There is a clear inequality between cancer treatments available in Northern Ireland compared to the rest of the UK. The purpose of this campaign is to ensure that the most effective drugs will be made available to local cancer patients in their time of need."

There are 39 life-extending cancer drugs available to patients living in England through the Cancer Drugs Fund (CDF). The Fund offers treatments that have not been approved by the National Institute for Health and Care Excellence (NICE) and are not routinely funded by the NHS. More recently in Scotland, changes have been made to its access to cancer drugs system, allowing patients and clinicians a greater say on what new medicines are approved by the Scottish Medicines Consortium

(SMC) for use in the NHS for end of life care and treating rare conditions.

Roisin Foster continued: "Cancer Focus NI has been concerned for some time that local cancer patients are being denied access to life-extending drugs that are currently available in England, and will soon be available in Scotland.

"We wanted to give elected representatives the opportunity to hear firsthand from some of our leading clinicians the concerns they have over access to cancer diagnostics and medicines.

"The meeting discussed proposals that the NI Executive demonstrates its commitment to redress the access to cancer drugs issue, and find the relatively small amount of funds needed to give cancer patients equality to medicines as patients in the rest of the UK.

"It was encouraging that there was broad agreement from everyone around the table that there is the will to improve the situation, but there was also the recognition that there needs to be commitment from all interested bodies – the health service, pharmacy industry, politicians and patient advocacy groups – to move this forward."

Dr Richard Wilson commented: "Northern Ireland has contributed significantly to the field of cancer research, clinical trials and new treatments. In fact some of the medicines available on the Cancer Drug Fund list were developed and trialled in Northern Ireland, but are still not available to patients living here. "Our cancer patients are, in some cases, unable to access treatments with proven clinical benefits available to others in England and in Scotland. We're simply asking for the same rights of access for Northern Ireland cancer patients."

Professor Mark Lawler added: "Article 2 of the European Cancer Patient's Bill of Rights, which we launched in the European Parliament in Strasbourg and which received cross-party support from our MEPs, calls for optimal and timely access to appropriate treatment and care for every patient in the EU. This includes rapid access to the latest innovations in diagnosis and treatment. Cancer patients in Northern Ireland are currently being denied potentially beneficial treatments available in other parts of the UK. We need to open this debate and investigate ways in which we can, in a cost effective manner, achieve the best outcomes for patients in Northern Ireland."

Allister Murphy (57) from Newtownabbey has terminal prostate cancer and has experienced first-hand the inequality of access to cancer drugs here. "In 2008 when I was first diagnosed I was given two to three years to live. By taking part in two clinical trials I benefited from specialised cancer drugs, that otherwise would have been unavailable to me, and that have added years to my life.

"Currently I'm undergoing a second bout of chemotherapy because I can't get access to new drugs like enzalutamide. If I lived in England I would be able to apply to the Cancer Drugs Fund for access to these drugs but as I'm based in Northern Ireland, this option isn't available to me.

"I believe the lack of access to cancer drugs here is discriminatory. It wouldn't cost a lot of money to improve the system and would make such a massive difference to thousands of people's lives."

To move these proposals forward a forum to include patient groups, charities and other interested parties is being held by Cancer Focus NI.



Professor Liam Heaney



CENTRE FOR INFECTION AND IMMUNITY (CII) RESEARCHERS IN UK-WIDE EFFORT TO IMPROVE ASTHMA CARE

Queen’s University Belfast has been named as a partner in a national research centre focussed on improving the lives of people with Asthma.

The Asthma UK Centre for Applied Research is the UK’s first integrated Centre for research into the illness, which affects 182,000 (one in ten) people in Northern Ireland - 146,000 adults and 36,000 children.

Researchers in the School’s Centre for Infection and Immunity (CII) are among experts from academic and NHS organisations across the UK who will work together to share expertise and insights to find better treatments for Asthma and making them available faster than ever before.

CII Professors Mike Shields and Liam Heaney are two of Northern Ireland’s leading experts on Asthma care. Professor Shields leads a programme of research into childhood asthma and wheezing disorders, while Professor Heaney conducts world-class research into ‘difficult to treat’ asthma.

Professor Mike Shields said: “We are delighted to be a part of the Asthma UK Centre for Applied Research. The Centre will provide a platform for high quality research initiatives and will help foster new partnerships between experts across academia and health.

“The ultimate aim of the Centre is to take research ‘from the lab bench to the bedside’ and implement new treatments for improved management of asthma. This should ensure that asthma attack rates and hospital admissions are reduced and patients’ quality of life improved.

“We are pleased that Northern Ireland is fully included in this initiative and we look forward to seeing the benefits for the one-in-ten people in Northern Ireland who are currently living with asthma.”

More than 5 million people in the UK are affected by asthma. There were 1,242 deaths from asthma in the UK in 2010 (21 of these were children aged 14 and under), and the NHS spends around £1 billion a year treating and caring for people with the illness. Yes research into this life-threatening condition is chronically underfunded, taking an average of 17 years currently to develop a new asthma treatment.

Asthma UK’s vision for this pioneering, multidisciplinary research initiative is to halve the time it takes to get innovations to people with asthma and to develop the next generation of world class applied asthma researchers. The new Centre is co-ordinated through the University of Edinburgh and Queen Mary, University of London.

Kay Boycott, Asthma UK’s Chief Executive, said: “The introduction into clinical use of the pressurised metered-dose inhaler (pMDI) - the first modern inhaler for asthma management – took over 40 years from initial lab discovery through clinical trials and into practice.

“More than half a century later asthma still kills and there are tens of thousands of people with asthma facing a daily struggle to breathe. This is why it is so vital for Asthma UK to invest significantly in the Asthma UK Centre for Applied Research and to kick start a new era of improved discovery-to-treatment times.”



Dr Sorcha Finnegan

CII Researcher awarded RBHSC research fellowship

Dr Sorcha Finnegan, from the School’s Centre for Infection and Immunity, has been awarded the Royal Belfast Hospital for Sick Children Research Fellowship with PI Dr Madeleine Rooney.

Sorcha’s project ‘Autoantibodies PrEdicTive of Uveitis in juvenile Idiopathic Arthritis (APErTure)’ will focus on identifying novel antibodies that could predict the development of uveitis, a sight threatening condition, which can affect between 15-40% of children who have juvenile idiopathic arthritis. At present there is no way of predicting whether a child with juvenile arthritis will develop uveitis. Thus all children with JIA have to be screened for many years. This wastes patient time and valuable NHS resources. This project could have important implications for the diagnosis of juvenile arthritis-related uveitis. It may enable us to identify those patients at risk, resulting in earlier diagnosis and more cost effective management.

CENTRE FOR INFECTION AND IMMUNITY SCIENTIST LEADS €4M BID TO TACKLE SUPERBUGS

Scientists in the School's Centre for Infection and Immunity are leading a €4 million international research project to develop new treatments for some of the world's top killer infections.

The project aims to develop new ways of tackling antibiotic resistant bacteria, viruses and intestinal parasites which account for 6 million deaths worldwide each year, according to the World Health Organisation. Around half of these deaths are caused by respiratory infections, which will provide a major focus for the project which is known as INBIONET (Infection Biology Training Network www.inbionet.eu).

Professor José Bengoechea from the School's Centre for Infection and Immunity (CII) is co-ordinating the four-year INBIONET project which is funded by the European Commission, under the Marie Skłodowska-Curie Actions scheme. He is leading a team of researchers from ten partner organisations, including academic institutions and pharmaceutical companies across Europe.

Professor Bengoechea, who is Chair of Infectious Diseases, said: "Infectious diseases are on the increase worldwide and represent a major threat to global public health.

"An increase in world travel, climate change and the continuous transfer of viruses to humans from other organisms have all contributed to the growth and spread of infections, and the growing number of so-called 'superbugs', which are largely resistant to antibiotics. The INBIONET project aims to develop new preventative methods and therapies to help protect the global population against these deadly infections.

"Our international team of scientists will follow an innovative drug discovery model, known as 'host-directed therapeutics'. This approach is based on understanding how microbes manipulate the human body's own defenses, leaving it unable to fight infection. We aim to identify the 'achilles heels' of the body's defenses – the particular weaknesses that

bacteria, viruses and parasites manipulate for their own benefit. By identifying these vulnerable pathways, we will be in a better position to develop new therapies to block the offending microbes and stop the infection in its tracks.

"The anticipated results of the research should initiate the development of drugs to treat infections caused by superbugs such as *Klebsiella pneumoniae* and *Streptococci*, and viruses such as influenza and respiratory syncytial virus. We would hope to see new treatments being available to patients in 10 to 15 years. Crucially, these treatments would target pathways within the human body, helping boost its own defences against infection, rather than targeting the infection itself. Treatments that target the human body in this way are less likely to be met with resistance to conventional antibiotics."

The research may also shed light on other inflammatory diseases such as asthma and chronic obstructive pulmonary disease, as some of the pathways manipulated by the microbes are involved in both diseases.

The four-year INBIONET programme will train 15 European scientists, including 11 early-career research fellows, working at the interface between microbiology, immunology and cellular biology. The INBIONET training programme is designed to equip these scientists with the skills they will need for successful careers in academia or industry.

Academic partners in the INBIONET project include Trinity College Dublin, the University of St Andrews (UK), Max Planck Institute for Infection Biology (Germany), École Polytechnique Fédérale de Lausanne (Switzerland), the University of Vienna (Austria), and Institut Pasteur (France). Industrial partners are Sanofi-Aventis (France), Preclin Biosystem (Switzerland), and ParcBit (Spain).

