

Centre for Experimental Medicine

NEWSLETTER
JULY 2016 ISSUE 1

Welcome

It is a great pleasure for me to present the first newsletter of the Centre for Experimental Medicine. The Centre is located in the award-winning Wellcome Wolfson building and we are part of the Queen's Global Research Institute for Health Sciences.

The 50 research groups housed in the new Centre are committed to excellent research while delivering translational impact on respiratory disease, eye disease, and infectious diseases. Indeed, we are addressing key global health issues such as diabetes-associated complications, asthma, acute respiratory distress syndrome, cystic fibrosis, and the major problem of antimicrobial resistance. By making scientific breakthroughs in mechanisms of disease, we translate these to innovative therapeutics to improve patient outcomes. The exciting projects lead by Tim Curtis and Stuart Elborn highlighted in this newsletter are two perfect examples of our research endeavours.

A strategic goal of our Centre is to train and nurture the future global leaders. We have the ambition to become a recognized training hub for postgraduate students and a Centre of choice for new investigators to establish their first laboratories. We are particularly proud of the achievements of our PhD students and the success of our junior colleagues which you can read in the next pages.

Our Centre is committed also to an open culture and to extend our interactions with the local community and the wider public. A relevant example is our participation in the Northern Ireland Science Festival Open Day among other outreach activities summarized in this newsletter. Do not hesitate to contact and visit us if you want to know more.



Professor José Bengoechea
Centre Director



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and life-changing research

If you would like to donate to any of the research programmes within CEM, please contact Alice O'Rawe, Development Manager (Health), Queen's University Belfast (Tel: +44 028 9097 5233; Email: alice.orawe@qub.ac.uk). Alternatively, go to **Queen's Foundation - Donate Now** (daro.qub.ac.uk/donate-now-2016). Within the donation form, you can specify how you would like your gift to be used.

Meet our Research Leaders



DR DEREK BRAZIL

Derek carried out his PhD in the laboratory of Prof. Peter Gierschik in the German Cancer Research Centre and the University of Ulm in Germany. He was then a postdoctoral fellow in at the Joslin Diabetes Centre in Boston working in the lab of Prof. Morris White.

Derek then returned to Europe to work in the lab of Dr. Brian Hemmings at the Friedrich Miescher Institute in Basel where he worked on PKB/Akt signalling in cancer and diabetes. In 2003, Derek returned to Dublin to establish his own research group until the guidance of Prof. Hugh Brady and Prof. Catherine Godson at the Mater Hospital, University College Dublin. In 2009 Derek relocated to Queen's University Belfast where he was appointed as Lecturer.

Derek's research group is focussed on the molecular cell biology of diabetes and diabetic complications. Their work has identified novel roles for proteins such as insulin receptor substrate-2 (IRS2) and the bone morphogenetic protein antagonist Gremlin1 (Grem1) in brain and kidney development, as well as diabetic nephropathy. Derek's lab is also exploring the potential of endothelial progenitor cells for the treatment of ischaemic vasculopathies such as retinopathy of prematurity in pre-term infants and diabetic retinopathy.

DR TIM CURTIS



Tim received his undergraduate education at the University of Southampton and his PhD in Physiology from the University of Plymouth. In 1998, he was appointed as a Wellcome Trust funded Post-Doctoral Research Fellow within the Department of Physiology (QUB) researching the physiology and pharmacology of the retinal microcirculation. His work at this time acted as a springboard for his appointment to a Lectureship position in 2001 (Ophthalmology, QUB) and the opportunity to develop his own independent research group. He was promoted to Senior Lecturer in 2008, and more recently, Reader in Vision Sciences in 2012.

The research in Tim's laboratory is mainly focused on achieving a better understanding of the physiology, pathophysiology and pathology of the retinal microcirculation. By using a range of integrative laboratory and clinical-based approaches it is envisaged that studies by Tim's group will result in a clearer understanding of the cellular and molecular mechanisms that contribute to the initiation and progression of diabetic retinopathy and, as such, provide a basis for novel therapeutic strategies for the treatment of this debilitating condition.



