

2014/15

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TRINITY SCHOOL OF
**Pharmacy &
Pharmaceutical
Sciences**

Welcome to the latest issue of our Elixir Newsletter. As you will see, 2014 has been an interesting year for the School, with exciting developments in research, the hosting of a number of key events and tremendous staff and alumni achievements.

Professor Anne Marie Healy

Head of School

In this newsletter we highlight the fact that pharmacy education in Ireland is changing. A new Five-Year Integrated Pharmacy curriculum was approved by the University Council in June of this year and will be introduced for new entrants to Trinity in September 2015.



Also featured in this newsletter is an inspiring alumna profile by Dr Catriona Bradley, of the Irish Institute of Pharmacy. I would like to sincerely thank Catriona for taking the time to tell us her story. I really hope you enjoy reading through this issue and that it encourages you to stay in touch and possibly tell your story. As we are all heading towards the holiday season I would like to wish you all a very merry Christmas and all the best for 2015! activities on our website www.tcd.ie/pharmacy

Research

New Pharmacy Research Could Provide Key to Overcoming Resistance to HER2 targeted Cancer Treatments

Our School has made a significant discovery of a new biomarker which may help overcome resistance to anti-cancer drugs, such as Herceptin. These findings may also help the early identification of patients who will benefit most from these treatments.

The researchers, led by Lorraine O'Driscoll, Associate Professor of Pharmacology, studied breast cancer cells and their extracellular vesicles (exosomes), which are 'packages' of information released from cells. They discovered a molecule called Neuromedin U (NmU) which is strongly associated with resistance to

these relatively new anti-cancer drugs.

About 25% of breast cancer patients have HER2-positive tumours, where the HER2 protein is found at substantially greater amounts on cancer cells compared to normal cells and which is associated with a poorer prognosis for the patient. A range of targeted anti-cancer drugs have been developed to treat these patients. The best known is Herceptin (trastuzumab), but newer drugs in this family include lapatinib, neratinib, afatinib, pertuzumab, T-DM1.

This research now suggests that NmU may be used as a tissue- and blood-based biomarker to indicate the likelihood of responsiveness in a particular patient and may also be very important in the management of drug-resistance. The findings were published in a leading international journal: *Cancer Research* (impact factor 9.284), the most frequently cited cancer journal in the world.

Components of this research were supported by Science Foundation Ireland, Marie Keating Foundation, Irish Cancer Society and Trinity Foundation. The intellectual property has been protected to facilitate the translation of these discoveries for patients' benefit, with patents pending in Europe and US.

The Irish Medical Times, The Examiner and 13 other international media sources reported on these findings; the paper is available at: <http://cancerres.aacrjournals.org/content/early/2014/05/29/0008-5472.CAN-13-2053.abstract>

Other elements of Associate Professor O'Driscoll's research featured in *"Cutting Edge Research in Cancer and Immunology"*, a special supplement to The Irish Times on 28/07/2014.



Assoc Prof Lorraine O'Driscoll, Director of Research in the School of Pharmacy and Pharmaceutical Sciences

Pharmacy Academic Secures a Science Foundation Ireland Career Development Award

Assistant Professor David Finlay has recently secured a Science Foundation Ireland Career Development award of €650,000 to develop his research team studying the anti-cancer actions of Natural Killer cells. Dr Finlay said: "I am delighted to have

been awarded this funding from Science Foundation Ireland, which will allow me to further establish my research laboratory within the Trinity Biomedical Sciences Institute. My research will study the interactions between tumours and Natural Killer (NK) cells, a key lymphocyte subset with cancer cell-killing capabilities, and will hopefully lead to improved NK cell-based therapeutic strategies." Dr Finlay's research suggests that the way in which glucose, an important cellular fuel, is used by NK cells affects their ability to kill tumour cells. This SFI funded project will fully characterise the relationship between NK cell metabolism and NK cell anti-tumour function.



