Message from Head of School

You are very welcome to the first edition of our School e-Newsletter for academic year 2014-15.

This has been a very busy period as we finally moved to a semesterised system in September and we have been very busy with welcoming new students and getting our courses off the ground. We must welcome a new cohort of 45 Science III students into our BSc in Biochemistry programme. In addition, this year we have 42 students in our MSc (Biotechnology) and 17 in our MSc (Molecular and Cell Biology). Of these, we welcome 13 new non-EU students to our School. Great credit is due to Drs Justin McCarthy, Kellie Dean and Maryanne Donovan for their stalwart efforts in marketing and administering these hugely successful programmes. I hope all of the students joining us will have a great time and find your experience here very positive and enjoyable.

At the other end of the spectrum, we this week graduated forty students from our BSc (Honours) Biochemistry class of 2014 as well as three PhDs. You can find some pictures and more news of these events inside.

On the research front, Professor John Atkins and Dr Pasha Baranov of this School received a team research award from the President recently in recognition of their world-class research achievements. We are all very proud of John and Pasha and we salute this recognition of their achievement in a hugely competitive arena.

I hope you find this e-Newsletter interesting and informative.

Professor David Sheehan
Professor John Atkins, SFI Research Professor in our School, and Dr Pasha Baranov, College Lecturer in our School, received the Research Team of the Year Award from the President, Dr Michael Murphy, at the University Staff Awards ceremony held in the Aula Maxima on Thursday 9th October last. The award was given in recognition of their collaborative efforts in the highly-competitive field of RNA Recoding. The awards are sponsored by Gilead Sciences Ireland UC, a BioPharma company based in Carrigtwohill, Co Cork.

John and Pasha's collaboration started in 1999 at the Human Genetics School, University of Utah, where Pasha’s bioinformatics approaches productively complemented John’s research. The award citation read by Professor Anita Maguire, Vice President for Research, noted that the Recoding Research Team have been extraordinarily productive with 46 publications over the last three years in top journals including Science, Nature and PNAS (Proceedings of the National Academy of Sciences). John was a lead editor on RNA Worlds, a seminal text launched by Nobel Laureate Dr. James Watson at UCC. The Recoding Research Team has enjoyed sustained funding success with 7 grant awards from SFI and a major grant from the Wellcome Trust.

At the same awards ceremony, Mr Dylan O’Donovan (BSc Biomedical Science) of this School received a UCC Strategic Research Award of a PhD studentship under the supervision of Professor Mary McCaffrey for a project entitled, “An investigation of the MAP kinase phosphorylation of the GRAB protein and functional consequences thereof on its binding to Rab11 and Rab8 and muscle cell physiology”. We wish Dylan all the best with his research.

Professor John Atkins and Dr Pasha Baranov win Research Team of the Year Award

UCC President Dr Michael Murphy pictured at the UCC Staff Recognition Awards with academic staff from the School of Biochemistry and Cell Biology, Professor Timmie McCarthy, Dr Pasha Baranov, Professor David Sheahan (Head of School) and Professor John Atkins.

Photo by Gerard McCarthy

Student wins UCC Strategic Research Award

Photo by Gerard McCarthy
In August 2014, Professor David Sheehan delivered a presentation entitled “Effects of engineered metal and metal oxide nanoparticles on model aquatic organisms: Finding protein targets by redox proteomics” as a Keynote paper at the 4th International Conference on Proteomics and Bioinformatics, Northbrook, Chicago, USA and as an invited paper to the American Chemical Society Meeting, San Francisco, USA.

In September 2014, Dr Pasha Baranov gave a talk at Cold Spring Harbor Translation Control meeting and a seminar in New York University School of Medicine entitled “Ribosome Profiling: The Dawn of Translatomics”.

