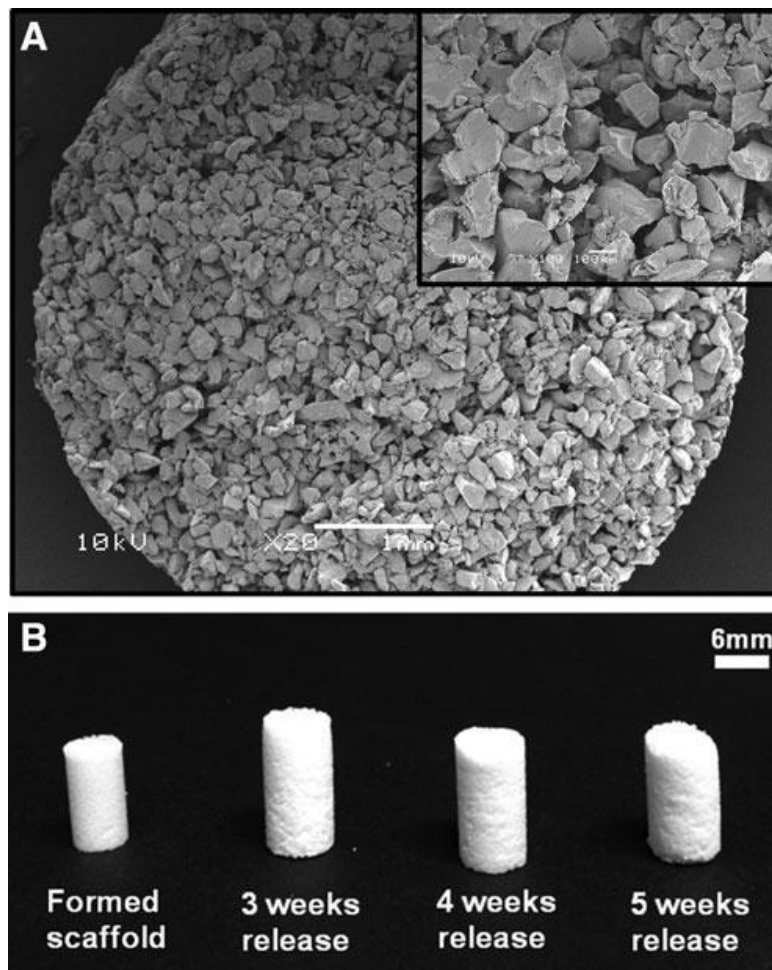




The University of
Nottingham

UNITED KINGDOM • CHINA • MALAYSIA

The School of Pharmacy Journal



November 2014-January 2015

Foreword

Welcome to our latest edition of the School of Pharmacy Journal, a quarterly collection of publications and press releases from Nov-January 2015.

[Outstanding result for research outputs in REF2014](#)

The School of Pharmacy is delighted to have once again performed so well in the UK Government's assessment of the quality of research at all UK Universities. There were 94 entries from Schools of Pharmacy, Nursing, Dentistry and Allied Health Professions to the 2014 Research Excellence Framework. The School of Pharmacy has come joint 4th on quality of research and is the top UK Pharmacy School to be entered just as Pharmacy. 51% of our research was ranked 4* (world leading) and a further 41% as 3* (internationally excellent). Of particular significance is that we are the only School of Pharmacy to have 100% of research at 4* in the 'Impact on Society' category, showing that we are the most effective School in using our research to improve people's lives through new medicines and innovation in the practice of Pharmacy as a profession.

