



Newsletter

June 2017

Professor Orla Hardiman, Academic Director

Mr Tony Byrne, Executive and Technical Director

Welcome to the 8th Newsletter from TBSI. We present conferences, discoveries, events and prizes from this year.



words from Orla Hardiman

A warm welcome to the eight TBSI newsletter. As ever a lot has been happening, from ongoing exciting discoveries, high profile publications, awards and even a march! We present a snapshot of activities and encourage you to keep us informed.

RESEARCH (To read more go to [recent discoveries](#) or to www.tcd.ie/biosciences)



Growth Plate Extracellular Matrix-derived Scaffolds for Large Bone Defect Healing

Grainne Cunniffe The growth plate (GP) of developing limbs contain a plethora of growth factors and matrix cues which contribute to long bone growth, suggesting that biomaterials derived from its extracellular matrix (ECM) may be uniquely suited to promoting bone regeneration. Journal text [ecmjournal](#) Publications date: February 2017

"Porous scaffolds derived from this biomaterial have been shown for the first time to contain osteoinductive factors suitable for the differentiation of stem cells into bone, and upon implantation into critically-sized bone defects, these

scaffolds instigated regeneration of the defect by allowing host cells and new vessels to infiltrate into the material and promoting mineralisation."

Lorraine O'Driscoll: EV-TRACK transparent reporting and centralising knowledge in extracellular vesicle research



The EU H2020-funded International Network on Microvesicles and Exosomes in Health and Diseases, led by Prof. Lorraine O'Driscoll School of Pharmacy & Pharmaceutical Sciences & TBSI, published on their extensive international study summarised under the title of EV-TRACK: transparent reporting and centralizing knowledge in extracellular vesicle research. **Nature Methods**. 2017 Feb 28; 14(3):228-232.



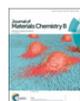
Collaboration led by TBSI's Danny Kelly



Issue 9, 2017

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From the journal:
Journal of Materials Chemistry B

RALA complexed α -TCP nanoparticle delivery to mesenchymal stem cells induces bone formation in tissue engineered constructs *in vitro* and *in vivo*



Binulal N. Sathy,^a Dinorath Olvera,^a Tomas Gonzalez-Fernandez,^a Gráinne M. Cunniffe,^a Sreekanth Pentlavalli,^b Philip Chambers,^b Oju Jeon,^c Eben Alsberg,^{cde} Helen O. McCarthy,^b Nicholas Dunne,^{abf} Tammy L. Haut Donahue,^{gh} and Daniel J. Kelly^{*ajjk}

RALA complexed α -TCP nanoparticle delivery to mesenchymal stem cells induces bone formation in tissue engineered constructs *in vitro* and *in vivo*.

[Abstract](#)

BSI Collaboration: Thorri Gunnlaugsson and Eoin Scanlan, Chemistry.

Paper on F – recognition that mediates one-pot synthesis of 3-amino-[1,2,4]-triazolo pyridines from Thiosemicarbazides [publication link](#)

This novel synthetic approach offers an efficient and importantly, transition-metal-free, one-pot protocol for the synthesis of biologically relevant 3-amino-[1,2,4]-triazolo[4,3-a]pyridines. These structures have been identified as key pharmacophores of major importance in medicinal chemistry

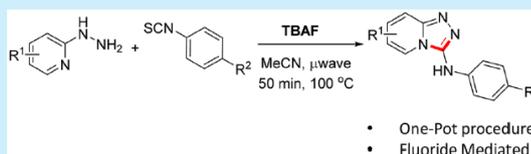
Supramolecular Anion Recognition Mediates One-Pot Synthesis of 3-Amino-[1,2,4]-triazolo Pyridines from Thiosemicarbazides

Komala Pandurangan, Anna B. Aletti, Devis Montroni, Jonathan. A. Kitchen, Miguel Martínez-Calvo, Salvador Blasco, Thorfinnur Gunnlaugsson,^{*b} and Eoin M. Scanlan^{*c}

School of Chemistry, Trinity College Dublin and Trinity Biomedical Science Institute (TBSI), The University of Dublin, Dublin 2, Ireland

Supporting Information

ABSTRACT: A facile one-pot synthesis of 3-amino-[1,2,4]-triazolo[4,3-a]pyridines from thiosemicarbazides through anion mediated synthesis is reported. Thiosemicarbazides derived from 2-hydrazino pyridine, 5-chloro 2-hydrazino pyridine, and 2-hydrazine quinoline were formed in situ as anion receptors in the presence of TBAF. Under microwave heating, thiosemicarbazides furnished the triazolo pyridines in good to moderate yields. The formation of the thiosemicarbazides hydrogen bonding anion receptors was critical in cascading the reaction toward the formation of the triazolo pyridines.