Asst Prof David Finlay

Cancer Research PhD Programme

In 2014 the School of Pharmacy and Pharmaceutical Sciences developed a new Cancer Research PhD Programme. This initiative is led by Assoc Prof Lorraine O'Driscoll, Director of Research, with the aim of improving drugs in the fight against cancer by progressing research on newly developed molecules and existing anti-cancer drugs. This four-year programme is designed to enhance cancer drug research capability by educating the next generation of cancer researchers in the new Centre for Cancer Discovery. It is a state-of-the-art facility where we work in an interdisciplinary setting as a

team of medical doctors, pharmacists, pharmacologists, and medicinal and pharmaceutical chemists. We have a great setting to build up our research capacity to the highest standard. To help deliver on our ambitious plans in cancer research, the School is seeking investors to support this programme. We are delighted to announce that Trinity alumni in the US (through the TCD US Fund) have awarded the School a 'challenge grant' valued at over €40,000. The challenge is to secure investment of €110,000 (over a 4 year period), which will enable us to draw down the grant from the

US Fund and award our first PhD as part of this exciting and important initiative. If you are interested in finding out more about the Cancer Research PhD Programme, or if you would like information on how to get involved as a supporter please contact Assoc Prof Lorraine O'Driscoll, Director of Research, School of Pharmacy and Pharmaceutical Sciences on +353 1 896 2822 / lodrisc@tcd.ie or Sinéad Pentony, Associate Director, Trinity Foundation +353 1 8964564 / sinead.pentony@tcd.ie

Alumni Pharmacy Alumni Appointed to Prestigious Positions in Industry and Academia

Dr Krzysztof Paluch, was recently appointed as Lecturer in Medicines Development and Pharmaceutical Science in the Bradford School of Pharmacy. Krzysztof completed his PhD under the supervision of Prof Anne Marie Healy and subsequently worked for two years as a Postdoctoral Research Fellow in her group. He took up his position in Bradford in July 2014.



Dr Krzysztof Paluch

Dr Maria Inês Amaro, who will be leaving the School at the end of the year to take up a position as Senior Inhalation Scientist with Mylan Pharmaceuticals in Dublin from January 2015. Inês completed her PhD under the supervision of Prof Anne Marie Healy and subsequently spent just over a year working as a Postdoctoral Research Fellow with Prof Healy in the Synthesis and Solid state Pharmaceutical Centre (SSPC).



Dr Maria Inês Amaro

Dr Claire Corcoran, alumnus from the School of Pharmacy and Pharmaceutical Sciences was recently appointed Molecular Diagnostics Senior Scientist at AstraZeneca, Cambridge. Claire completed her PhD under the supervision of Assoc Prof Lorraine O'Driscoll and graduated from Trinity in spring 2014.



Dr Claire Corcoran

Pharmacy Reunion - Class of 1989

Twenty Pharmacy alumni from the 1989 graduating year returned to Trinity in August for their 25-year reunion. They attended the Health Sciences Banquet on Friday 22nd August 2014, which formed part of the TCD Alumni Weekend. Many stayed in rooms on campus and re-lived their student days. A great night was had by all!



Pharmacy alumni - Class of 1989

Alumnus Profile Dr Caitriona Bradley



As I write this, it's Fresher's week in Trinity. This morning I walked through Front Square, enjoying the madness and fun of societies trying to attract new students. Twenty years ago I was one of those Fresher students, excited about coming to Trinity. There was no way I could have imagined

all that lay ahead as I started my pharmacy degree. After four years of hard work and fun, I graduated in 1998 and did my first six months of pre-registration experience in community pharmacy. I returned to Trinity to complete the second six months of my pre-registration experience in the Pharmaceutics Department in the School of Pharmacy, and stayed there for a further year before joining Boots as a community pharmacist. In 2004 I returned to Trinity as the Boots Teacher Practitioner. In this role my time was split between the School of Pharmacy & Pharmaceutical Sciences and the Boots professional training team. During this time I also undertook a PhD with Dr Martin Henman, which explored health promotion in the community pharmacy setting. Following the completion of my studies I moved into a role in Pharmacy Research and Service Development within Boots and maintained my connection with the School of Pharmacy & Pharmaceutical Sciences as an adjunct lecturer. This was an exciting time, as I worked as part of the team which introduced new services such as Seasonal Influenza Vaccination and

the Emergency Hormonal Contraception into community pharmacies. In 2010 I took up a role as Head of Capability for Boots in Ireland and in 2013 I was appointed Pharmacy Director and Superintendent for Boots, which brought me back to a pharmacy focussed role. Earlier this year I was honoured to be appointed Executive Director of the newly established Irish Institute of Pharmacy. The Institute will play an important role in supporting both the continuing professional development (CPD) of pharmacists and the development of the profession as a whole. It is important that we engage in CPD throughout our career, not only to ensure that our knowledge is up-to-date, but also to support our own professional and personal development. When I was in Trinity as a student, I couldn't have dreamed where my pharmacy degree would take me. I gained skills that provided the foundation for an enjoyable and varied career and, more importantly, I met people who supported me along the way. All registered pharmacists can access further information about the IOP through www.iop.ie