[Five new grant success stories](#)

This has been a great quarter in terms of new grants. Dr Cornelia de Moor was awarded a total grant of **£260,000 from Arthritis Research UK** "Cordycepin as a lead compound for the treatment of osteoarthritis pain". The project is a collaboration with Victoria Chapman (Life Sciences), Pavel Gershkovich and Dave Barrett. Professor Jonas Emsley was awarded a grant of **£688,179** from the **Medical Research Council** (£313,259 to UoN) for a project entitled "ADAMTS13 structure and the molecular basis of VWF recognition and cleavage". The project has the long term goal of developing a new therapy for the treatment of stroke and is a collaboration with Imperial College London. Professor Kevin Shakesheff has been awarded two new grants: **£200,000 from the Engineering Physical Sciences Research Council** for a project entitled "Landscape Fellowship for Derfogail Delcassian: pancreatic particles: controlling the immune response". The project is a collaboration with Imperial College London and Massachusetts Institute of Technology. **£108,688 from the EU** for an ERC Proof of Concept grant: INTRASTEM. Dr Franco Falcone was awarded **£60,000 from CAPES (Brazil)** for a project entitled "Development of schistosoma mansoni protein kinases as new drug targets". The project is a collaboration with Professor Jonas Emsley, Dr Lodewijk Dekker and the Centro de Excelencia em Bioinformatica (Belo Horizonte).

[Malaysia campus](#)

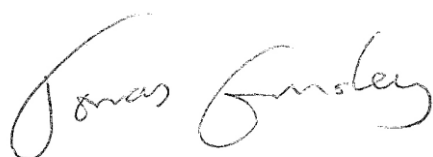
Researchers in the United Kingdom and Malaysia are developing a new class of injectable material that stimulates stem cells to regenerate damaged tissue and form new blood vessels, heart and bone tissue. Their aim is to produce radical new treatments that will reduce the need for invasive surgery, optimise recovery and reduce the risk of undesirable scar tissue. The research, which brings together expertise at the University of Nottingham and its Malaysia Campus (UNMC), is part of the "Rational Bioactive Materials Design for Tissue Generation" or "Biodesign" project – **an €11m EU-funded initiative** involving 21 research teams from across Europe. (see press release below). Within the last quarter research at the Malaysia campus has produced 8 publications covering topics from drug delivery, cancer research and anti-infectives (see below).

Publication success

Bees wax formulation in drug delivery: In a collaboration between the pharmacy school at the Nottingham (David Scurr, Clive Roberts) and Malaysia campuses (Chloe See Wei Tan, Nashiru Billa), a publication in *Nanomaterials* (2014), 4, 905-916 used a composite of bee's wax and theobroma oil to formulate an AmB-containing solid lipid nanoparticulate delivery system. Invasive fungal infections have been recognized as a major cause of morbidity and mortality among immuno-deficient patients (e.g., (AIDS) worldwide and the polyene macrolide, amphotericin B (AmB), has been in use for over 30 years remains as the drug of choice for managing these conditions. this study improves the bioavailability of AmB.

Cancer research and drug discovery. Mitotic kinases have attracted significant attention as important targets for developing treatments for cancer. In a study published in *Molecular Pharmacology* involving Tracey Bradshaws group from the University of Nottingham in a collaboration with School of Pharmacy and Medical Sciences, University of South Australia, Adelaide, Australia (Shudong Wang). Novel chemical TL-77 represents a promising anticancer agent worthy of further evaluation.

Research into cardiovascular disease. A combined biophysical and genetic approaches in identifying potential therapeutic avenues for treating bleeding and thrombotic disorders was published in the journal *Blood*. 2014;124(25):3799-807. This involved a a collaboration between the Tom Diacovo group (Columbia University Medical Center, New York, NY) and group of Jonas Emsley at the University of Nottingham. These findings broaden our understanding of mechanisms governing platelet-VWF interactions in health and disease, and underscore the importance of combined biophysical and genetic approaches in identifying potential therapeutic avenues for treating bleeding and thrombotic disorders.



Prof Jonas Emsley
jonas.emsley@nottingham.ac.uk
Chair of School Research Committee
(Nottingham)



Dr Nashiru Billa
nashiru.billa@nottingham.edu.my
Chair of School Research Committee
(Malaysia)

Contents

- [Staff Research News](#)
- [Grants/Studentships Awarded](#)
- [Student News](#)
- [Highlighted Papers](#)
- **Press Releases**
 - [Remotely controlled magnetic nanoparticles simulate stem cells to regenerate bones](#)
 - [Outstanding result for REF2014](#)
 - [Tor Vergata student contributes to an advance in the understanding of bacterial resistant materials](#)
 - [Recruiting for 12 fully-funded PhD studentships for the EPSRC Centre in Advanced Therapeutics and Nanomedicines](#)
 - [I'm a scientist get me out of here – final report](#)
 - [CHELL project appears in the latest EPSRC Pioneer magazine](#)
- **Collated Research Papers:**