Thorri Gunnlaugsson 3D bone maps

Thorri Gunnlaugsson demonstrates [watch video](#)



Chemists develop a technique that reveals the 'microcracks' in a patient's bone, without exposing them to x-ray radiation. They say it could act as an early warning for degenerative bone diseases, such as osteoporosis

The Journal of Immunology: Jean Fletcher March 2017

J Immunol March 15, 2017, 198 (6) 2249-2259; DOI: [Abstract](#)



Ex-Th17 (Nonclassical Th1) Cells Are Functionally Distinct from Classical Th1 and Th17 Cells and Are Not Constrained by Regulatory T Cells. Sharee A. Basdeo, Deborah Cluxton, Jamal Sulaimani, Barry Moran, Mary Canavan, Carl Orr, Douglas J. Veale, Ursula Fearon and Jean M. Fletcher.

Th17 cells, which play an important pathogenic role in autoimmunity, undergo plasticity at sites of autoimmune inflammation to become 'ex-Th17' cells. This work showed that these ex-Th17 cells are functionally distinct from both their parent Th17 cells and from Th1 cells, and exhibit characteristics such as cytokine polyfunctionality, increased survival and proliferation that make them pathogenic in the context of autoimmunity. Ex-Th17 cells were also resistant to suppression by regulatory T cells, meaning that they would not be adequately regulated. These findings have important implications for diseases such as rheumatoid arthritis and other autoimmune diseases where ex-Th17 cells accumulate and are likely to exert a pathogenic role. In addition, since these pathogenic ex-Th17 cells have lost expression of IL-17, they would not be inhibited by therapies targeting IL-17, and this may in part explain the lack of efficacy of anti-IL-17 in rheumatoid arthritis



Scientists discover shared genetic origin for MND and schizophrenia

Orla Hardiman:



Motor Neurone Disease (MND) -- also known as Amyotrophic Lateral Sclerosis (ALS) -- and schizophrenia have a shared genetic origin, indicating that the causes of these diverse conditions are biologically linked.

Motor neurone disease and schizophrenia are linked [Irish Times video](#)

Motor Neurone Disease and Schizophrenia are link – Study

[Abstract](#) (nature communications article 21 March 2017)

David Hoey:

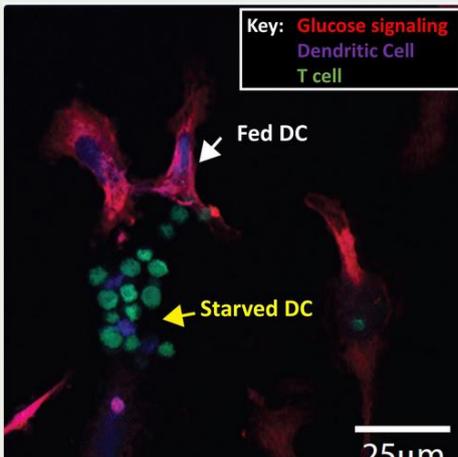


Oscillatory fluid flow induces the osteogenic lineage commitment of Mesenchymal Stem Cells: The effect of shear stress magnitude, frequency, and duration [Abstract](#)

Link to [Science Direct](#)

Physical loading of our bones arising from exercise is known to be good for our skeletal health. However how these physical forces result in increased bone formation is poorly understood. Mesenchymal stem cells (MSCs), which reside within our bones, have the ability to differentiate into bone forming osteoblasts and are known to be sensitive to physical stimulation. Therefore, this study exposed MSCs to physical forces that would be experienced within bone during exercise and found that these physiological relevant forces can drive the differentiation of these MSCs into bone forming osteoblasts demonstrating that loading may regulate skeletal health by directly regulating MSC differentiation

David Finlay: Nature Communications publication: “The discovery that T Cells



and dendritic cells compete with each other for glucose offers a new and exciting insight into how glucose can regulate dendritic cell function.” [Nature article](#)

Glucose represses dendritic cell-induced T cell responses

Simon J. Lawless, Nidhi Kedia-Mehta, Jessica F. Walls, Ryan McGarrigle, Orla Convery, Linda V. Sinclair, Maria N. Navarro, James Murray & David K. Finlay [✉](#)

Nature Communications **8**,
Article number: 15620 (2017)
doi:10.1038/ncomms15620

Received: 15 April 2016
Accepted: 13 April 2017
Published online: 30 May 2017



David Finlay



Nidhi Kedia-Mehta



Simon Lawless

Immunology and Tissue Engineering Collaboration: Nature published online

7th June 2017 [Nature Article](#)