Professor Andrew Bowie, Head of Immunology at the School of Biochemistry and Immunology at Trinity College Dublin, said: "INBIONET presents exciting opportunities to engage with world-class infection biology



Professor José Bengoechea

labs across Europe. This provides my research with a broader appreciation of host-pathogen interactions and with unique opportunities to collaborate. The structure of the network provides a very rich training experience for the research fellows."

Professor Pavel Kovarik, from the Max F. Perutz Laboratories at the University of Vienna, said: "INBIONET is generating new and exciting collaborations that have already been hugely beneficial to the people involved. The network brings together a unique combination of renowned and experienced scientists and excellent young research fellows, facilitating the expansion of expertise, knowledge and ideas. INBIONET holds the potential to establish new pathogen systems for studying host-pathogen interactions and employ new approaches for assessing the activation of the immune system with promising implications for therapeutic exploitation. It is a pleasure and honour to be member of the INBIONET community."

Bettina Ernst, CEO of Swiss company Preclin Biosystems, said: "The INBIONET project is an excellent example of how academia and industry can work together to advance medical research and improve our understanding of infectious diseases".

CENTRE FOR CANCER RESEARCH AND CELL BIOLOGY RESEARCHERS EFFORTS TO BEAT BLOOD CANCER RECEIVES FUNDING BOOST

Scientists at Queen's University Belfast have been awarded a £126,000 grant by blood cancer charity Leukaemia & Lymphoma Research for research to improve treatments for blood cancer patients.

The two year research project will be led by Professor Ken Mills, Dr Kienan Savage, Professor Mary Frances McMullin and Dr Fabio Liberante. They will develop new treatments that are more effective at seeking out and destroying abnormal white blood cells.

The research will focus on a genetic fault found in patients with myelodysplastic syndrome (MDS). MDS is a group of blood disorders where the balance of healthy blood cells in the body is disrupted by the growth of 'master' cells. Patients with these types of disease are usually elderly and are often unable to cope with intensive treatment like chemotherapy.

Professor Mills, from the School's Centre for Cancer Research and Cell Biology (CCRCB), said: "Several genetic abnormalities have been connected with MDS but we don't know their role in the onset or progression of the disease. In particular a gene called SF3B1 is known to be mutated in the blood cells of around a third of patients with MDS. As many as 85% of patients with a type of MDS called refractory anaemia with ring sideroblasts (RARS) have the error. The ultimate aim of our research is to improve treatment for patients with MDS, particularly RARS, by identifying a specific drug that can target this SF3B1 mutation."

The researchers will study this particular genetic fault and use cutting-edge genetic techniques to identify exactly how the mutated SF3B1 gene influences



Professor Ken Mills (Top), Dr Fabio Liberante (left), Dr Kienan Savage (right), Professor Mary Frances McMullin (front)

the development of MDS. They will look at how the abnormal SF3B1 affects the ability of the cell to repair damaged DNA, how this impairment influences disease progression, and whether it's possible to block it with drugs.

Dr Matt Kaiser, Head of Research at Leukaemia & Lymphoma Research, said: "The majority of patients diagnosed with MDS are over the age of 60 and most are unable to cope

with the current treatments available. This research shed light on how a genetic error in SF3B1 affects blood cell development and behaviour. Improving treatments and tailoring them to target specific rogue cells will enable a safer and more effective way of combating the disease for patients."

ARE MEN GETTING THE MESSAGE?

The Cancer Focus Northern Ireland annual ManAlive conference this year focused on the best ways to communicate with men about cancer prevention, the importance of early diagnosis and treatment, and where to find support. The conference was held at the Dunsilly Hotel, Antrim, to mark Men's Health Week, which ran in June 2014, and to update healthcare professional and individuals with an interest in men's health and cancer issues.

More than 100 delegates attended including the voluntary, community and private sectors as well as local councils and the five health trusts. They were welcomed by Cancer Focus NI's Head of Cancer Prevention, Gerry McElwee, who said: "We aim to empower men to improve their health, make healthier choices and access appropriate support services."

"This year our conference focused on how men receive, understand and act on information. We examined a range of approaches and asked what works best

when we communicate with men on these important health issues."

Professor Mark Lawler, Centre for Cancer Research and Cell Biology (CCRCB) spoke to delegates on the theme 'Manning up to cancer – male empowerment to overcome cancer inequalities'. He said: "Inequality in access to cancer care is a significant problem. The European Cancer Concord, led from Belfast, launched the European Cancer Patient's Bill of Rights in the European Parliament on World Cancer Day earlier this year. This Bill of Rights has all party support from our three MEPs and is a catalyst for change, allowing cancer patients to address the significant inequalities that they experience every day.

"Health is not a luxury, health is a right. In this Men's Health month, we focus on the particular challenges that male cancer patients and their families face and investigate potential solutions that may improve outcomes for men with cancer."



Gerry McElwee (Cancer Focus NI), Professor Mark Lawler (CCRCB) and Sandra Gordon (Cancer Focus NI) at Cancer Focus NI's annual ManAlive conference

Well-known author and broadcaster Christy Kenneally talked on the subject 'Say yes to life – living well with cancer'. He said: "Traditionally, men have been encouraged to 'take it like a man'. The inference was that a real man doesn't feel any of the normal feelings of doubt, worry, fear, and so on. This has led many men to 'park' rather than 'process' their feelings. "We know that unresolved anger, self-doubt, and negative self-talk can block a man's pathway to wellbeing. When the block appears insurmountable, the option to give up is all the more tempting."

Streilein Foundation for Ocular Immunology (SFOI) Visiting Professor Paul McMenamin visits the Centre for Experimental Medicine (CEM)



Professor McMenamin (rear right) met students/post-docs of the Ocular Immunology group of CEM

Earlier this year, Professor Paul McMenamin visited the School's Centre for Experimental Medicine (CEM).

Professor McMenamin is the Director of the Centre for Human Anatomy Education in the Faculty of Medicine, Nursing and Health Science, Monash University, Australia. He is also a world-renowned ocular immunologist. His visit to Queen's was part of the Streilein Foundation for Ocular Immunology

(SFOI) Visiting Professorship award (Streilein-foundation.org). It supported his visits to Vision Science/Ophthalmology Departments in four UK institutions: the University of Birmingham, Institute of Ophthalmology (UCL), Liverpool University and Queen's University Belfast.

During his visit, Professor McMenamin met with CEM Director, Professor Alan Stitt, and Dr Tom Gardiner, Director of the School's Centre for Biomedical Sciences Education. They discussed various issues around medical education and postgraduate/postdoctoral training. They also discussed Monash University's progress in 3D printing of various organs for anatomy teaching. Professor McMenamin is leading the way in applying 3D printing to medical anatomy teaching.

Professor McMenamin also met and had thorough discussions with a number of academic staff at CEM, including Dr Mei Chen, Dr Derek Brazil and Professor Heping Xu. During a "Meet the Speaker" session, PhD students and Postdoctoral Research Fellows of CEM

had the opportunity to question Professor McMenamin about postgraduate training and research careers in Australia, as well as discuss issues around the field of ocular immunology.

Professor McMenamin gave a talk on "Macrophages in and around the retina in models of innate immune responses, ageing, diabetes and autoimmune responses" at CEM on 8th April. He has led the way in imaging ocular immune cells, and has discovered and characterised choroidal macrophages and dendritic cells in humans, rodents and other species. The 3D confocal/SEM/TEM images of macrophages and dendritic cells in and around ocular tissue were superb. Around 50 researchers attended the seminar, and the talk was well-received and generated a lot of discussion.

Following his visit to Queen's, Professor McMenamin travelled to the Institute of Ophthalmology (UCL) and continued his SFOI Fellowship visit.

CENTRE FOR INFECTION AND IMMUNITY SCIENTIST MAKES MAJOR CYSTIC FIBROSIS BREAKTHROUGH

Professor Stuart Elborn, Dean of the School of Medicine, Dentistry & Biomedical Sciences and an international authority in respiratory medicine, with colleagues from the United States and Australia has led pivotal studies of a new treatment for people with Cystic Fibrosis. The combination therapy, developed by Vertex (a Boston, USA company), improves lung function and reduces hospitalisations for patients with the most common type of cystic fibrosis.

Two Phase 3 studies of the drugs ivacaftor and lumacaftor, which included over 1,100 patients worldwide, built on previous studies of ivacaftor in patients with G551D and other related mutations. Ivacaftor is the first drug to treat the underlying causes of cystic fibrosis rather than just its symptoms and is currently approved for patients with the 'celtic gene' mutation carried by about four per cent of all patients and 10-15 per cent of patients in Ireland. This therapy is a leading example of precision medicine, where treatment is based on a test for genetic mutations.

This recent trial looked at the treatment of patients with two copies of the F508DEL mutation which is carried by roughly half of all cystic-fibrosis patients. It found that a combination of ivacaftor with lumacaftor was effective in improving lung function between 2.6 and 4 per cent.

Cystic fibrosis is a fatal lung disease affecting 75,000 children and adults worldwide, and is caused by inherited genetic mutations that vary among different patient groups.

Professor Stuart Elborn, the European lead on the study, said: "This is a very significant breakthrough for people with cystic fibrosis. While we had previously found an effective treatment for those with the 'celtic gene' this new combination treatment has the potential to help roughly half of those with cystic fibrosis, those who have two copies the F508DEL mutation.