[**A Gastrointestinal Transit Study on Amphotericin B-Loaded Solid Lipid Nanoparticles in Rats**](#)

Hilda Amekyeh, Nashiru Billa, Kah-Hay Yuen and Sherlyn Lim Sheau Chin

AAPS PharmSciTech (2015) Available online DOI: 10.1208/s12249-014-0279-4

[**Lipid Effects on Expulsion Rate of Amphotericin B from Solid Lipid Nanoparticles**](#)

See Wei Tan and Nashiru Billa

AAPS PharmSciTech (2014) Available online DOI: 10.1208/s12249-013-0056-9

[**Revealing cytokine-induced changes in the extracellular matrix with secondary ion mass spectrometry**](#)

Adam J. Taylor, Buddy D. Ratner, Lee D.K. BATTERY and Morgan R. Alexander

Acta Biomaterialia (2015) 14, 70-83 DOI: 10.1016/j.actbio.2014.12.005

[3D ToF-SIMS Imaging of Polymer Multilayer Films Using Argon Cluster Sputter Depth Profiling](#)

James Bailey, Rasmus Havelund, Alexander G. Shard, Ian S. Gilmore, Morgan R.

Alexander, James S. Sharp and David J. Scurr

ACS Applied Materials & Interfaces (2015) 7, 2654-2659 DOI: 10.1021/am507663v

[Direct Analysis of Intact Proteins from Escherichia coli Colonies by Liquid Extraction Surface Analysis Mass Spectrometry](#)

Elizabeth C. Randall, Josephine Bunch and Helen J. Cooper

Analytical Chemistry (2014) 86, 10504-10510 DOI: 10.1021/ac503349d

[Switching specific biomolecular interactions on surfaces under complex biological conditions](#)

Minhaj Lashkor, Frankie J. Rawson, Jon A. Preece and Paula M. Mendes

Analyst (2014) 139, 5400-5408 DOI: 10.1039/c4an01225a

[Antiproliferation and induction of caspase-8-dependent mitochondria-mediated apoptosis by \$\beta\$ -tocotrienol in human lung and brain cancer cell lines](#)

Su-Wen Lim, Hwei-San Loh, Kang Nee Ting, Tracey D. Bradshaw and Nazariah A.

Zeenathul

Biomedicine & Pharmacotherapy (2014) 68, 1105-1115 DOI:

10.1016/j.biopha.2014.10.006

[Exploiting the kinetic interplay between GPIIb/IIIa-VWF binding interfaces to regulate hemostasis and thrombosis](#)

Jianchung Chen, Hairu Zhou, Alexander Diacovo, X. Long Zheng, Jonas Emsley and

Thomas G. Diacovo

Blood (2014) 124, 3799-3807 DOI: 10.1182/blood-2014-04-569392

[Reasons why Thai patients with chronic kidney disease use or do not use herbal and dietary supplements](#)

Mayuree Tangkiatkumjai, Helen Boardman, Kearkiat Praditpornsilpa and Dawn-Marie

Walker

Complementary and Alternative Medicine (2014) 14, 473 DOI: 10.1186/1472-6882-14-

473

[High prevalence of chitotriosidase deficiency in Peruvian Amerindians exposed to chitin-bearing food and enteroparasites](#)

N. Manno, S. Sherratt, F. Boaretto, F. Mejía Coico, C. Espinoza Camus,

C. Jara Campos, S. Musumeci, A. Battisti, R.J. Quinnell, J. Mostacero León, G. Vazza, M.L. Mostacciuolo, M.G. Paoletti and F.H. Falcone
Carbohydrate Polymers (2014) 113, 607-614 DOI: 10.1016/j.carbpol.2014.07.011

[Electrically-driven modulation of surface-grafted RGD peptides for manipulation of cell adhesion](#)