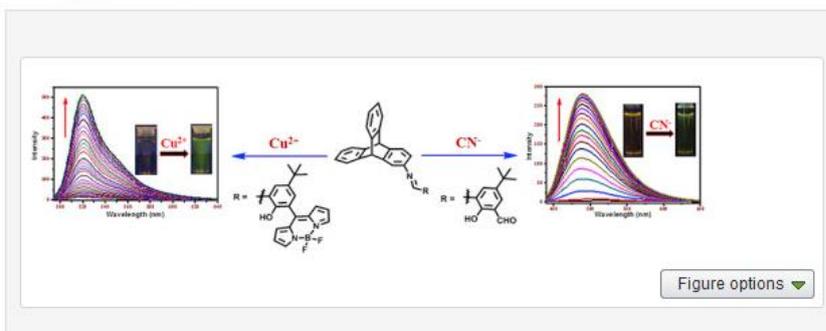
The shape and size of hydroxyapatite particles dictate inflammatory responses following implantation

Filipa Lebre, Rukmani Sridharan, Michael J. Sawkins, Daniel J. Kelly, Fergal J. O'Brien & Ed C. Lavelle

Mathias Senge and Mike Lyons publication in Science Direct:[Science Direct, May 2017](#)

Triptycene scaffolds: Synthesis and properties of triptycene-derived Schiff base compounds for the selective and sensitive detection of CN⁻ and Cu²⁺

Graphical abstract



Keywords

Triptycene; Schiff base; Sensor; Cyanide; Copper ions

The project, which was focused around monitoring in real time and diagnosing the onset of catheter associated urinary tract infection, was based upon using a combination of pH responsive luminescent sensor that was embedded within hydrogels, of the same nature used in contact lenses, and the enzyme urease. Urease



activities are enhanced upon bacterial growth on the surface of catheters, which can be coated with the hydrogels. The onset of the bacterial infect, increases the generation of urea which is subsequently hydrolysed to ammonia by the enzyme, and this changes the pH of the local environment around the catheter, which the sensor detects, resulting in changes in its red emission, which occurs from a lanthanide ion in the read region, this being easily detected or visible to the naked eye.

The collaboration lead by Prof. Thorri Gunnlaugsson and Prof. Clive Williams from TBSI, and Prof. Colin McCoy from QUB, consisting of chemists, biochemistry and material scientists, is ongoing, the initial result having been published in the high impact journal of the American Chemical Society, *The Journal of the American Chemical Society*, earlier this year. [JACS](#)



Article

pubs.acs.org/JACS

Luminescent Lanthanide Cyclen-Based Enzymatic Assay Capable of Diagnosing the Onset of Catheter-Associated Urinary Tract Infections Both in Solution and within Polymeric Hydrogels

Esther M. Surender,[†] Samuel J. Bradberry,[†] Sandra A. Bright,[‡] Colin P. McCoy,[§] D. Clive Williams,[‡] and Thorfinnur Gunnlaugsson^{*,†}

[†]School of Chemistry, Trinity Biomedical Sciences Institute (TBSI), Trinity College Dublin, The University of Dublin, Dublin 2, Ireland

[‡]School of Biochemistry and Immunology, Trinity Biomedical Sciences Institute (TBSI), Trinity College Dublin, The University of Dublin, Dublin 2, Ireland

[§]School of Pharmacy, Queen's University Belfast, 97 Lisburn Road, Belfast, BT9 7BL, Northern Ireland, U.K.

Prof. Senge's chemistry group in TBSI discovers new optical probes for monitoring oxidative stress

Understanding the effects of reactive oxygen species (ROS) in living cells is crucially important for the development of new therapies. There are many open questions concerning the role of the higher energy state of molecular oxygen, so-called singlet oxygen, in the activation of cell stress response mechanisms. The main problem is that we lack reliable sensing tools for the detection of this species. Finding a common approach for optical diagnostic probes for singlet oxygen, has been debated for a long time, especially with regard to false positives obtained with multifunctional molecules.

In work by Dr. Mikhail Filatov, a Marie-Curie fellow in Prof. Senge's group, undergraduate Erasmus students from France, Germany and Lithuania, and with collaborators from Russia, the UK, and Saudi-Arabia just published in the high profile chemistry *Journal of the American Chemical Society*, they uncovered the origin of common misinterpretations regarding singlet oxygen abundance in cells. Studying the photophysical properties of a large family of newly developed probes, they identified an unexpected pathway for singlet oxygen generation. The observed light-induced intramolecular processes result in self-production of singlet oxygen by the probes *in vitro*, giving intense optical



responses along with profound cytotoxic effect. This result demonstrates that current paradigms for the design of optical probes must be reconsidered.