"This is another example of how Queen's scientists are working internationally to change lives around the world."



Professor Stuart Elborn

The European Team was led by Professor Stuart Elborn, in the USA by Dr Bonnie Ramsey and Dr Michael Boyle, and in Australia by Dr Claire Wainwright. Twelve patients from the Northern Ireland Adult and Paediatric Cystic Fibrosis Centres participated in the study. The local investigators included Dr Damian Downey and Dr Alistair Reid from the Belfast Health and Social Care Trust.

BOWEL CANCER BREAKTHROUGH MAY BENEFIT THOUSANDS OF PATIENTS

Dr Sandra Van Schaeybroeck, a researcher in the School's Centre for Cancer Research and Cell Biology (CCRCB), and her team have made a significant breakthrough that may benefit patients with bowel cancer by discovering how two genes that cause bowel cancer cells to become resistant to treatments used against the disease.

The research, which was funded by Cancer Research UK, was published in July in the prestigious international journal *Cell Reports*. The activity of the two genes, called MEK and MET, was uncovered when the researchers looked at all the different pathways and interactions taking place in bowel cancer cells.

Dr Van Schaeybroeck and her group found that these bowel cancers switch on a survival mechanism when they are treated with drugs that target faulty MEK genes. But when the researchers added drugs that also block the MET gene, the bowel cancer cells died. The team are now testing a new approach to target these two genes in the most aggressive forms of bowel cancer in a European Commission

funded clinical trial that is being led by Dr Van Schaeybroeck (see Summer 2014 edition of MDDBS News).

Currently over 40,000 people are diagnosed with bowel cancer in the UK each year and over 16,000 patients die of the disease. More than half of patients develop the aggressive form of the disease which does not respond to standard therapy, the five year overall survival in this patient group is less than five per cent.

Dr Sandra van Schaeybroeck, said: "We have discovered how two key genes contribute to aggressive bowel cancer. Understanding how they are involved in development of the disease has also primed the development of a potential new treatment approach for this disease."

Queen's University Vice-Chancellor, Professor Patrick Johnston, said: "Understanding the genes that cause bowel cancer is a key focus of our research. Our discoveries in this deadly disease have identified a new route to clinical application for cancer patients."



Dr Sandra Van Schaeybroeck

Professor David Waugh, Director of the CCRCB, said: "The publication of this research by Dr van Schaeybroeck and her team demonstrates our commitment to performing excellent science here in Belfast that can be directly translated to the clinic."

The clinical trial, which is called MERCuRIC, will deliver personalised medicine to Northern Irish patients and patients from other European countries. Overall, the pan European collaborative effort will involve 13 research/clinical teams from nine European countries.

BOOST FOR CANCER PREVENTION RESEARCH

Centre for Public Health Researchers are helping to spearhead a new £6 million initiative to find better ways to prevent cancer.

It is estimated that more than four in ten cancer cases could be prevented by lifestyle changes, such as not smoking, keeping a healthy body weight, cutting back on alcohol, eating a healthy diet, keeping active and staying safe in the sun.

Professor Frank Kee, Deputy Director of the School's Centre for Public Health (CPH) who directs the UKCRC Centre of Excellence for Public Health Research in Northern Ireland, has been invited to join the International Advisory Board (IAB) of the new Cancer Prevention Science Initiative.

Professor Kee said: "Advancing knowledge and changing lives is at the core of what we do at Queen's University. I am honoured to be part of this initiative which aims to do just that. It is a tribute to the CRUK and BUPA that a bold new initiative like this has been developed. It shows how major research funders want to support prevention science and the value they place in the sort of collaborations across

disciplines that are required to fight cancer. Building capacity in this area is vital if new discoveries are ever to be translated into better outcomes for patients and the population."

"I am delighted to have the opportunity to work with Professor Linda Bauld, the new Cancer Research UK Prevention Champion and with the IAB, and I look forward to seeing the fruits of this initiative in years to come."

Professor Kee also spoke on Creativity in Science at the inaugural 'Sandpit' event for of the new Cancer Prevention Science Initiative in Oxford which took place during the Summer.

The sandpit provided an opportunity for early career researchers across the country from a wide variety of backgrounds to work with research users and stakeholders to generate novel ideas that could lead to new interventions for cancer prevention.

Dr Helen Coleman, Centre for Public Health (CPH), Cancer Research UK Fellow and Lecturer in the UKCRC Centre of Excellence at Queen's joined the 'Sandpit' as



Professor Frank Kee

one of the mentors and facilitators for the participating early career researchers and was able to share her experience of working at the boundaries of different disciplines to drive new forward insights in prevention science.

Cancer Research UK research strategies are placing an increasing focus on prevention science in the battle against cancer and the new initiative will build upon their commitment to the UKCRC Centres of Excellence for Public Health Research.

CCRCB scientist to help find new options to treat aggressive breast cancers



Dr Niamh O'Brien

Dr Niamh O'Brien, from the School's Centre for Cancer Research and Cell Biology (CCRCB) has been awarded a grant of some £100,000 by research charity Breast Cancer Campaign to investigate if the protein 'PIN1' could be used to provide new options to treat patients with more aggressive forms of breast cancer.

50,000 women in the UK are diagnosed with breast cancer each year on average and 12,000 women sadly die from the disease

each year on average. Around 15 per cent of breast cancers are found to be 'triple-negative' - a type of breast cancer that tends to be more aggressive and has limited treatment options.

In some cases of triple-negative breast cancer (and the related 'basal-like' breast cancer), a protein called BRCA1 does not work normally. Dr Niamh O'Brien, says: "Currently, there are drugs in development which could treat breast cancers that lack a working BRCA1 protein, but it is difficult to identify which patients would benefit from these drugs. Identifying the right treatment for a particular patient will greatly improve their chances of survival and help stop more people dying from breast cancer."

"At Queen's University we are committed to world leading research which advances knowledge and changes lives and thanks to the funding from Breast Cancer Campaign we are able to continue this."

Dr O'Brien has previously identified that the production of the PIN1 protein is increased in breast cancer cells which have faulty BRCA1 genes. She believes that PIN1 might

therefore be used as the basis of a test to indicate which patients would benefit from these drugs. Using lab-grown breast cancer cells, Dr O'Brien will find the link between the faulty BRCA1 genes and the increase in PIN1 protein production.

Using samples from breast tumours donated by patients, Dr O'Brien will also find out whether PIN1 could be used to predict the likelihood of a patient's breast cancer spreading, and whether they will respond to existing treatments.

Katherine Woods, Research Communication Manager at Breast Cancer Campaign, said: "Triple-negative and basal-like breast cancer tend to be more aggressive types of the disease, but sadly there are currently no targeted treatments available.

"Dr O'Brien's research could greatly improve the chances of survival for people with more aggressive forms of the disease and bring us one step closer to our goal that by 2025 more improved and personalised treatments for breast cancer will reduce mortality from the disease by half."

CCRCB launches CRUK 5 year research strategy to research community

Earlier this year, the Centre for Cancer Research and Cell Biology (CCRCB) hosted the launch of the new Cancer Research UK 5-year Research Strategy to the research community.

CRUK Chief Executive Harpal Kumar and CRUK Chief Clinician Professor Peter Johnson presented the strategy to over sixty researchers, academics, clinicians and others who attended the event. CRUK Director of Centres, Operations and Reporting Jo Reynolds, then moderated a detailed question and answer session.

CRUK's ambition is to accelerate progress and see three-quarters of patients surviving their disease within the next twenty years. Harpal outlined the charity's agenda to tackle cancer from all angles, increase investment, promote collaboration across a range of

disciplines and pioneer new approaches. The new strategy includes a greater focus on improving patient benefit and the research that will best help achieve this.

Peter Johnson presented several new funding streams and these were outlined for researchers. Funding will be increased for early diagnosis research and research into cancers of unmet need where progress has been slow (lung, pancreatic, oesophageal, brain) and precision medicine. There will also be increased investment in prevention research. There is an overall increased focus on collaboration, including the involvement of new research areas and international approaches. The event finished with a networking lunch, where everyone had an opportunity to ask further questions and find out more information about CRUK's range of grant opportunities.



Professor David Waugh (CCRCB Director) with Harpal Kumar (CRUK Chief Executive), Professor Peter Johnson (CRUK Chief Clinician), Jo Reynolds (CRUK Director of Centres, Operations and Reporting) and Professor Patrick Johnston (QUB President and Vice-Chancellor) at the launch of Cancer Research UK 5-year research strategy

LORD MAYOR CELEBRATES 50 YEARS OF LEUKAEMIA & LYMPHOMA NI



Belfast City Lord Mayor Mairtín Ó Muilleoir with Professor Ken Mills (CCRCB) and PhD students Gemma Logan and Kathryn Clarke

In Spring 2014, outgoing Belfast City Lord Mayor Mairtín Ó Muilleoir visited the Centre for Cancer Research and Cell Biology (CCRCB) at Queens University to unveil a plaque marking the 50th anniversary of local research charity Leukaemia & Lymphoma NI.