Minhaj Lashkor, Frankie J. Rawson, Alex Stephenson-Brown, Jon A. Preece and Paula M. Mendes
Chem. Commun. (2014) 50, 15589-15592 DOI: 10.1039/c4cc06649a

[Optical monitoring of faradaic reaction using single plasmon-resonant nanorods functionalized with graphene](#)

Hao Zhou, Qing Liu, Frankie J. Rawson, Wei Ma, Da-Wei Li, Di Lib and Yi-Tao Long
Chem. Commun. (2015) 51, 3223-3226 DOI: 10.1039/c4cc07939f

[Identification of novel RHPS4-derivative ligands with improved toxicological profiles and telomere-targeting activities](#)

Angela Rizzo, Sara Iachettini, Pasquale Zizza, Chiara Cingolani, Manuela Porru, Simona Artuso, Malcolm Stevens, Marc Hummersone, Annamaria Biroccio, Erica Salvati and Carlo Leonetti
J. Experimental & Clinical Cancer Research (2014) 33, 81 DOI:10.1186/s13046-014-0081-x

[Gelation properties of self-assembling N-acyl modified cytidine derivatives](#)

K. J. Skilling, A. Ndungu, B. Kellam, M. Ashford, T. D. Bradshaw and M. Marlow
J. Mater. Chem. B (2014) 2, 8412-8417 DOI: 10.1039/c4tb01375a

[Antibacterial Coating for Elimination of Pseudomonas aeruginosa and Escherichia coli](#)

Zainal Abidin Ali, W. Ahliyah Ismail, Cheng-Foh Le, Hassan Mahmood Jindal, Rosiyah Yahya, Shamala Devi Sekaran and R. Puteh
J. Nanomaterials (2014) 523530 DOI: 10.1155/2014/523530

[Formulations for modulation of protein release from large-size PLGA microparticles for tissue engineering](#)

Roosbeh Qodratnama, Lorenzo Pio Serino, Helen C. Cox, Omar Qutachi and Lisa J. White
Materials Science and Engineering: C (2015) 47, 230-236 DOI:
10.1016/j.msec.2014.11.003

[Potent Trypanocidal Curcumin Analogs Bearing a Monoenone Linker Motif Act on Trypanosoma brucei by Forming an Adduct with Trypanothione](#)

Abdulsalam A.M. Alkhalidi, Darren J. Creek, Hasan Ibrahim, Dong-Hyun Kim, Neils B. Quashie, Karl E. Burgess, Chatchawan Changtam, Michael P. Barrett, Apichart Suksamrarn, and Harry P. de Koning

Molecular Pharmacology (2015) 87, 451-464 DOI: 10.1124/mol.114.096016

[In Vitro Antitumor Mechanism of \(E\)-N-\(2-methoxy-5-\(\(\(2,4,6-trimethoxystyryl\)sulfonyl\)methyl\)pyridin-3-yl\)methanesulfonamide](#)

Tiangong Lu, Charles A. Laughton, Shudong Wang, and Tracey D. Bradshaw

Molecular Pharmacology (2015) 87, 18-30 DOI: 10.1124/mol.114.093245

[Properties of An Oral Nanoformulation of A Molecularly Dispersed Amphotericin B Comprising A Composite Matrix of Theobroma Oil and Bee's Wax](#)

Chloe See Wei Tan, Nashiru Billa, Clive J. Roberts and David J. Scurr

Nanomaterials (2014), 4, 905-916 DOI:10.3390/nano4040905

[Alkaloid extracts of Ficus species and palm oil-derived tocotrienols synergistically inhibit proliferation of human cancer cells](#)

Ibrahim Babangida Abubakar, Kuan-Hon Lim and Hwei-San Loh

Natural Product Research (2015) Available online DOI:10.1080/14786419.2014.991927

[An internal ribosome entry site in the 5' untranslated region of epidermal growth factor receptor allows hypoxic expression](#)

TE Webb, A Hughes, DS Smalley and KA Spriggs

Oncogenesis (2014) 3, e134 DOI: 10.1038/oncsis.2014.43

[Criofoline and Vernavosine, New Pentacyclic Indole Alkaloids Incorporating Pyrroloazepine and Pyridopyrimidine Moieties Derived from a Common Yohimbine Precursor](#)