On the other hand, the systems studied provide a new dimension for studying oxidative stress induced by singlet oxygen formation. The new photosensitization mechanism induces cytotoxicity and at the same time provides fluorescent visualization of the morphological changes taking place in cancer cells with time (Figure 1). This promises new theranostic advances in photomedicine, as the fluorescent response allows for minimizing the photon doses required to cause cell death and thus preventing the side-effects of light treatment common in conventional methods, such as photodynamic therapy (PDT).

Currently they focus on the optimization of the photophysical properties of these systems, so that they operate in the near-IR window of tissue and may be used with patients. The work was supported by grants from Science Foundation Ireland (SFI) and the European Commission.

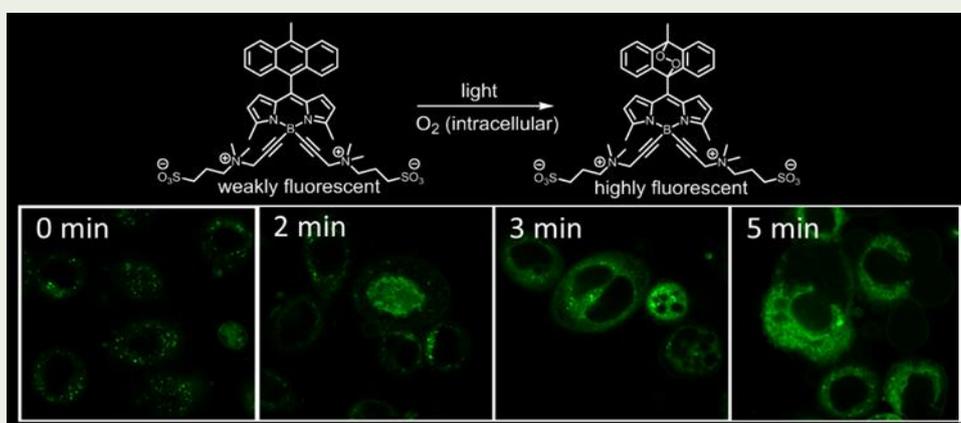


Figure 1: Confocal microscopy image of cancer cells incubated dyad molecules after irradiation with broadband visible light for 0, 2, 3 and 5 min showing florescent response and morphological effects associated with singlet oxygen induced oxidative stress.

Reference:

Filatov, M. A.; Karuthedath, S.; Polestshuk, P. M.; Savoie, H.; Flanagan, K. F.; Sy, C.; Sitte, E.; Telitchko, M.; Laquai, F.; Boyle R. W.; Senge, M. O. (2017): Generation of Triplet Excited States via Photoinduced Electron Transfer in *meso*-anthra-BODIPY: Fluorogenic Response toward Singlet Oxygen in Solution and in Vitro. *Journal of the American Chemical Society* **139**, 6282–6285. doi: [10.1021/jacs.7b00551](https://doi.org/10.1021/jacs.7b00551)

Eoin Scanlan, Chemistry group:

[Nature article](#)

Publication in Nature Communications from the Scanlan group; Exploring S-to-N acyl transfer reactions in synthesis and chemical biology; Burke, H.; McSweeney, L. and Scanlan E. M.* Nat. Commun. 2017, 8, 15655