The 50 year old charity, formerly known as the Northern Ireland Leukaemia Research Fund, recently underwent a major rebrand and the charity wanted to acknowledge the work of its supporters by unveiling a glass plaque and hosting a coffee morning at the CCRCB. Commenting at the launch, Lord Mayor Mairtín Ó Muilleoir said: "It is with great pleasure I unveil this beautiful glass plaque to mark Leukaemia & Lymphoma NI's

50th anniversary of scientific research into leukaemia and associated blood cancers. The haematology research laboratories within the Centre for Cancer Research and Cell Biology (CCRCB) are doing sterling research work and contributing greatly to the fight against cancer. I congratulate those hard-working researchers and also the dedicated volunteers whose support has allowed the charity to reach this landmark anniversary. I wish them luck for the next 50 years."

Professor Ken Mills, Chair of Experimental Haematology, said: "This plaque marks the hard work that has gone into leukaemia and lymphoma research in Northern Ireland which is greatly appreciated by the CCRCB. The plaque is testament to all those working to enhance scientific research into leukaemia and associated blood cancers. It is also testament to those volunteers who have supported the charity in the past 50 years and for that support we are grateful. "Our research into leukaemia, lymphoma and myeloma is internationally renowned and our world class insights need to be supported and encouraged. The research we carry out seeks to understand how leukaemia and other related diseases develop. From this important work we can discover better ways of treating these diseases and ultimately improve the outcome and quality of life for patients.

"Leukaemia and Lymphoma NI recently rebranded in order to reinvigorate it and allow it to continue its fundraising and research efforts so it is quite timely that we unveil this plaque as a symbol of its commitment to the fight against blood cancers".

Mr Bill Pollock, Chair of Leukaemia & Lymphoma NI, said: "The unveiling of this plaque is a symbol of a new and exciting era for Leukaemia & Lymphoma NI and marks the dedication and commitment by our scientific researchers and supporters over the last 50 years. We've recently made a £1.5 million three year investment which will enable researchers and clinicians in Queen's University Belfast and across Northern Ireland to continue and expand their internationally recognised research.

"The number of lives and loved ones that have been saved through the donations raised and spent here on scientific research is significant, and with our new vision for the charity we are confident that we will be able to continue advancing the fight against blood cancers for many years to come. We would like to say thank you to our supporters for all of the hard work and fundraising that has enabled Leukaemia & Lymphoma NI to reach its 50th anniversary."



Professor Richard Kennedy

NEW GENE EXPRESSION BIOMARKER TEST DISCOVERED

Professors Richard Kennedy and Paul Harkin from the School's Centre for Cancer Research and Cell Biology (CCRCB), in collaboration with Professor Charlie Gourley in Edinburgh University and Almac Diagnostics, have discovered a novel biomarker to help guide the treatment of high-grade serous ovarian cancer (HGSOC) and avoid harm by inappropriate use of anti-angiogenic drugs.

The associated study, on which Richard Kennedy was the senior author, was selected for an oral presentation at the American Society of Clinical Oncology (ASCO) 2014 annual meeting. The organizing committee also awarded the study "Best of ASCO".

The AADx biomarker predicts which patients with HGSOC are likely to benefit from standard chemotherapy and identifies those who potentially come to harm through the addition of antiangiogenic drugs such as Avastin (bevacizumab). The project started in 2009 with the transcriptional analysis of a group of 200-plus Scottish patients to identify the major molecular subtypes. The team identified 3 subtypes among these HGSOC patients. Two had angiogenic gene upregulation, which means that they had high expression of genes involved in vascular development during angiogenesis. They were combined to make the "proangiogenic" subgroup. The subgroup with no angiogenesis was

characterized by up-regulation of immune genes and was labeled the "immune" subgroup. A 63-gene expression biomarker was developed to prospectively identify the immune subgroup, which had the better survival. The test was subsequently validated as a good prognostic biomarker for overall survival following standard chemotherapy in an independent validation dataset (HR = 0.32 [0.19 - 0.54]).

Next, the team hypothesized that the immune response subgroup, which had no angiogenesis-related gene expression, would benefit less from the anti-angiogenic drug Avastin. In collaboration with the MRC clinical trials unit, they applied the biomarker to 285 HGSOC translational research samples from the ICON7 study. This was an international phase III study in which ovarian cancer patients received standard carboplatin and paclitaxel chemotherapy or standard chemotherapy plus Avastin. In this dataset, the gene signature showed a difference in impact of Avastin on progression-free survival between the immune response and "proangiogenic" (upregulation) subgroups (P = .016). For the immune subgroup (41% of cases), the addition of Avastin conferred a worse progression free survival (HR = 1.73) and overall survival (HR = 2.00) compared with chemotherapy alone. Importantly, Avastin halved the median progression free survival from

36 down to 18 months in the immune subgroup, the group that did well with standard chemotherapy treatment.

"The immune signature identified patients whose outcome was adversely affected by Avastin, and there was a trend toward improved outcomes with Avastin outside of this subtype. This is the first assay to convincingly predict sensitivity to anti-angiogenic therapy in any cancer," Professor Gourley said at the ASCO presentation.

Speaking at a 'Highlights of the Day' Session at ASCO, Rebecca Kristeleit, MD, PhD, medical oncologist at University College of London Cancer Institute, said: "This is a very exciting study because it is the first time that researchers have managed to identify subgroups that will not respond to Avastin. Patients with the immune gene signature could likely be spared the costs and possible side effects of Avastin treatment. This is a powerful tool to help us refine treatment."

Richard Kennedy and Paul Harkin, along with their colleagues in Almac Diagnostics, presented the assay to the FDA in Washington in May, and are now in the process of bringing it into the clinic early next year.

Antibacterial resistance a cause for major concern according to world leading Cystic Fibrosis expert

World leading Cystic Fibrosis experts at Queen's have called for greater research to address the major concern of antibacterial resistance.

Professor Stuart Elborn, an international authority on respiratory medicine, said that more funding and further research are required into antibiotic resistance in order to improve patient outcomes for people with Cystic Fibrosis.

In his paper, *Infections in chronic lung diseases 2*, which was recently published in *The Lancet*, Professor Elborn reviews current research into infections in chronic lung diseases. Professor Elborn and his colleagues state that while not all resistance found in bacteria is caused by antibiotics, the increasing resistance to antibiotics is proving a major problem in treating people with Cystic Fibrosis.

Speaking about his research Professor Elborn, Dean of the School of Medicine,

Dentistry and Biomedical Sciences at Queen's, said: "Our review of current research has found a need for further investigation into antibacterial resistance. While antibiotic treatment has undeniably resulted in increased life expectancy for patients with Cystic Fibrosis during the past 50 years, the emergence of antimicrobial resistance is a cause for major concern.

"We need more research into how to improve cystic fibrosis patient outcomes while reducing antibiotic resistance. We need to look at the use of compounds that may work against bacteria in a way that helps our current antibiotics to be more effective. Such compounds are readily available for treatment of other conditions. At Queen's we are leading the way and are working on developing some of these compounds.

"Queen's University, through its internationally renowned research,



Professor Stuart Elborn

is committed to advancing knowledge and changing lives."

The full journal paper of Professor Elborn's review and recommendations is available at: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)61137-5/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)61137-5/fulltext)

Centre for Experimental Researchers Secure Juvenile Diabetes Research Foundation Awards

Researchers in the School's Centre for Experimental Medicine (CEM) have been successful in securing prestigious awards from the Juvenile Diabetes Research Foundation (JDRF).

Dr Reinhold Medina has been awarded a JDRF Career Development Fellowship which carries a value of \$736,000, to fund a five-year investigation into blood vessel damage in the retina and the role of stem cells.

Dr Medina and his team plan to study vascular stem cells, which circulate in the blood, and how they become damaged during diabetes. They are seeking to use these cells to test drugs for diabetic patients as a novel 'personalised medicine' solution for diabetic retinopathy.

Professor Heping Xu was also awarded a two-year grant from the JDRF, valued at \$498,000. The team consisting of co-researchers Professors Tim Lyons and Noemi Lois and Dr Mei Chen, will study diabetic retinopathy, using already-existing drugs to try to 'switch off' a molecule that has been identified as central to the development of the illness. This project will combine laboratory and clinical science to achieve more rapid benefits for patients.

Commenting on the recent awards, Director of the School's Centre for Experimental Medicine, Professor Alan Stitt, said; "These awards demonstrate the international reputation of ophthalmology research at Queen's and the efforts being made to achieve significant outcomes for patients with sight-threatening conditions."



Dr Reinhold Medina

QUEEN'S UNIVERSITY TO TRANSFORM HOW RESEARCH DISCOVERIES ARE TRANSLATED INTO REAL BENEFITS FOR PATIENTS

Scientists from Queen's University Belfast travelled to Brussels to launch a ground-breaking initiative which could radically improve how research discoveries are translated into real benefits for patients across Europe.

Endorsed by all three of Northern Ireland's Members of European Parliament (MEPs), the initiative is led by Professor Mark Lawler, Chair in Translational Cancer Genomics at the School's Centre of Cancer Research and Cell Biology (CCRCB). Known as the Roadmap for Personalised Medicine in Europe, the initiative is a collaboration involving patients, doctors and scientists, as well as the pharmaceutical and biotech industries. It is aiming to make personalised medicine available to all European patients.

Professor Lawler said: "In many diseases, we have tended to use a 'one size fits all' approach and give every patient the same treatment, yet a significant proportion of patients don't respond to this treatment and can develop serious side effects.

"Understanding the genetics of the disease, say for example, bowel cancer, has made us realise that all bowel cancers are not the same and therefore a 'one size fits all' approach cannot work for all patients. New technologies allow us to understand the type of disease based on the genetic make-up and therefore this information lets us personalise the treatment for each of those bowel cancer patients.