Choy-Eng Nge, Chew-Yan Gan, Kuan-Hon Lim, Kang-Nee Ting, Yun-Yee Low and Toh-Seok Kam

Organic Letters (2014) 16, 6330-6333 DOI: 10.1021/ol503072g

[A competing risk analysis of hormone therapy interruption in Asian women with breast cancer](#)

Kun-Pin Hsieh, Li-Chia Chen, Kwok-Leung Cheung and Yi-Hsin Yang

Pharmacoepidemiology and Drug Safety (2014) Available online

DOI: 10.1002/pds.3733

[Hispidacine, an unusual 8,4'-oxyneolignan-alkaloid with vasorelaxant activity, and hispiloscine, an antiproliferative phenanthroindolizidine alkaloid, from *Ficus hispida* Linn](#)

Veronica Alicia Yap, Bi-Juin Loong, Kang-Nee Ting, Sandy Hwei-San Loh, Kien-Thai Yong, Yun-Yee Low, Toh-Seok Kam and Kuan-Hon Lim

Phytochemistry (2015) 109, 96-102 DOI:10.1016/j.phytochem.2014.10.032

[Development of Dual-Activity Vectors by Co-Envelopment of Adenovirus and SiRNA in Artificial Lipid Bilayers](#)

Açelya Yilmazer, Bowen Tian and Kostas Kostarelos

PLOS One (2014) 9: e114985 DOI: 10.1371/journal.pone.0114985

[Improved expression and purification of the *Helicobacter pylori* adhesion BabA through the incorporation of a hexa-lysine tag](#)

Naim Hage, Jonathan G. Renshaw, G. Sebastiaan Winkler, Paul Gellert, Snow Stolnik and Franco H. Falcone

Protein Expression and Purification (2015) 106, 25-30

DOI: 10.1016/j.pep.2014.10.009

[Investigation of interaction studies of cefpirome with ACE-inhibitors in various buffers](#)

Muhammad Nawaz, Muhammad Saeed Arayne, Najma Sultana and Hira Fatima Abbas

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy (2015) 137, 1050-1054 DOI: 10.1016/j.saa.2014.08.152

[Investigation of Localized Delivery of Diclofenac Sodium from Poly\(D,L-Lactic Acid-co-Glycolic Acid\)/Poly\(Ethylene Glycol\) Scaffolds Using an In Vitro Osteoblast Inflammation Model](#)

Laura E. Sidney, Thomas R.J. Heathman, Emily R. Britchford, Arif Abed, Cheryl V. Rahman and Lee D.K. Buttery

Tissue Engineering: Part A (2015) 21, 362-373 DOI: 10.1089/ten.tea.2014.0100

[Evaluation of a Thermoresponsive Polycaprolactone Scaffold for In Vitro Three-Dimensional Stem Cell Differentiation](#)

Veronika Hruschka, Aram Saeed, Paul Slezak, Racha Cheikh Al Ghanami, Georg Alexander Feichtinger, Cameron Alexander, Heinz Redl, Kevin Shakesheff, Susanne Wolbank

Tissue Engineering Part A. (2015) 21, 310-319

[New dimensions in controlling cellular function with electroceutics](#)