Interesting Statistics

Statistics - TCD and the School of Pharmacy & Pharmaceutical Sciences

TRINITY IS RANKED **71** IN THE WORLD AND **1st** IN IRELAND. THE TCD SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES IS RANKED **1st** IN IRELAND, IN THE TOP **40** IN EUROPE AND IN TOP **100** IN THE WORLD¹. OUR SCHOOL WAS ESTABLISHED IN **1977** AND IS THE OLDEST ACADEMIC PHARMACEUTICAL INSTITUTION IN IRELAND. CAO POINTS FOR PHARMACY: **565** POINTS. **€6** MILLION IN COMPETITIVE RESEARCH GRANT INCOME AND **128** INTERNATIONAL PEER REVIEWED PUBLICATIONS IN 2013-14.

1. QS World University Ranking, The World University Ranking, Academic Ranking of World Universities (Shanghai)

Staff News

Pharmacy Academic Appointed Visiting Professor at Wurzburg University

In August 2014, Associate Professor John Gilmer was appointed visiting professor in medicinal chemistry at Wurzburg's Faculty of Chemistry and Pharmacy. This prestigious appointment is a part of the Wurzburg University internationalization of teaching and research program which involves stiff competition based on excellence in research and teaching. John will travel to Wurzburg to give lectures on medicinal chemistry to pharmacy undergraduate and postgraduate classes. He will also give research lectures to the faculty and develop research and educational links with TCD.



Assoc Prof John Gilmer,
Director of Teaching &
Learning (Postgraduate)

Pharmacy Academic Appointed to the Scientific Advisory Board of Midatech

Associate Professor Lorraine O'Driscoll has recently been appointed to the Scientific Advisory Board of Midatech, Oxford. Midatech (<http://midatechgroup.com/>) is a world leader in the design, synthesis and manufacture of biocompatible gold nanoparticles (GNPs) with a core focus on therapeutics for diabetes and cancer. The Company is also exploring the use of GNPs in other healthcare applications including vaccines, diagnostics and medical imaging. Further information can be found on: <http://midatechgroup.com/scientific-advisory-board>



Assoc Prof Lorraine O'Driscoll, Director
of Research in the School of Pharmacy
and Pharmaceutical Sciences

Pharmacy Academic Shortlisted for an Early Career Teaching Award

In June 2014, Associate Professor Tamasine Grimes received a recommendation for an early career teaching award through the Provost's Teaching Awards scheme. This scheme is designed to recognise and reward those who have made an outstanding contribution in the pursuit of teaching excellence. Tamasine was one of only 9 individuals in the College shortlisted, three were presented by the Provost with Awards and 6 presented with a Certificate of Commendation. Further details can be found on: <http://www.tcd.ie/CAPSL/awards/provost/>



Left to Right: Dr Richard Porter, Ms Michelle Leech, Dr Kathleen McTiernan,
Dr Louise Gallagher, Provost Dr Patrick Prendergast, Dr David Prendergast,
Dr Niamh Connolly, Dr Tamasine Grimes, Dr Ann Devitt & Ms Jade Concannon

Pharmacy Curriculum News

The Five-Year Integrated Pharmacy Programme

The model of pharmacist education and training is changing in Ireland

(see <http://www.thepsi.ie/gns/education/fiveyearintegratedpharmacydegreeprogramme.aspx>).