"Getting the right treatment to the right patient at the right time can greatly improve our chances in the fight against deadly diseases such as cancer.

"This personalised medicine approach holds great promise and has already shown benefit in many diseases including cancer, heart disease, diabetes and respiratory disease. However, the real challenge is how to make sure that it becomes part of the standard of care for Europe's citizens.

"Today we provide a blueprint of how this can be achieved and call on the Members of the European Parliament (MEPs) here today and to national health ministers to embed personalised medicine into health systems throughout Europe."

Suggestions in the blueprint include the development of a European Translational Research Platform to ensure the efficient conversion of exciting research discoveries into new diagnostics and therapies, and the creation of a new regulatory framework that ensures a more rapid take up of personalised medicine for the benefit of patients.

Commenting on the initiative, Queen's Vice Chancellor, Professor Patrick Johnston said: "Today's launch highlights how Queen's is at the forefront of world-class medical research and how Queen's scientists are taking a leadership role and making an impact in European healthcare by addressing the international challenges and needs of today's society."

Mr Jim Nicholson Northern Ireland MEP, who chairs today's session in Brussels, said: "Personalised medicine gives hope for all our patients. I am proud to be chairing this session particularly as it is local research which is leading the way in this important initiative and it will make a real difference to patients' lives."

Mrs Diane Dodds MEP commented: "I recently welcomed Professors Mark Lawler and Patrick Johnston to Parliament for the launch of the European Cancer Patient's Bill of Rights, and I am delighted to see Queen's University again leading the way in terms of European best practice with this innovative initiative on personalised medicine."

Northern Ireland's third MEP Ms Martina Anderson said: "I commend Professor Lawler for his tireless work to improve both patient and professional knowledge of cancer and its effects. During my time as an MEP, I have prioritised the fight against cancer in my own work on EU legislation on tobacco products."

Professor David Waugh, Director of the School's Centre of Cancer Research and Cell Biology (CCRCB) said: "This is another great example of how our



Professor Mark Lawler

researchers and scientists at Queen's University are impacting on society, as this initiative creates a pathway to bring our best scientific discoveries to the clinic for the benefit of our patients and which may also lead to a new model of healthcare for Northern Ireland and beyond. A 'personalised medicine' approach allows innovative science to be translated into new diagnostics and treatments."

Professor Paul Harkin President and Managing Director of Almac Diagnostics said: "We welcome this Queen's-led initiative. Personalised medicine has the potential to revolutionise medical diagnostics and contribute significantly to the growth of this sector in Northern Ireland. At Almac Diagnostics we are working closely with CCRCB researchers to realise this vision."

MEDICAL RESEARCHER'S WORK ON RESPIRATORY ILLNESSES REDUCES NEED FOR ANIMAL TESTING

A major research project into respiratory illness, which reduces the need for animal testing, has been recognised internationally.

Leading the pioneering study, Rebecca Clarke from the School's Centre for Infection and Immunity, was awarded a €50,000 grant from herbal-medicine producer Bionorica to continue her research into respiratory illness, using human stem cells rather than traditional testing on mice, rats and guinea pigs.

The research grant will allow Rebecca to undertake further study of common ailments such as coughs and asthma within the Queen's School of Medicine, Dentistry and Biomedical Sciences.

She explained: "My PhD project was about establishing an alternative model for drug screening rather than using animal testing. It's the first in-vitro model of its kind and it will be very exciting to work alongside Bionorica in applying it to plant-based therapies.

"What I did was to isolate cells from human dental pulp and differentiate them into neuronal cells. Using this model, I was able to demonstrate that they looked and behaved like

nerves, particularly in their expression of channels that sense environmental irritants. That opened the door to me being able to explore the behaviour of sensory nerves in the airways of the human body – their response to stimuli such as cold air or cigarette smoke and whether these responses could be mitigated by plant-based medicines."

Ms Clarke is due to complete her PhD in September but will use her prize money to fund a year's post-doctoral research, using her neuronal model, at Queen's. Her PhD was funded by the National Centre for the Replacement, Refinement and Reduction of Animals in Research. Although she acknowledges that animal testing has its place in medical research, she believes it's important to develop models that will accurately predict human responses.

She said: "In this particular area of research, it has been noted that there are marked differences between species, so I wanted to develop a human model that would deliver more representative results. Human airway nerves are extremely difficult to study, making it hard to come up with cures for common respiratory ailments, so that was another reason for wanting to develop a new model."



Dr Rebecca Clarke

Ms Clarke was one of only 20 recipients worldwide of the Bionorica Global Research Initiative 2014 award and the only winner from the island of Ireland. Consultant Physician and Senior Lecturer in Respiratory Medicine at Queen's, Dr Lorcan McGarvey said: "Rebecca has worked extremely hard and we are delighted with her award. She has helped develop an important model that will help us better understand the role of sensory nerves in chronic pain and cough." Pharmacist and CEO of Bionorica, Dr Michael Popp said: "Such a large and high-quality response to the first-time call for submissions proves that herbal medicine is gaining further relevance among the scientific community."

BIOLOGICAL INSIGHTS FROM 108 SCHIZOPHRENIA-ASSOCIATED GENETIC LOCI



Twenty five years' work on the genetics of schizophrenia at Queens University by a group led by Dr Tony O'Neill of the School's Centre for Public Health (CPH) has resulted in a multicountry study examining the genetics of schizophrenia which found 108 genetic clusters associated with the disease, offering the best evidence to date about which genes play a significant role in schizophrenia. The study was recently published in the journal Nature. This has the potential to provide new insights and treatments for an illness that can affect up to 1% of the population.

The group have also started work on a project funded by the Medical Research Council looking at how these genes may influence outcome and treatment. Further discussion on the significance of these findings are discussed at <http://sfari.org/news-and-opinion/blog/2014/guest-blog-schizophrenia-milestone-holds-lessons-for-autism>.

Centre for Medical Education shares Surgical Teaching Resource with Burao Medical School, Somaliland

The Centre for Medical Education continues to develop an exciting partnership with the Medical School in Burao, Somaliland.

Mr Robin Baker, Clinical Senior Lecturer and Consultant Vascular Surgeon, presented Dr Gavin McClintock with the phase 3 and 5 surgery teaching material which is used in the current undergraduate surgery course at Queen's. Dr McClintock will use these resources to help establish the undergraduate surgery programme in Burao. The shared material consists of 58 state-of-the-art surgery lectures and accompanying tutorial manuals, produced over the past 5 years by Northern Ireland's top surgical experts.

Dr Gavin McClintock, a graduate of Queen's, is currently Head of the Department of Medicine in the University of Burao. The Medical School of Burao was established recently to train the doctors desperately needed to provide medical care in this country.

Mr Robin Baker said, "We are very grateful to our NHS surgical and anaesthetic consultants who gave permission for the material to be shared in this way. We look forward to providing an update from Burao regarding the use of these materials in the New Year."



Mr Robin Baker and Dr Gavin McClintock

Centre for Cancer Research and Cell Biology Summer Studentship/Research Programme 2014



Students from the CCRCB Summer Studentship / Research Programme 2014

The Centre for Cancer Research and Cell Biology (CCRCB) Summer Studentship/Research Programme kicked off this year with a welcome from Professor Kevin Prise, Deputy Director, followed by the requisite health and safety briefing before the students met with their supervisors and research teams.

The 2014 cohort of students come from a range of academic backgrounds within the University, including biomedical science, biological science, medicine and dentistry. There were also students from universities in Dundee, Warwick, Cardiff, Cambridge and New York taking part in the programme. Some Brazilian students

involved in the "Science without Borders" scheme have added to the international flavour of the summer programme.

This year's projects reflect the full range of research in the CCRCB from haematological malignancies; breast, gastrointestinal and genitourinary cancers; radiation biology, molecular pathology and bioinformatics. The results from the projects were displayed in a poster session in August. The students have been funded from a variety of sources including the CCRCB, the School of Medicine, Dentistry and Biomedical Sciences, Leukaemia & Lymphoma NI, Almac and the EU Epo-CAN project.

CENTRE FOR MEDICAL EDUCATION (CME) HOSTS ANNUAL GP TUTORS MEETING

The Centre for Medical Education hosted their annual meeting for GP tutors in the 4th Year course at Riddell Hall on the 10th September 2014. Over 150 GP tutors from across the province attended this training session and representatives from NIMDTA and the RCGP (NI) were also present.

Attendees including colleagues within the School, were welcomed by Professor Margaret Cupples who highlighted the group's annual report of academic activities and achievements. Professor Pascal McKeown, Director of the Centre for Medical Education, set the scene for the meeting with an overview of the medical degree curriculum. He showcased some of the many notable achievements by the CME, its staff and students over the last year. Dr Drew Gilliland gave a brief history of the student-nominated Robin Harland

Award for Excellence in Undergraduate Teaching which he invited Dr John O'Kelly (Chair of the RCGP NI) to present to Dr Scott McIver (Finaghy Health Centre, Belfast). Dr Tinekea Fearon (Keady) and Dr Fiona Colton (Ballyowen) were also recognised as being worthy runners up.