DR DENISE FITZGERALD

Denise did her B.Sc. in Cell Biology and Molecular Genetics at University College Dublin (1996-2000) where she went on to pursue her PhD in Immunology under the mentorship of Prof. Alan Baird (2000-2004). During this time Denise developed a keen interest in demyelinating diseases of the CNS and in 2004 she moved to Thomas Jefferson University, Philadelphia, to pursue postdoctoral training in MS research. During that time, Denise was awarded a 3-year postdoctoral fellowship from the National Multiple Sclerosis Society (USA) which supported her commitment to MS research. In 2009, Denise moved to Queen's to start her own independent Multiple Sclerosis research group where she is currently Senior Lecturer in Immunology.

Denise's group is particularly interested in the process of myelin repair (remyelination) and aim to identify novel therapeutic targets to promote remyelination in MS. This regenerative medicine research programme is supported by a range of collaborators internationally. Denise's lab also conduct a research programme on the pathogenesis of autoimmune inflammation. This programme mainly focuses on T cell biology with a view to identifying strategies to reduce disease activity in MS and other immune-mediated diseases.

DR SINÉAD WELDON



After graduating with a BSc from University College Dublin in 1999, Sinéad completed a PhD in Nutrigenomics in the Institute of Molecular Medicine, Trinity College Dublin (2001 – 2004). During this time, she developed an interest in innate host defence mechanisms and their modulation in the context of atherosclerosis. Following her PhD, she joined the Respiratory Research Division in the Royal College of Surgeons in Ireland. In 2007, Sinéad moved to Queen's University Belfast to continue her postdoctoral training and was appointed as a Lecturer in 2013. Since 2004, she has been actively involved in research programmes centred on host defence mechanisms and their regulation in acute and chronic lung inflammation to better understand the pathogenesis of lung diseases, such as Cystic Fibrosis (CF).

Building on this experience, Sinéad's current research is centred on (1) development of novel biomarkers of pulmonary infection, inflammation and damage, (2) increasing understanding of innate host defence protein and microRNA function and their roles in disease pathogenesis, (3) investigating novel therapeutic strategies to repair lung damage in acute and chronic lung disease.

AWARDS & PRIZES

Professor Usha Chakravarthy awarded CBE in Queen's Birthday Honours

Professor Usha Chakravarthy, a world-leading authority on eye disease, has been awarded the CBE in the latest Queen's Birthday Honours. The Professor of Ophthalmology and Vision Sciences who works in CEM is internationally acclaimed for her research and clinical excellence in the preservation of human vision.



Research contribution recognised



Professor Miguel Valvano, CEM, received a plaque at the 2016 International Burkholderia cepacia Working Group meeting, April 27-30 2016, Ohio State University, in special recognition of his extensive contribution to Burkholderia research. Professor Valvano delivered his keynote lecture entitled "Burkholderia cenocepacia: the juggling act of surviving".



Postgraduate Supervisory Excellence Award

CEM's Dr Ultan Power was the recipient of the PG Supervisory Excellence Award for the MHLS Faculty at the recent Supervisory Excellence Awards 2016. Ultan was nominated by Joanne Lemon, Patricia Coulter, Helen Groves, Kyra Kerkofs and Lindsay Broadbent.

Pro-Vice-Chancellor Professor James McElroy (left) presents Dr Ultan Power (right) with his award

Dr José Romero receives Fight for Sight Early Career Investigator Award

Dr José Romero has been awarded a 3 year **Fight for Sight** Early Career Investigator Award for his work on "Defining the role of mitochondrial turnover in diabetic retinopathy". Jose, a post-doctoral researcher in Professor Heping Xu's laboratory in CEM, will pursue novel mitochondrial-based therapies for the early management of Diabetic Retinopathy. Diabetic retinopathy is a major cause of blindness in the working-age population and new therapies are urgently needed.



Medical Research Foundation Award made to Dr Donna Small

Dr Donna Small, a post-doctoral researcher in Professor Cliff Taggart's laboratory in CEM, has recently been awarded a **Medical Research Foundation** (MRF) award for a new 2 year research programme. Donna's research will focus on the role of SLPI, a serine antiprotease, and CD4+ T helper Th17 cells in the development and progression of malignant pleural mesothelioma (MPM). The UK has one of the highest MPM death rates in the world and more treatments are needed due to the limited number of efficient therapies available for MPM.