Professor Dmitri Papkovsky and his group made several presentations at international conferences recently:

• Papkovsky DB, Dmitriev RI, Optical imaging of cell and tissue oxygenation by means of cell-penetrating phosphorescent probes, 42nd Meeting of the International Society on Oxygen Transport to Tissue, June 28 - July 3, 2014, London, UK. (oral presentation)


• Papkovsky DB, Dmitriev RI, Imaging of oxygenation in 3D tissue models by means of cell-penetrating phosphorescent nanosensors, International Microscopy Congress 2014, September 7-12, 2014, Prague, Czech Republic. (oral)

• Zhdanov AV, Golubeva AV, Cryan JF, Papkovsky DB, 3D mapping of tissue oxygen in chronically inflamed mouse bladder, International Microscopy Congress 2014, September 7-12, 2014, Prague, Czech Republic. (poster)

• Papkovsky DB, Dmitriev RI, Imaging of oxygenation in 3D tissue models with phosphorescent probes and FLIM, Workshop on Advanced Fluorescence Lifetime Imaging Techniques, Bethesda, USA, October 20-21, 2014. (invited talk)

• Zhdanov AV, Golubeva AV, Cryan JF, Papkovsky DB, 3D mapping of tissue oxygen in chronically inflamed mouse bladder, International Microscopy Congress 2014, September 7-12, 2014, Prague, Czech Republic. (oral)

• Zhdanov AV, Golubeva AV, Cryan JF, Papkovsky DB, 3D mapping of tissue oxygen in chronically inflamed mouse bladder, International Microscopy Congress 2014, September 7-12, 2014, Prague, Czech Republic. (poster)

• Papkovsky DB, Dmitriev RI, Imaging of oxygenation in 3D tissue models with phosphorescent probes and FLIM, Workshop on Advanced Fluorescence Lifetime Imaging Techniques, Bethesda, USA, October 20-21, 2014. (invited talk)

A paper on the Clustal W programme co-authored by Professor Des Higgins (formerly a lecturer in this School and now at UCD) was ranked tenth in a listing of the top 100 most-cited papers of all time. The Top 100 Papers list was published recently in Nature.

Career Development Award for Dr Ken Nally

Dr Ken Nally has been awarded a Career Development Award by Science Foundation Ireland for his proposal: “Identification of the Molecular Pathways that Mediate Cytokine Induced Immunopathology of the Gut Epithelium”. This provides funding of €648,643.00 for four years to help establish and consolidate a research group of 2 postdoctoral researchers and 3 PhD students.
BSc in Biochemistry Conferrings

Forty of our BSc (Hons) Biochemistry students graduated at a ceremony on Tuesday, 28th October.

The guest speaker at the ceremony was Sean Sherlock, Minister of State for ODA, Trade Promotion and North/South Cooperation and former Minister of State for Innovation.

The staff in the School would like to wish all the graduates every success in their careers ahead.
Congratulations to Aprille Duigan, Lara Farmer and Margaret O’Sullivan.

Shauna O’Connor and Shauna McMahon.
On 28 October 2014, forty students in the BSc in Biochemistry programme were conferred with their degree.
The Professor Art Champlin gold medal is awarded annually to the top student graduating BSc (Hons) in Biochemistry.

Mr Fergus Collins, 2014 Art Champlin Gold Medal winner, pictured here with Professor David Sheehan, Head of School of Biochemistry and Cell Biology

2014 Gold Medal Award Recipient Fergus Collins BSc

The Professor Art Champlin Gold medal award for academic excellence in Biochemistry, was presented to Fergus Collins on October 28th by Professor Dave Sheehan of this School. Fergus graduated as the top student with a first class honours degree in Biochemistry and has commenced a PhD at Teagasc, Moorepark under the supervision of Professor Paul Ross, Head of SEFS. Fergus has been an outstanding student and is also the recipient of the Eil Lilly undergraduate award for academic excellence in Biochemistry in 2013 and 2014. In 2013, Fergus was also awarded a UCC Academic Scholarship and a Health Research Board Summer fellowship, which enabled Fergus to conduct research with Dr Ken Nally, School of Biochemistry, analysing the expression and function of the Type 1 Interferon pathway in irritable bowel syndrome.
Professor David Sheehan, Head of School, deputised for the Registrar at a conferring ceremony for the BSc (Hons) Biomedical Science class held in Cork Institute of Technology on Monday, 20th October 2014. Professor Sheehan and Dr Brendan Murphy jointly presented parchments to graduates from this successful course.

Dr Sinéad Kerins (Director of BSc Biomedical Science programme), Dr Brigid Lucey, CIT (Deputy Director of BSc Biomedical Science programme) and Dr Brendan O’Connell (Head of Biological Sciences CIT) were also in attendance at the ceremony and would like to wish the BSc Biomedical Science graduates every success in their future careers.
PhD Conferrings

Three students from the School of Biochemistry and Cell Biology were awarded PhD degrees at the Autumn Conferring ceremony held at UCC on October 29th last.