Professor Tim Dornan (CME, see page 4) presented a very engaging talk on 'Experience based learning: how medical students learn from workplace experiences'. Dr Gerry Gormley then presented an update, and feedback, about the Phase 4 GP module. Aidan Bannon (Final year medical student) shared his experience of his general practice placement. Dr Nigel Hart (CME) and Dr Janet Rodgers (GP, Carryduff) presented an overview of the General Practice attachment within the



Dr John O'Kelly (Chair of the RCGP NI) presenting Dr Scott McIver (GP tutor, Finaghy Health Centre) with the Robin Harland Award

hugely successful Assistantship Scheme (FY0) for final year students. Feedback from participants indicated that this was a highly successful meeting, and the importance of general practice in the undergraduate medical curriculum at Queen's.

STUDENTS AND STAFF ORGANISE SECOND ANNUAL STUDENT RESEARCH CONFERENCE

The second annual Student Research Symposium, organised by the Queens University Academic Medicine Society (QUAMS) and School of Medicine, Dentistry and Biomedical Sciences' staff took place on Wednesday 12th November in Riddell Hall and was attended by over 60 students from across the medical school.

This was the second conference funded under the Academy of Medical Sciences INSPIRE initiative, for which the university secured a £10,000 grant back in March 2013.

Over 20 students presented a range of oral and poster presentations during the afternoon. The subjects areas were of a wide variety of backgrounds from Summer Studentship projects on Cystic Fibrosis to global health intercalated degree projects on topics such as Female Genital Mutilation in Sudan.

The judges commented on how high the standard was of all the presentations and in the end identifying the winners was an extremely hard task!!

The keynote speech this year was given by Mr Edward Fitzgerald, a trainee surgeon from the Royal London Free Hospital. He

gave a very empowering talk about some of the challenges that students can face in trying to engage with research, some tips on how to overcome these struggles as well as his experience founding the student-led national research and audit network-StarSURG.

Nathan Cantley, 4th year Medical Student and convenor of the Symposium said, "This year has been great with having more students submitting abstracts to present and a great continuation of the collaboration between staff and student in this project. At QUAMS, we feel it is so important for students to be able to have this forum to present the research they have conducted to their peers and we hope this initiative can continue for years to come."

Dr Danny McAuley added "It was very impressive to see the enthusiasm from our medical students to engage in research and it is reassuring, on the basis of the work presented, to see that the future of academic medicine at QUB was bright and will continue to flourish."

It is hoped that this conference can continue for years to come as a central project to the universities engagement with students about research. Furthermore QUAMS hopes to try and continue to empower students to



continue research long after they graduate from medical school. If you have ideas on how we can improve this initiative or any of the QUAMS projects, or if you want to get involved in the organisation of next year's conference we would love to hear from you using the contact details below.

For more information about the INSPIRE projects, about QUAMS and about ideas you have to engage students with an research opportunities, don't hesitate to contact Nathan Cantley, President of QUAMS at quams@qub.ac.uk.

DIABETES UK PATIENT GROUP VISIT



Seven young guests accompanied by their parents attended the Diabetes UK Patient Group Visit to the School's Centre for Experimental Medicine (CEM), together with Mr Alan Hanna, National Director of Diabetes UK NI, and other Diabetes UK representatives.

The afternoon event, arranged by Dr Derek Brazil, Professor Tim Lyons (Deputy Director of CEM) and Dr Michelle Hookham involved a general discussion about the on-going diabetes research programmes within CEM, including details of our work on diabetic eye disease, kidney disease and preeclampsia.

The young patients and their parents also shared their personal experiences and knowledge of living with diabetes on a day-to-day basis.

The guests then embarked on a guided tour of the CEM laboratories, and enjoyed an opportunity to look at some cells through a microscope.

After some refreshments, researchers Drs Judith Lechner, Jose Romero, Arjun Krishnakumar and Ms Olivia O' Leary talked about their Diabetes UK-funded research projects and the CEM research team thoroughly enjoyed the interaction with our guests.

Professor Alan Stitt, Director of the Centre for Experimental Medicine, said. "We would like to thank Mr Hanna and his colleagues for organising this event, and we very much appreciate the continued support of our research at Queen's from Diabetes UK".

LORD MAYOR'S RECOGNITION AWARD

The support that the School's Centre for Biomedical Sciences Education (CBMSE) provides for students was recognised by the Lord Mayor, Nichola Mallon, at a ceremony held in Belfast City Hall in June as part of her "Unsung Heroes" campaign. Through this initiative the Lord Mayor aims to recognise individuals and groups whose work enriches the life of the city in ways that do not normally draw public attention.

The Lord Mayor presented Dr Tom Gardiner (CBMSE Director) and Dr Stephen McCullough (CBMSE Deputy Director) with a Certificate of Commendation in recognition of the significant, worthwhile and outstanding contribution made by the Centre to the City of Belfast and its residents.

Dr Gardiner said "We are hugely honoured to be recognised in this way by the Lord Mayor as the First Citizen of the city that is home to our University."



Pictured with the Lord Mayor are the Director of the Centre for Biomedical Sciences Education Dr Tom Gardiner (right) and Deputy Director of the Centre, Dr Stephen McCullough (left)

CENTRE FOR CANCER RESEARCH AND CELL BIOLOGY STAFF PARTICIPATE IN 5,500 NI WOMEN 'RACE FOR LIFE'

Over 5,500 women took part in Cancer Research UK's largest fundraiser in Northern Ireland – Race for Life – at Stormont Estate in June this year. In order to accommodate the large number of women who registered, two 5K races were held, one in the morning and one in the afternoon. Cool FM DJ Sonya Mac was the MC for the day's events and although there was some rain around mid-day, it didn't dampen spirits at all. Dr Keara Redmond, PhD student Phil Burn and CRUK Senior Research Nurse Ruth Boyd helped out on the day by cheering on all the participants and handing out medals (along with their thanks) to runners as they completed the course. The Belfast Race for Life event was expected to raise over £330,000.



Phil Burn and Keara Redmond didn't let a bit of rain bother them at Race for Life

CENTRE FOR CANCER RESEARCH AND CELL BIOLOGY HOSTS SUCCESSFUL TEACHERS DAY EVENT



AS- and A-Level Biology teachers once again gathered at the School's Centre for Cancer Research and Cell Biology (CCRCB), for the Information Day on Gene Technology sponsored by Cancer Research UK and the CCRCB. Thirty teachers attended the event in June 2014, from a wide range of schools throughout Northern Ireland.

After a welcome from Professor Kevin Prise, the morning session included talks by Professors Patrick Morrison and Mark Lawler. Professor Morrison's talk was titled 'Giants, Kings, Queens and Genes' and was an engaging overview of genetics and the myriad of ways it can be used – including paternity testing, catching criminals and establishing Northern Ireland links to long dead famous giant.

Professor Lawler's talk 'Personalised Medicine – Are We There Yet?' gave an insight into genetics in terms of cancer diagnosis and treatment, and how personalised medicine will be the way forward. Using examples of molecular analysis directing new drug development

in leukaemia and bowel cancer, Professor Lawler outlined the importance of continuing to develop an understanding of the genetic makeup of cancers in order to provide the translation 'from bench to bedside and back again'.

After lab tours in the CCRCB and lunch, the teachers headed to one of the teaching labs in the MBC for some practical work which was led by Dr Jules Gorski, and supported by 10 researchers from across the CCRCB. The group got to load a gel and analyze the results. They also participated in two activities that they can take back to the classroom – extracting DNA from a strawberry and making a DNA double helix from jelly babies.

The evaluations of the day were overwhelmingly positive with one attendee saying 'It was a really interesting and useful day. It improved my knowledge, which in turn will impact on my teaching'. Another said 'It was a fantastic day; the scientists at our bench were great and we not only learned a lot but had a great time as well'.

CANCER RESEARCH AND CELL BIOLOGY RESEARCHERS INSPIRE NEXT GENERATION



Phil Burn and Keara Redmond didn't let a bit of rain bother them at Race for Life

Sentinus is the home of STEM (Science, Technology, Engineering & Mathematics) enrichment and enhancement activities for schools in Northern Ireland. Their annual exhibition was held in the Odyssey Arena on 20 June and over 2,500 students, both primary and secondary, from across Northern Ireland attended. The event encourages students to take up STEM subjects and many who attended entered their own science projects which were judged at the event.

Throughout the day, about 300 students visited the Cancer Research UK stand and participated in two interactive activities. The stand was manned throughout the day by volunteer Centre for Cancer Research and Cell Biology (CCRCB) researchers Jess Niesen, Mark Aurel Fuchs, Maria Rea, Michael Moran, Vicky Bingham and Pamela Maxwell. They helped students to extract DNA from a strawberry and to make a DNA double helix out of jelly babies. They also talked with the students about DNA generally and its importance in cancer research.

SCHOOL OF MEDICINE, DENTISTRY AND BIOMEDICAL SCIENCES PARTNERS WITH EAST BELFAST COMMUNITY GROUPS

Every year, the School of Medicine, Dentistry and Biomedical Sciences joins with the community and voluntary sectors to give undergraduate medical students an opportunity to help out with and experience at first hand community based health initiatives designed to improve public health.

Seven third year medical students have recently spent three weeks on placement with community groups in east Belfast; meeting locally based health professionals, and practising their skills with early year's groups, the elderly, men's health and physical activity. This gave students a great opportunity to experience the range of support groups that work together in the community and voluntary sectors to provide improvements in public health and preventive medicine.

The School would like to express thanks to all the participating groups for facilitating this exciting initiative: - East



Professor Sheena Lewis and Dr Ruth Hunter (pictured right with some of the course participants)

Belfast Community Development Agency, Surestart East, Tullycarnet Neighbourhood Collective, Engage with Age and East Belfast Partnership.