Frankie J. Rawson

Therapeutic Delivery (2015) 6, 5-8 DOI: 10.4155/TDE.14.105

Staff Research News

- [Professor Cameron Alexander](#) :
 - Has been awarded the Royal Society of Chemistry/Society of Chemical Industry Macro Group Medal for 2014 (for "significant and substantial contribution to the development of polymer science") and will be presented with the medal at a Royal Society of Chemistry Symposium in Warwick on May 8th
 - Has been invited to give a Plenary Lecture at the Controlled Release Society 2015 Annual Meeting.
 - Has been invited to give a Plenary Lecture at the Polymers for Advanced Technologies Meeting (PAT2015, Hangzhou, China) and an Invited Lecture at the European Polymer Federation Annual Meeting in Dresden, Germany.
- [Professor Morgan Alexander](#) has been invited to give a talk at the [5th International Symposium Interface Biology of Implants](#) in Kurhaus Warnemünde in May.
- [Dr Stephanie Allen](#) has been elected to the American Vacuum Society's [Biomaterials Interface Division](#).
- [Professor Jonas Emsley](#) has been invited to give a talk at the [International Society of Thrombosis and Hemostasis Congress](#) in Toronto.
- [Dr Franco Falcone](#) has been invited to give three talks in Tokyo later this Summer, one at the National Institute of Health Sciences (Host: Dr Ryosuke Nakamura), and two (consecutive) talks at the Tokyo Medical and Dental University (Host: Prof Hajime Karasuyama). This is part of a move to expand collaborative contacts with the Japanese research community very active in the area of Immunology and Allergy.
- Dr Sebastian Spain, who was an EPSRC funded PDRA in Professor Cameron Alexander's group, has recently commenced a Lectureship in the Department of Chemistry at the University of Sheffield.

Grant/Studentships Awarded

- Dr Claudia Conte from the University of Naples will be joining Professor Cameron Alexander's research group in March following the award of a 2 year Italian Cancer Research (i-CARE) Fellowship.
- [Dr Cornelia de Moor](#) was awarded a total grant of £260,000 (£212,503 to UoN) from Arthritis Research UK for a three year project entitled "Cordycepin as a lead compound for the treatment of osteoarthritis pain". The project is a collaboration with Victoria Chapman (Life Sciences), Pavel Gershkovich and Dave Barrett.
- [Professor Jonas Emsley](#) was awarded a grant of £688,179 (£313,259 to UoN) from the Medical Research Council for a project entitled "ADAMTS13 structure and the molecular basis of VWF recognition and cleavage". The project is a collaboration with Imperial College London.
- [Dr Franco Falcone](#) was awarded £60,000 from CAPES for a project entitled "Development of schistosoma mansoni protein kinases as new drug targets". The project is a collaboration with Professor Jonas Emsley, Dr Lodewijk Dekker and the Centro de Excelencia em Bioinformatica (Belo Horizonte).
- [Professor Kevin Shakesheff](#) has been awarded:
 - £200,000 from the Engineering Physical Sciences Research Council for a project entitled "Landscape Fellowship for Derfogail Delcassian: pancreatic particles: controlling the immune response". The project is a collaboration with Imperial College London and Massachusetts Institute of Technology.
 - £108,688 from the EU for an ERC Proof of Concept grant: INTRASTEM.

Student News

- Mohannad Qazzaz, a second year student supervised by Dr Tracey Bradshaw, recently gave an oral presentation of his work at the winter PAMM meeting (an annual international cancer meeting). His talk and slides were outstanding and he won the award for best presentation.
- Yamina Boukari, a PhD student at the Drug Delivery Laboratory, School of Pharmacy, UNMC won the Best oral presentation in the PhD biotechnology category at the International Postgraduate Research Award Seminar, 10-11 December 2014, University of Putra Malaysia. Yamina is principally supervised by Dr Nashiru Billa.

Highlighted Papers

- [**Revealing cytokine-induced changes in the extracellular matrix with secondary ion mass spectrometry**](#)

Adam J. Taylor, Buddy D. Ratner, Lee D.K. Buttery and Morgan R. Alexander
Acta Biomaterialia (2015) 14, 70-83 DOI: 10.1016/j.actbio.2014.12.005

- [**Improved expression and purification of the *Helicobacter pylori* adhesion BabA through the incorporation of a hexa-lysine tag**](#)

Naim Hage, Jonathan G. Renshaw, G. Sebastiaan Winkler, Paul Gellert, Snow Stolnik and Franco H. Falcone
Protein Expression and Purification (2015) 106, 25-30
DOI: 10.1016/j.pep.2014.10.009

Naim Hage's paper in Protein Expression and Purification describing the recombinant expression and purification of *Helicobacter pylori* adhesin BabA was published in February and has rapidly risen to the third most downloaded paper from this journal from the last 90 days.