Patricia Collins, (supervised by Dr Ruaidhri Carmody, University of Glasgow, and Dr Cora O’Nei1l, School of Biochemistry and Cell Biology) for her thesis: “An investigation into the role of bcl3 in toll-like receptor signalling”.

Matthew Dunne, (supervised by Dr Tom Moore, School of Biochemistry and Cell Biology and Dr R. Meijers, EMBL, Heidelberg) for his thesis: “A novel activation mechanism for clostridial bacteriophage endolysins”.

Louise Foley, (supervised by Dr Eoin Fleming, School of Biochemistry and Cell Biology) for her thesis: “Characterisation of the degradation of wild type and mutant hfe proteins during stress signalling in the endoplasmic reticulum”.

Heartiest congratulations to Dr Collins, Dr Dunne and Dr Foley!
Congratulations to **Dr Kellie Dean** who has been appointed to a College Lectureship in this School.

Kellie will be working in particular on International Education and diversification of our postgraduate offerings.

Kellie’s research interests include translational regulation, non-coding RNAs and RNA-binding protein biochemistry, with a particular focus in investigating the mRNA targets and biological influence of the RNA-binding protein, Smaug, in *Drosophila* and human cells.

**Shauna O’Donovan** and **Emily Power** completed their research projects with the recording group for the MSc in Bioinformatics with Computational Biology.

**Neil O’Donnell** MSc has recently joined the lab of Professor Dmitri Papkovsky as a PhD student.

Congratulations and best wishes also to **Alina Kondrashina**, Biophysics and Bioanalysis Lab on the safe arrival of a baby girl on October 24th last.
Dr Maryanne Donovan on the move
We are sorry to announce the departure of Dr Maryanne Donovan who is moving to a new position with Novartis. Maryanne made significant contributions to establishing the structured PhD in Molecular Cell Biology and MSc (Molecular and Cell Biology with Bioinnovation) which have been outstandingly successful programmes. This success is largely attributable to Maryanne’s energy in establishing, publicising, marketing and overseeing deliver of these courses. We wish Maryanne every success in her new role and we thank her for her key contributions to our success.

Dr Geraldine Kelly on the move
Congratulations to Dr Geraldine Kelly who commenced a Technical Services/Manufacturing Science Laboratory Representative role at Eli Lilly in September 2014. Prior to this Geraldine was a Postdoctoral Researcher in the Cell Biology Laboratory, conducting investigations into the protective role of IGF-1 in the heart. Geraldine completed her PhD research in 2011, on the regulation of IGF-1R activation in cancer, under the supervision of Professor Rosemary O’Connor and graduated in 2009 with a BSc in Biochemistry.

Dr Finola Fogarty on the move
Congratulations to Dr Fionola Fogarty who commenced a Bioassay Technical Specialist role at MSD Brinny in May 2014. Fionola is a BSc Genetics graduate. Fionola conducted her PhD research, which focused on the characterization of the Heme binding protein HRG-1 in cancer cells, under the supervision of Professor Rosemary O’Connor. On completion of her PhD, Fionola worked with the Almac group, Belfast identifying novel clinically relevant biomarkers for IGF de-regulated signalling in cancer and disease, until commencing her role at MSD.

Dr Ronan O’Riordan on the move
Congratulations to Dr Ronan O’Riordan who commenced a Technical Services/Manufacturing Science Laboratory Representative role at Eli Lilly in September 2014. Ronan is a BSc Genetics graduate. Ronan was selected for the PhD Scholars Programme in Cancer Biology, UCC in 2008 and commenced his PhD research in 2009, under the supervision of Dr Tom Moore, on Pregnancy-Specific Glycoprotein. On completion of his PhD, Ronan worked as a Research Assistant until commencing his role at Eli Lilly.
Staff Christmas Party!

It's that time of year again and the Staff Christmas Dinner is booked for the Kingsley Hotel on Thursday 18th December at 6.00pm. Have a look at the menu and contact Justin McCarthy or Tricia Fowler if you would like to go. Justin and Tricia will be collecting EUR 45.00 per person to allow for a tip. We really hope to see you there!

UCC Biotechnology and Biochemistry Society to host their second MSc information seminar

Are you thinking about your future? The Biochemistry and Biotechnology Society UCC are hosting an information seminar on MSc Programmes, UCC on Tuesday evening next, 4th November from 6.00-7.00pm in Western Gateway G01.