QUEEN'S INVITES PUBLIC TO LEARN ABOUT NEW DISCOVERIES IN EYE DISEASE RESEARCH

The latest, cutting-edge research into eye disease carried out by medical researchers at Queen's was unveiled at a free public information evening in the University's Great Hall on Tuesday 23 September 2014.

The major theme of the Centre for Experimental Medicine (CEM) event was ophthalmology and featured the ongoing efforts of Queen's researchers and their work into eye disease. Professors Augusto

Azuara-Blanco, Usha Chakravarthy and Noemi Lois showcased recent advances within CEM.

Topics included 'How diabetes affects the retina', and the audience heard about two new Queen's projects which have been awarded international funding from the New York-based Juvenile Diabetes Research Foundation (JDRF).



Queen's researchers helping to make the 'big C' smaller

Researchers from the School's Centres for Cancer Research and Cell Biology (CCRCB) and Public Health (CPH) and the School of Pharmacy provided an insight into their work and its impact on cancer patients in Northern Ireland at the Cancer Research: Advancing Patient Care event held at Riddel Hall, in June 2014. Members of the public were invited to drop-in for a chat with those working in cancer nursing, palliative care, drug discovery and the running of clinical trials, and to hear presentations by four of Queen's top cancer researchers, including:

- Professor Tracy Robson (School of Pharmacy), who pioneered the development of a new drug which inhibits the growth of cancer tumours by starving them of oxygen and nutrients. The drug, developed with Almac Diagnostics, will be trialled on ovarian cancer patients in Northern Ireland later this year.
- Professor Joe O'Sullivan (CCRCB), a world-leader in the development of new radiation treatments for prostate cancer, including a new way to combine radiation therapy and chemotherapy to treat prostate cancer which has spread to the bone.
- Professor Richard Kennedy (CCRCB) who, in collaboration with Almac Diagnostics, has developed new tests to guide oncologists and patients in their choice of chemotherapy treatment, allowing it to be 'tailored' to an individual's specific needs.
- Dr Anna Gavin (CPH), Director of the Northern Ireland Cancer Registry at Queen's, which gathers 'cancer intelligence' and provides an information hub for clinicians, policy-makers, charities, and all those working to reduce the burden of cancer.

Professor David Waugh, Director of the School's Centre for Cancer Research and Cell Biology, said: "Around 8,600 new cases of cancer are diagnosed each year in Northern Ireland, but thanks to



Professor David Waugh, Professor Joe O'Sullivan, Professor Richard Kennedy, Dr Anna Gavin & Professor Tracy Robson

developments in diagnosis and treatment, more people than ever are surviving the disease".

"There are now at least 50 people walking around Northern Ireland each year who, less than twenty years ago, would have died. Our cancer survival rates are among the best in the UK and that is due, in no small part, to the work of Queen's cancer researchers".

Around 300 experts from 40 countries currently work across cancer research programmes at Queen's. The University received the 2011 Diamond Jubilee Queen's Anniversary Prize for its leadership of the Northern Ireland Comprehensive Cancer Care Services programme, and its impact in reducing cancer mortality rates over the last decade. The award is the most prestigious honour available to any UK higher education institution.

Queen's was one of the first locations in the UK to be designated a Cancer Research UK Centre of Excellence in 2009. Since then, the University has also become a national Movember Centre of Excellence in Prostate

Cancer Research. It has also strengthened its links with industry and is now home to a dedicated Almac Discovery laboratory, where Almac and Queen's scientists are driving forward a £13million partnership to identify parts of tumours that are susceptible to treatment, and to develop new drugs to target them.

Queen's Vice-Chancellor, Professor Patrick Johnston, who is widely regarded as one of the world's top cancer researchers, said: "People often read and hear in the media about the world-class cancer research that is taking place at Queen's, and this event offered people the opportunity to actually meet and hear more from the people behind the headlines.

"Queen's is leading on the initiative to create a European Cancer Patients Bill of Rights, launched in the European Parliament on World Cancer Day earlier this year. As part of the European Cancer Concord we are urging member states to help underpin improved and equal access to cancer care for all European citizens.

QUEEN'S PROFESSOR APPOINTED CHAIR OF THE NIHR PUBLIC HEALTH RESEARCH PROGRAMME

Professor Frank Kee, Director of the Centre of Excellence for Public Health NI and Deputy Director of the School's Centre for Public Health has been appointed Chair of the National Institute for Health Research (NIHR) Public Health Research Programme. Professor Kee joins Professor Martin White from Newcastle University who is the newly appointed Director of the programme.

The NIHR Public Health Research (PHR) Programme funds research to evaluate non-NHS interventions intended to improve the health of the public and reduce inequalities in health.

Queen's Vice-Chancellor, Professor Patrick Johnston, said: "I would like to offer my congratulations to Professor Kee on this significant appointment. This role reflects

the ongoing contribution to public health that Professor Kee makes through his leadership in the world-class Centre of Excellence for Public Health at Queen's."

Speaking about his appointment, Professor Kee said: "I am delighted and honoured to have been appointed to chair of the NIHR Public Health Research Programme over the next five years. The programme has become central to the public health landscape in the UK and has contributed to a major expansion of evaluation research. I look forward bringing my experience from the Centre for Public Health at Queen's to this role and continue to make a meaningful impact on the health of the population."

Professor Frank Kee and Professor Martin White succeed Professor



Professor Frank Kee

Catherine Law, whose term of office is due to come to an end in 2014.

Chief Medical Officer, Dame Sally Davies FRS RMedSci, said: "I would like to express my thanks to Catherine Law for her superb leadership over the first six years of the NIHR Public health Programme. I am confident that Professors White and Kee are the perfect people to build on her work and ensure that the programme continues to fund high quality scientific research to support public health decision-makers."

Dr Bronagh Blackwood, elected as President of the European Federation of Critical Care Nursing

Dr Bronagh Blackwood, Centre for Infection and Immunity (CII) has recently been elected as President of the European federation of Critical Care Nursing associations at the Spring Meeting in Reykjavik, Iceland for a 3-year term of office.

The federation comprises a Council of 26 representatives from National Associations across Europe representing approximately 25,000 European critical care nurses. Its mission is to promote collaboration and equity among the national critical care member associations in order to improve nursing care of critically ill patients and their families.



Dr Bronagh Blackwood

ASCO Merit Award for Queen's Clinician

Congratulations to Dr Richard Turkington, who received an ASCO Merit Award at the American Society of Clinical Oncology conference in Chicago in June 2014. This is the first time that the award has been given to a trainee from Belfast. Richard's abstract was entitled 'Association of a DNA Damage Response Deficiency (DDR) assay and prognosis in early stage Oesophageal Adenocarcinoma.' Richard has since taken up a position as a Clinical Senior Lecturer in Clinical Oncology in the School's Centre for Cancer Research and Cell Biology.



Dr Richard Turkington

Queen's University Vice-Chancellor receives top European award

Queen's University Belfast's Vice-Chancellor, Professor Patrick Johnston, whose work has transformed cancer care in Northern Ireland, has been elected as a Fellow of the European Academy of Cancer Sciences.

The Academy, which was launched in 2009, is an independent advisory body of highly distinguished oncologists and cancer researchers which aims to reduce the death and suffering caused by cancer in Europe.

Professor Johnston, whose leadership has seen cancer survival rates in Northern Ireland move from the bottom of the UK league table to near the top, has been honoured for his outstanding contribution to cancer research.

Professor Johnston, former Dean of the School of Medicine, Dentistry and Biomedical Sciences and previously Director of the School's Centre for Cancer Research and Cell Biology,

has worked alongside some of the world's leading cancer experts and patient groups to launch a European Cancer Patient's Bill of Rights. The result of two years of work by the European Cancer Concord and Co-Chaired by Professor Johnston, it aims to address the disparities that exist in cancer care from one European country to the next.

Commenting on the prestigious accolade, Professor Johnston said: "I am delighted to have been elected a Fellow of the European Academy of Cancer Sciences. It is an honour and privilege to have had my contribution to cancer research recognised in this way. I look forward to working with my European colleagues in the Academy to develop strategies and further research to improve cancer care across Europe."



Professor Patrick Johnston

FORMER QUEEN'S DENTISTRY STUDENT IS NEW DIRECTOR OF DEFENCE HEALTH IN NEW ZEALAND

Former Queen's University Dentistry graduate Andrew Gray is the new Director of Defence Health in New Zealand. Colonel Gray is the first non-doctor to take up the role.

On his appointment, Colonel Gray said "Our focus now is not just on treatment but on education, and helping people, in terms of strengthening and conditioning so that they avoid injury. We want our people to play a bigger role in looking after themselves and so prevent a lot of disease and injury."

Andrew graduated with a Bachelor of Dental Surgery from The Queen's University of Belfast in 1991 and he completed Vocational Training in Belfast. From 1993 – 1996 Colonel Gray worked at the University of Otago as a Clinical Tutor, Clinical Co-ordinator and Lecturer. Colonel Gray returned to

London in 1997 and worked in general dental practice, City of Westminster. Andrew is accredited in Forensic Dentistry with the New Zealand Society of Forensic Deontology and served in the Pacific as part of disaster relief to Niue in 2005 and in New Zealand as part of NZDF Disaster Victim Identification support to the 2011 Christchurch Earthquake.