As a result, the three schools of pharmacy in Ireland have worked with all the major stakeholders to develop five-year integrated programmes which will provide a greater level of practical learning in work place settings. The new curriculum and structure for the Five-year Integrated Pharmacy Programme in TCD was approved by the Council of the University in June 2014. The integrated programme is intended to be introduced for new entrants in September 2015. Those students who carry on to successfully complete year four of the programme will be awarded a BSc (Pharm.) and may progress into a postgraduate fifth year which leads to the award of a MPharm. The MPharm will be required for registration as a pharmacist with the Pharmaceutical Society of Ireland. Details of the new curriculum may be found on the School website:

www.pharmacy.tcd.ie

Pharmacy Events



Left to Right: Assoc Prof Tamasine Grimes, Prof Anne Marie Healy, Head of the School, Mrs Ramona Nicholas, CARA Pharmacy, Prof Mary McCarron, Dean of Health Sciences and Assoc Prof Martin Henman

Pharmacy Inaugural Annual Lecture “Community Pharmacy - Surviving and Thriving in Times of Adversity”

The School of Pharmacy and Pharmaceutical Sciences hosted its Inaugural Annual Pharmacy Lecture with guest speaker Ramona Nicholas MPSI, Joint Managing Director of CARA Pharmacy Group and ‘Dragon’ on the RTÉ Series Dragons Den on Thursday 6th November 2014. The School hopes to use the Annual Pharmacy Lecture as an opportunity to engage with our Alumni, as well as encouraging discussion and debate on topical issues.

Trinity Hosts its 9th International Cancer Conference “Living with Cancer in the 21st Century”

On 17 & 18th of September, Trinity hosted its 9th International Cancer Conference. State-of-the-art lectures were delivered by Prof Marek Radomski on the topic of Pharmacology and Nanopharmacology of Blood-Borne Mechanisms of Carcinogenesis and by Assoc Prof Lorraine O’Driscoll focussed on Targeted Therapies for Breast Cancer: the Highs and Lows beyond their Discovery. Catherine Byrne, a PhD student supervised by Asst Prof Deirdre D’Arcy and Asst Prof Sheila Ryder was selected to present one of 4 proffered papers selected from 82 submitted research abstracts. This work detailed Telcoplanin Dosage in Adult Patients with Haematological Malignancies: Impact on Trough Levels and Clinical Outcomes.



TCD Provost Dr Patrick Prendergast and Ms Áine Lawlor, RTÉ Presenter

Pharmacy Hosts PIER Career Transition Day at Trinity College Dublin

Pharmacists in Industry Education and Regulatory (PIER) organised a career transition day on Friday 25th April 2014 in TCD for any pharmacy graduate with an interest in a career in the wider industry. AbbVie and Thornshaw Recruitment assisted with the delivery of the day. The day comprised of presentations from some of the PIER Committee members, a panel discussion with individuals working in various roles in the industry, and a CV clinic. Further information on PIER can be found at: <http://www.pier.ie/>

Senior Sophister Yoga Workshop Asst Prof Astrid Sasse

What started off pretty much as a pilot project in 2011 – the Yoga Workshop in the Senior Sophister Year as part of PH4003 – has developed into a much anticipated change to the busy SS timetable. Students are introduced in a two-hour long class in the Sports Centre to some aspects of Raja Yoga (‘King of Yogas’). Based on the very positive feedback from students, more yoga classes are offered in Hilary Term – and are very much welcomed by students. “It was a really good class; felt like I had slept for about 24 hours after the meditation bit at the end.”



Asst Prof Astrid Sasse, Director of Teaching & Learning (Undergraduate)

Student Research Placements & Voluntary Work Abroad



Turlough Heffernan SF Pharmacy Student

Senior Freshman Pharmacy Student's Summer Research Placement in the University of Southern California

Over the past summer I spent 3 months as a research assistant in the University of Southern California, Los Angeles. This opportunity was part of the Summer Research Placement Program offered by our School of Pharmacy. I studied natural product biosynthesis in the lab of Professor Clay Wang. This research focused on the regulation and biosynthetic pathways of fungal secondary metabolites with the intention of using this information for drug discovery. There were around 15 other people working in the lab, all of whom were at either the postgraduate or postdoctoral level. I became familiar with many different techniques such as the polymerase chain reaction, mass spectrometry, HPLC and gel electrophoresis. It goes without saying that I benefited hugely from the experience and I would definitely encourage others to apply.



Daniel Francis Scott SF Pharmacy Students

Senior Freshman Pharmacy Student's Summer Research Placement in the University of Montpellier

This summer, I travelled to the University of Montpellier working with Professor Gilberte Marti-Mestres. I was investigating an in vitro model to mimic changes in percutaneous permeation of the skin following use of cosmetic products, such as razors, exfoliating gels and waxing. The project was very enjoyable and unique, considering cosmetic research and education is virtually non-existent in Ireland, as well as providing me with the opportunity to gain familiarity with HPLC, histology and electron microscopy. I can use this project as part of my final year for module PH4012 and the added benefits of my placement included improving my French and making new friends. It's something I would definitely recommend and love to do again!