Dr Kellie Dean, School of Biochemistry and Cell Biology will discuss the structure and entry requirements of both the MSc Molecular Cell Biology programme and Master of Research in Biochemistry and Cell Biology (MRes) programme.

Katie Green, who is a past BSc Biochemistry and MSc Molecular Cell Biology graduate, will talk about what it was like to do the MSc Molecular Cell Biology programme and discuss how she secured her PhD position at the University of Calgary, NW Calgary, Alberta, Canada.

Dr Marcus Claesson, School of Microbiology, UCC will discuss the structure and entry requirements of the MSc programme in Bioinformatics with Computational Biology.

Charity Cake Sale

UCC Biochemistry and Biotechnology will host a cake sale and raffle for Pieta House in the foyer of the Western Gateway Building on Monday, 10th November between 10.00 and 15.00 hrs.
Irish Area Section of the Biochemical Society (IASBS) Meeting

UCD Conway Institute, University College Dublin
13th-14th Nov 2014

At-A-Glance Speaker Programme

Day 1: Thursday 13th November 2014

8:15 - 9:00 Registration, Conway Foyer
Session I Platelet and Vascular Therapy

9:00  Prof Paola Patrignani, University of Chieti, Italy.
Crosstalk between platelets and cancer cells and the effect of antiplatelet drugs.

9:30  Dr Simone Marconi, University College Dublin, Ireland.
Proteomic Signatures of Platelet Drug Response

10:00  Oral presentation selected from abstracts (TBA)

10:15  Dr Roger Preston, Trinity College Dublin, Ireland.
Engineered super-enzymes as therapies for vascular disease

10:45  Coffee Break
Session II A focus on the Vascular Endothelium

11:15  Dr Phil Cummins, Dublin City University, Ireland.
The Blood-Brain Barrier: A Target for Proinflammatory Cytokines

11:45  Oral presentation selected from abstracts (TBA)

12:00  Dr Steve Kerrigan, Royal College of Surgeon's in Ireland, Ireland.
Platelets and bacterial infection of endothelial cells

12:30  Lunch & technical session. Sponsored by Medical Supply Company Ltd.
Session III Vascular Biochemistry & Disease I

14:00  Dr Orina Belton, University College Dublin, Ireland.
Immune cells- Signals and function in the resolution of atherosclerosis

14:30  Dr Maura Grealy, National University of Ireland, Galway
Title to be confirmed

15:00  Dr Patricia Maguire, University College Dublin, Ireland,
Platelets, plexosomes and their Wnt secretes

15:30  Poster Session I

16:30  Prof Meinrad Gawaz, Tuebingen University, Germany.
Platelet-derived CXCL12 (SDF-1 α); basic biochemical mechanisms and clinical implications.
Followed by wine reception and poster viewing

19:00  Conference Dinner

Day 2: Friday 14th November 2014

9:00  Session IV Platelet Biochemistry & Function.
Prof Alastair Poole, University of Bristol, UK.
Secrets of platelet exocytosis: how and why do platelets secrete?

9:30  Dr Niamh Gilmartin, Biomedical Diagnostics Institute, DCU
Development of a new platelet function assay: From lab to clinic

10:00  Oral presentation selected from abstracts (TBA)

10:15  Prof Cormac Taylor, University College Dublin, Ireland.
Regulation of gene expression by hypoxia.

10:45  Coffee Break
Session V Vascular Biochemistry & Disease II

11:15  Dr Fiona Nuala Ni Ainle, Mater Misericordiae Hospital, Dublin, Ireland.
Early onset preeclampsia: novel approaches to prognosis and therapy?

11:45  Oral presentation selected from abstracts (TBA)

12:00  Prof Louise Kenny, University College Cork, Ireland.
Screening for Pre-Eclampsia The Obstetric Holy Grail

12:30  Lunch & Technical session sponsored by Fluxion & Labtech.
Session II

14:00  Poster Session II

15:00  Prize Giving and Close of Meeting

More details are available from Dr Eoin Fleming, School of Biochemistry and Cell Biology
UCC OPEN DAY

The UCC Open day was held on the 11th October 2014. Professor Dave Sheehan, Dr Cora O’Neill and Dr Pasha Baranov from the School of Biochemistry & Cell Biology were on hand to answer queries relating to Biological and Chemical Sciences and the Biochemistry Degree outlet. In addition, Dr Paul Young, Dr Sinéad Kerins (School of Biochemistry and Cell Biology), Dr David Clarke (School of Microbiology, UCC) and Dr Collette Hand (Department of Pathology, UCC) provided information and dealt with student queries regarding the joint UCC/CIT Biomedical Science degree programme. Prospective students attended a presentation from Professor Dave Sheehan on Biological and Chemical Sciences and also, a presentation on Biochemistry and Biomedical Science from Dr Sinéad Kerins.