He is a graduate of the United States Army Medical Strategic Leadership Program and is an honorary affiliate of the United States Army Medical Department Regiment.

Colonel Gray is on the New Zealand Oral Health Clinical Leadership Board. He has sat on the New Zealand Dental Association Board and on the New Zealand Dental Association Executive.



Colonel Andrew Gray

DENTAL STUDENT AND FORMER CCRCB SUMMER STUDENT WINS PRESTIGIOUS PRIZE

Rebekah Eves, a 4th year dental student, won the Hatton Prize at the International Association for Dental Research, which was held in June 2014 in Cape Town, South Africa. The prize is the highest honour bestowed for undergraduate dental research and is a great achievement for Rebekah, who carried out her research as part of the summer studentship program in the School's Centre for Cancer Research

and Cell Biology (CCRCB) in 2013. Rebekah carried out her research under the supervision of Dr Adam Pickard in Professor Dennis McCance's laboratory with help from Dr Jackie James, and was working on the role of myofibroblasts on invasion of oropharyngeal cancers. The work showed how myofibroblasts develop from tissue fibroblasts and showed a potential role in predicting early recurrence of disease.



Rebekah Eves

Christopher Kirk, 2nd year undergraduate medical student, talks about his appointment represent Queen's Medical School/NI at a national level in The Pathological Society Undergraduate Network

"In August past, I was both fortunate and delighted to be appointed the Queen's Medical School representative for The Pathological Society Undergraduate Network.

Founded in 2013, The Pathological Society Undergraduate Network is the student-founded and student-led wing of The Pathological Society of Great Britain and Ireland. There is a concern among pathologists that more must be done to promote the discipline both as a clinical entity and as an academic base. The aim of the Pathological Society's Undergraduate Network is to

shift the perception of pathology well away from the stereotypical image of the ancient professor in a darkened room and to promote pathology as a vibrant, dynamic and intellectually stimulating career. The society aims to promote pathology as a discipline to medical, dental, biomedical and science students UK-wide and engage students in forthcoming events and competitions.

"In my role as Queen's representative, I am privileged with the task of both promoting the society to students, and seeking their active participation toward its expansion. With the newly created undergraduate

membership to the Royal College of Pathologists launched and the arrival of the Pathological Society here at Queen's, it is an exciting opportunity for all students interested in laboratory and scientific medicine to expand their exposure to pathology on a national level."

Membership of The Pathological Society Undergraduate Network is open to all medical, dental and biomedical students. Further details may be found at <http://ugpathsoc.wordpress.com/>; <https://www.facebook.com/UGPathsoc> <https://twitter.com/PathSocUG>

MEDICAL AND DENTAL STUDENTS WIN FREE EDUCATION AT QUEEN'S

Ten of Northern Ireland's brightest young people have won a free education at Queen's, worth a total of almost £150,000, after being named Queen's Scholars. Six of these are students in the School of Medicine, Dentistry and Biomedical Sciences.

As a Queen's Scholar, the students will each have their annual tuition fees paid by Queen's for the duration of their undergraduate degree.

The awards, which are in their second year, are worth a total of almost £150K to the ten winning students, who were selected from 156 students nominated by 83 schools and colleges across Northern Ireland.

Each school or college was asked to nominate those pupils who could demonstrate exceptional achievements outside academic life, whether in sport, music and the arts, business and enterprise or through community work, with a particular focus on leadership, enterprise and social responsibility.

Prior to the winners being announced, a shortlist of 68 pupils attended a selection day at Queen's where they were assessed on a range of competencies by a number of business leaders.

The Queen's Scholars studying in the School of Medicine, Dentistry and Biomedical Sciences are:

- Rachel Cullen (Belfast), Grosvenor Grammar School, Belfast - Medicine.
- Eoin Curran (Crossgar), St Patrick's Grammar School, Downpatrick - Medicine.
- Katie McComb (Lisburn), Victoria College, Belfast - Medicine.
- Bronagh McGuckin (Maghera), St Mary's Grammar School, Magherafelt - Dentistry.
- Jason Nicoletti (Broughshane), Ballymena Academy, Ballymena - Medicine.

Announcing the winners, Director of Student Plus at Queen's, Isabel Jennings, said: "Each of the Queen's Scholars has demonstrated exceptional leadership and enterprise skills and an outstanding commitment to social responsibility which, alongside their academic strengths, mark them out as the best and brightest young people Northern Ireland has to offer. "I am delighted to welcome them to Queen's. I am sure they will each make a valuable contribution to university life and embrace the many opportunities on offer here. A Queen's degree is about much more than an education, it is a gateway to the world. We are committed to supporting the ambitions of all our students and nurturing their talents, inside and outside the lecture hall, to afford them a lifetime of opportunity."



Scholarship Students

Domestic Recruitment Manager at Queen's, Anthony McGrath said: "The Queen's Scholars awards are among the most prestigious available from any UK university. They are the latest addition to Queen's annual undergraduate scholarship package, which is worth £300,000 per year, benefits approximately 200 students, and represents a crucial investment in Northern Ireland's future prosperity.

"Queen's is committed to investing in the delivery of an exceptional academic and non-academic student experience, leading to excellent career opportunities for our graduates so they can stay local and go global. Our aim is to provide students with the life skills that will allow them to contribute to the Northern Ireland community, both professionally and culturally. That is why our scholarships include awards for students across all disciplines."

SIX QUEEN'S UNIVERSITY STUDENTS NAMED 'BRIGHTEST AND MOST INNOVATIVE IN THE WORLD'

Grace McKenna, an undergraduate Biomedical Sciences student in the School, was among six students from Queen's University Belfast who have won an international award for being the brightest and most innovative in the world.

The students, announced as winners in The Undergraduate Awards, were selected from nearly 5,000 submissions from over 200 universities worldwide.

The Undergraduate Awards, which are now in their fourth year, aim to give recognition to the brightest and most innovative undergraduate students in the world, and those who are leading creative thinkers, problem solvers and future leaders.

Grace, from Magherafelt, won the Undergraduate Award in the Medical Sciences Category for her paper entitled 'Identification of Tumour Suppressor Genes whose loss mediates sensitivity to conventional chemotherapy and targeted therapeutics.'

Thirteen students from Queen's were also Highly Commended across eight of the categories.

David Jones, Pro-Vice-Chancellor for Education and Students at Queen's University Belfast, said: "I would like to congratulate all of our students on their success at this year's Undergraduate Awards. We, at Queen's pride ourselves on the world-leading education on offer here and the success of our students in these prestigious and internationally competitive awards is testimony to that. A degree at Queen's is about much more than an education, it is about the student experience and being afforded a lifetime or opportunity."



Grace McKenna

Louise Hodgson, Executive Director of the Undergraduate Awards, said: "The Undergraduate Awards is the only pan-discipline academic awards programme in the world. The Awards recognise the best and brightest students and brings them together to encourage inter-disciplinary cooperation that transcends borders, advances scholarship, and promotes new academic thinking. I wholeheartedly congratulate all of the winners."

The winners were invited to attend The Undergraduate Awards Global Summit in Dublin in November 2014.

SAM LOCKHART, FINAL YEAR MEDICAL STUDENT WINS PRESTIGIOUS AWARD

Sam Lockhart, a final year medical student and former summer student at the Centre for Experimental Medicine (CEM) has received a prestigious award from the Diabetes Research and Wellness Foundation to support a research placement in the Harvard affiliated Joslin Diabetes Centre.

After completing a summer studentship in the Boston based centre in 2013 Sam was invited to return to undertake a yearlong fellowship under the supervision of Dr Christian Rask-Madsen with Professor Timothy Lyons from CEM serving as his home supervisor.

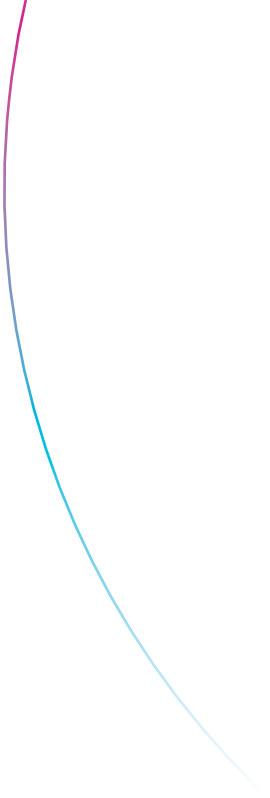
Dr Rask-Madsen's research concerns the contribution of insulin resistance to endothelial dysfunction in diabetes and aims to delineate its role in the complication of diabetes. Sam's project will describe how insulin regulates a novel downstream target called CITED2. In his previous placement in the Joslin Diabetes Centre Sam helped demonstrate that CITED2 can impair blood vessel formation and that insulin can overcome this action by suppressing the production of CITED2 in endothelial cells. It is thought that in insulin resistant states this regulatory action of CITED2 is perturbed and that accumulation of CITED2 may contribute to the impairment of blood vessel growth in the heart and limbs of people with



Sam Lockhart

type 2 diabetes. Therefore, Sam hopes to investigate the potential of CITED2 as a therapeutic target using animal models of peripheral vascular disease, a common complication of diabetes.

Sam's application was one of seven funded applications from a shortlist of twenty seven and it is hoped that this award marks the beginning of a fruitful collaboration between Professor Lyon's lab in the CEM and Dr Rask Madsen in Boston. Sam would like to take this opportunity to thank all those within CEM who supported his application.



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