New €2.25M project to tackle diabetes-related blindness

A new €2.25M US-Ireland R&D partnership is bringing together a unique team of scientists and clinicians to develop a gene therapy approach with the aim of potentially reversing diabetes-linked blood vessel damage to the eye. Dr Tim Curtis from CEM said: "Queen's researchers are established leaders in diabetic retinopathy and we are delighted to be part of a leading international consortium tackling one of the major health challenges facing us today."

€50M programme to develop new antibiotic treatments for patients with chronic lung disease

Researchers at Queen's are leading a project to develop new drug treatments that could improve the lives of patients with cystic fibrosis and bronchiectasis. The iABC (inhaled Antibiotics in Bronchiectasis and Cystic Fibrosis) consortium, which is made up of world-leading lung specialists from across Europe, will develop new 'inhaled antibiotics' to manage chronic lung infection, the main cause of disease and death in patients with cystic fibrosis and bronchiectasis. Lead researcher Professor Stuart Elborn, CEM, Dean of the School of Medicine, Dentistry and Biomedical Sciences, said: "This work...is the latest example of the commitment of researchers and staff at Queen's University to advancing knowledge and changing lives by working with international experts."

Annual Postgraduate Student Research Symposia

We celebrated the achievements and work of our PhD students at the recent CEM Postgraduate Student Research Symposia. The sessions, which were organised by postgraduate students, were a great suc-

cess, and well done to everyone who took part. Thanks to the postdoctoral researchers who chaired the sessions, sponsors, and the Invited Speakers—Professor John Simpson (Newcastle University) and Dr Kenneth Bailie (University of Edinburgh).

Congratulations to the Best Presentation

Prize Winners — Year 1 Symposium: (1st) Michael O'Hare, (2nd) Rachel Caines, (3rd) Leona Bannon; **Year 2 Symposium:** (1st) Clare Kelly, (2nd) Helen Groves, (3rd) Jamie Toole; **Year 3 Symposium:** (1st) Marianne Fitzgerald, (2nd) Marie Dittmer, (3rd) Rebecca Delaney.

Congratulations...

Dr Lindsay Broadbent won best poster prize at the Microbiology Society Focused Meeting 2016 – Irish Division on Host-Pathogen Interactions in Trinity College Dublin (30th June – 1st July).



Meeting organiser Dr Gerald Barry (UCD, right) congratulates Dr Lindsay Broadbent (left) on her prize

Jenna Shiels was a joint recipient of the Merial Award for Best Student Presentation at the Annual Scientific Meeting of the Irish

Society for Parasitology in Trinity College Dublin on Friday 10th June 2016.

Marta Vilà-González was awarded 1st prize for the Best Presentation in the British Microcirculation Society 2016 conference in Newcastle in April 2016.

Dr Sophia Kelaini was awarded the Best Poster Prize in the Scottish Cardiovascular Forum which took place in February 2016 in QUB.

Kathy Hetherington, PGR student, supervised by Prof Judy Bradley, won the "Asthma Project of the Year" award at the 17th NI Healthcare Awards.

OUTREACH

4th Annual REMERGE Symposium

The 4th Annual REMERGE Symposium took place on Monday 20th June in Riddel Hall, Stranmillis. The symposium, organised by Regenerative Medicine Research groups (REMERGE) at QUB, brought together leaders in regenerative medicine and cell therapeutics. Keynote speakers included CEM researchers Prof Abhay Pandit (National University of Ireland Galway), Prof Nicola Smart (University of Oxford), Dr Anna Williams (University of Edinburgh), and Dr George Burke (University of Ulster). The Best Poster Prize was awarded to **Dr Sarah Chambers**, with Runner Up Prizes awarded to **Marianna Tsifaki** and **David Campbell**. Poster prizes were generously sponsored by Brennan & Co., Mason and Biocair. The REMERGE group were grateful to receive support from HSC NI R&D and CEM, and we are already looking forward to REMERGE 2017!

CEM Welcomes 2016 Summer Students

Our 2016 Summer Student Programme kicked off on Monday June 20th at the annual REMERGE Symposium, followed by a joint outing with CCRCB summer students on Tuesday 21st.