Clíodhna McDonald & Kate O'Reilly SS Pharmacy Students

SS Pharmacy Students Volunteer in Uganda

It was the start of the summer holidays and we were on our way to Kitovu Hospital Masaka, Uganda; a 228-bed hospital founded by the Medical Missionaries of Mary (MMM) who dedicate their time to the prevention of the spread of HIV and AIDS. We volunteered in the hospital pharmacy with a team of six hard working Ugandans. Outpatients dropped off typewritten scripts, which were checked swiftly by the pharmacy assistant. Then it was over to us to count drugs, prepare the medicines for packing, write instructions and liquidise antibiotics. The pharmacy also comprised of a stock room with stock cards for noting the flow of medicines in and out of the pharmacy, a window room where nurses would deliver scripts from the wards, an IV fluid room, a room for the dispensing of creams and pastes, and a sterile room with an autoclave. The labels were all hand-written; there was a limited supply of medicines and quartering tablets for children's doses was common.

During our stay we were invited to join the MMMs at the sister Health Complex, "Makondo", which boasts colourful medicinal plants including Aloe Vera, Lemongrass, Cassava and Jackfruit which we had learned so much about from Dr Boylan!! Sr. Helen, who reviews each family in each of the 127 districts served by the outreach programme, gave expert advice on the nutritional needs of new-borns and encouraged family members to be tested for HIV. As an adjunct, we assisted the mobile antiretroviral outreach clinic. This consisted of two fold-out chairs, and a large box of pharmaceuticals, managed none other than by ourselves in the shade of the largest Matooke tree on the edge of Lake Victoria. Through our experience in the hospital pharmacy we appreciate that the MMMs are truly incredible women, sisters and health professionals who have left their footprints in many parts of the world, especially in Uganda.

University of Florida College PharmD students visit the School of Pharmacy Trinity College

In May a group of 3rd and 4th year PharmD students from the University of Florida visited the School of Pharmacy. Apart from taking a tour of the School's facilities they also were given an introduction to pharmacy and health care in Ireland by Assoc Prof in Pharmacy Practice, Martin Henman. Assistant Dean Sven Norman who led the group commented *'Thank you so much for arranging such a wonderful program for us, yesterday and throughout our visit to Dublin. We were most impressed with all of the pharmacists and so grateful for their time and information.'*



University of Florida PharmD students with Assoc Prof Martin Henman

International News

Science Without Borders Project Asst Prof Fabio Boylan

I am currently participating on a Science Without Borders project as a Special Visiting Researcher with a research group in pharmacology from the Federal University of Rio de Janeiro. The project I am developing is entitled *"Chemistry and pharmacology of plants belonging to the Rutaceae family with special focus on alkaloids"*. During my stay in Brazil I separate these compounds (alkaloids) from hybrids of several *Choisya* species

using counter current chromatography and test them along with their extracts on in vivo models of nociception and inflammation. The anticancer activity for these plants and compounds is also assessed in different cancer cell lines, including breast, lung and colon cancers.

I also have the opportunity to deal with several other academic tasks such as:

- Supervision of undergraduate and post-graduate students;
- Delivering 4th level teaching (PhD level) by means of a short module on *"Introduction to Phytochemical Analysis"*;
- Delivering talks in different universities on my research in Ireland as well as advertising our School of Pharmacy and Pharmaceutical Sciences and TCD as the

leading university in Ireland;

- Participating in MSc and PhD "Viva Voce" examinations in Pharmacy, Chemistry of Natural Products and Pharmacology.
<http://www.eurireland.ie/related-international-co-operation/brazil-science-without-borders-programme.1946.html>



L to R: Marina Azevedo, Nathalia de Araujo, Nicole Zalli, Asst Prof Fabio Boylan, Vivian Soares, Maria Olivia Francke.

Get Involved

Trinity has a long tradition of outreach and community engagement. To find out about the numerous ways you can get involved with Trinity both at home and abroad, see www.tcd.ie/alumni/volunteer

Stay in touch

Get connected with Front Gate Online. Update your details, search and contact fellow alumni, register for events, join the career network and other groups, all in one place! Register today!

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