Prospective Biochemistry students got some hands-on experience with agarose and SDS-page gels in the School’s undergraduate lab at Open Day.

Biochemistry graduate, Jamie Byrne provided tours of the undergraduate teaching laboratories in the School of Biochemistry and Cell Biology and demonstrated various Molecular Biology techniques to the students. The students also got some hand on experience in loading agarose and SDS-PAGE gels. They really enjoyed this and were very impressed with the teaching facilities at the School.

The Open Day at UCC was a highly successful event attended by over 5,000 potential students and Professor Dave Sheehan would like to thank the academic staff, technical staff and Jamie for making our participation in this event such a success.
The Biochemistry & Biotechnology Society hosted a seminar on Wednesday 8th October last regarding the MSc Biotechnology Programme, UCC. Speakers on the evening were Dr Justin McCarthy, Director of the MSc Biotechnology and Daniel Sheehan, a BSc Biochemistry and MSc Biotechnology graduate. Dr McCarthy provided information regarding the structure and content of the programme and Daniel discussed his career profile to date, including information on his placement and position with BioMarin, Shanbally and also his current position with MSD, Brinny.

The seminar was extremely well attended with over 120 students attending. The night was a great success. The Biochemistry and Biotechnology Society would like to thank Daniel and Justin for staying past 9.00 pm in order to answer student queries.
This is a new feature where we will briefly profile a key contributor to our discipline from the past highlighting also their contributions to the future

John Desmond Bernal, Physicist (1901-1971)

JD Bernal was born near Nenagh, Co. Tipperary in 1901. During his childhood, he made the acquaintance of a local gentleman geologist who sparked interest in minerals. After school in England, Bernal studied at Cambridge. He was fascinated by X-rays and soon began a research career in Physics exploring scattering of X-rays by minerals and, eventually, biological materials.

In early research at the Cavendish Laboratory in Cambridge, he was one of the first scientists to confirm the “boomerang” shape of the water molecule. Bernal was known as “Sage” by all who knew him because, as Max Perutz said, “.he knew everything”.

He became Professor of Physics at Birkbeck College, London, in 1937 where he encouraged the idea of applying X-ray diffraction to elucidating biostructures. He mentored and befriended many of the great names of Biochemistry who went on to win Nobel Prizes – (William) Bragg, Perutz, Kendrew, Wilkins, Klug and Pauling - as well as many who did not – Ramachandran, Franklin and many more. Some 17 Nobel prizes have been awarded for use of X-ray diffraction techniques in structure elucidation.

Bernal worked as a Scientific Advisor to the British Government in World War II and became an expert on effects of bombing and beach topography amongst other things. His role was especially important in preparing for the Normandy landings of June 1944. He was a committed communist and freethinker which did not endear him to the Establishment and he worked tirelessly for greater internationalization in Science.

The Bernal Professor of Structural Biology today in Birkbeck is Professor Helen Saibil who delivered the British Biophysical Society lecture in this School in November 2009.
Recent Research Publications from this School


Rainville L.-C., Varela, A.C., Sheehan, D. (2014) Application of the redox-proteomics toolbox to Daphnia magna challenged with model pro-oxidants copper and paraquat. Environmental Toxicology and Chemistry. IN PRESS.


Leedale, J., Herrmann, A., Bagnall, J., Fercher, A., Papkovsky, D., Sée, V., Bearon, R.N. (2014) Modeling the dynamics of hypoxia inducible factor-1α (HIF-1α) within single cells and 3D cell culture systems. Mathematical Biosciences IN PRESS, DOI: 10.1016/j.mbs.2014.09.007


Any material for inclusion in the next newsletter should be sent to the editor, Professor David Sheehan. EMAIL: hosbcandcb@ucc.ie