We would like to take the opportunity to welcome this year's students to CEM — Adam Wilson, Aislinn Toner, Derek Kuah, George Momtazi, Gokulramana Lakshmipathy, Hannah Gardiner, Jenny Crozier, Kevin Magorrian, Oran Mallon, Lena Glaser, Lucia Labeur, Nurshifa Liana Binti Shaari, Radhika Gupta, Ronan Cuning, Sarah Hill, Shing Yin Chong, Sneha Upadhyaya, Stacey McNutt, Victoria Kosyak, and Xuedi Liu.



CEM and CCRCB Summer Students enjoy the sights of Belfast

Raising funds for Anthony Nolan Charity

Students and Researchers in CEM participated in a Belfast Marrow football match to raise funds for the Anthony Nolan blood cancer charity. Belfast Marrow raise funds, recruit donors and are often bone marrow donors themselves. The team thanked **Queen's Sport** for supporting their cause in raising £210 on the day.

CEM participates in 16th Annual Viking Boat Race for Charity

CEM took part in the Cutters Wharf 16th Annual Viking Boat Race, Longships Challenge, on Sunday 1st May and raised £549.40 for the NSPCC. The Team came 8th out of 12 mixed teams. Rowers were Simon Carlile, Anna Connell, Lydia Eeles, Thomas Morrison and Philip Toner, assisted by non-CEM crew, David Costley, Jennie Clarke, Laura Fox, Michaela Murphy and Ryan Robertson.

Antrim Borough Council MS Support Group donates £2,000 towards MS research

Ms Joan Hamilton, Chair of the Antrim Borough Multiple Sclerosis Support Group, is pictured presenting a cheque for £2,000 to Dr Denise Fitzgerald, CEM, who is conducting research into the repair of the Myelin Sheath, the protective coating around nerve fibres in the central nervous system.



Ms Joan Hamilton (left) presents Dr Denise Fitzgerald (right) with a cheque

UNISTEM 2016 at W5

On Friday 11th March 2016, UniStem Day returned to Belfast and the W5 exhibition centre. UNISTEM 2016 in Belfast was organised

by Dr Reinhold Medina (CEM) and Educator Sean Greer (W5). Speakers included Dr Denise Fitzgerald (CEM), Educator Danielle Nicholson (REDDSTAR), Dr Cecilia O'Kane (CEM) and Dr Melissa McCullough (Brighton Medical School). Over 100 students from 6 different schools attended this European Stem Cell Awareness day in Northern Ireland. The event, a project of the University of Milan which started in 2009, is now in its 8th year and is the largest science event on stem cells in Europe. Follow the exciting project on their **website**, on Facebook and on Twitter #unistem2016.

CEM hosts NI Science Festival Open Day

As part of the Northern Ireland Science Festival, CEM hosted an open-to-the public event entitled "Know Your Enemy: Disease Focused Research at Queen's" on Saturday 27th February 2016. Over 300 attendees of all ages had the chance to visit the new state-of-the-art laboratory facilities in CEM and engage with scientists and clinicians in a variety of stands demonstrating our disease-focussed research on diabetes, cystic fibrosis, multiple sclerosis, cardiovascular and eye diseases. The event was organised by Dr Derek Brazil (CEM) and was kindly funded by the Faculty of Medicine, Life and Health Sciences, with support from CEM administration and technical teams.



Dr Laura Holey, QUB Fellow, CEM (left)



Clare Kelly, CEM PhD student (left)

Upcoming Events — Save the Date!

Our annual Summer Student Research Symposium will take place on **Thursday 11th August**. Come along, support our students and hear about their research.



QUB will host the joint final conference of the EU Funded INBIONET (coordinated by CEM's Professor José Bengoechea) and Infect-ERA Programmes. The conference, to be held on **14th-15th September 2016**, will take place in Queen's and will facilitate discussions on some of the most deadly infectious diseases and present the latest findings to shape future treatments of infection. Further information can be found at www.qub.ac.uk/sites/INBIONETInfect-ERAConference/.

If you have an event, research announcement or news you would like to see featured in the next CEM Newsletter, please email Sinéad Weldon at s.weldon@qub.ac.uk.