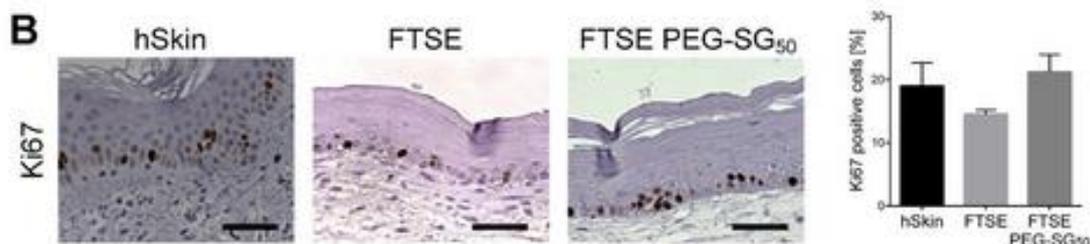
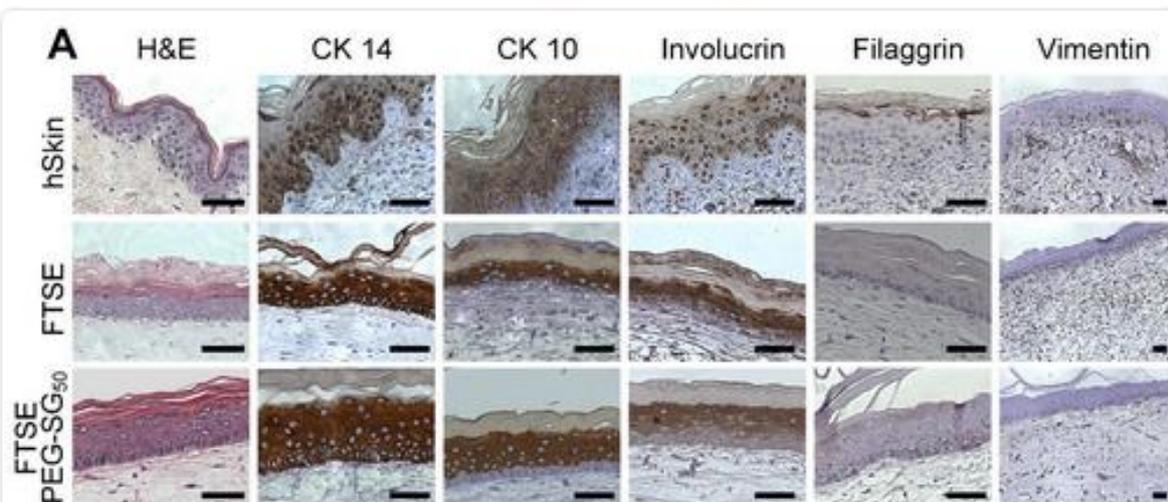


Exploring chemoselective S-to-N acyl transfer reactions in synthesis and chemical biology

Helen M. Burke, Lauren McSweeney & Eoin M. Scanlan

Michael Monaghan (Ussher Assistant Professor in Biomedical Engineering) recent publication entitled: Cross-linked Collagen Hydrogel Matrix Resisting Contraction To Facilitate Full-Thickness Skin Equivalents. Read in [ACS publication](#)

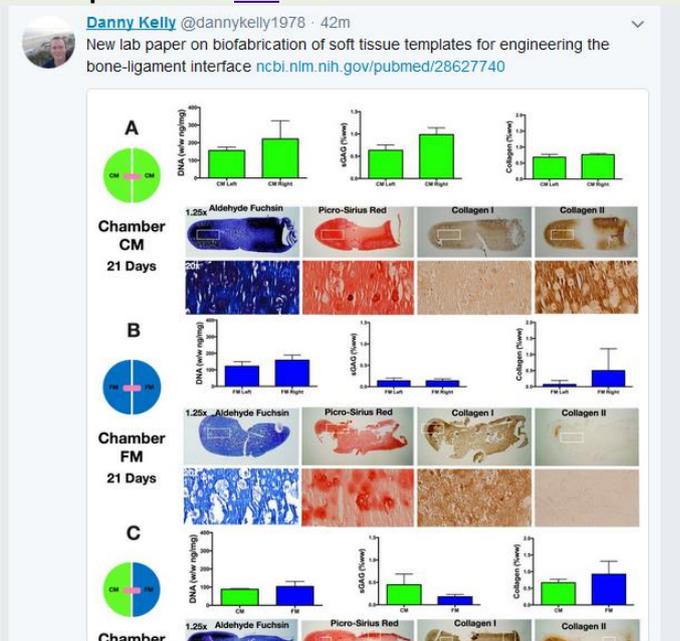
Recent paper: TE crosslinked collagen dermal matrix to resist contraction for full thickness in vitro skin models- pubs.acs.org/doi/abs/10.102...





New Danny Kelly lab publication. Biotechnology and Bioengineering

Online publication [link](#)



Thorri Gunnlaugsson Surface-Modified Gold Nanoparticles Possessing Two-Channel Responsive Eu^{III}/Tb^{III}Cyclen Complexes as Luminescent Logic Gate Mimics

[read online](#)

CHEMPHYS-CHEM
A EUROPEAN JOURNAL OF CHEMICAL PHYSICS AND PHYSICAL CHEMISTRY

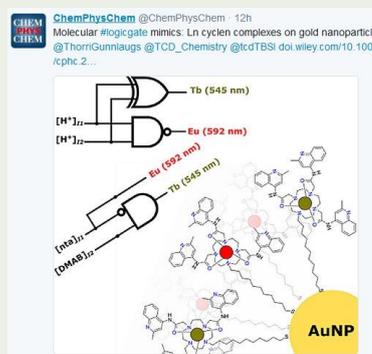
ChemPubSoc Europe

Communication

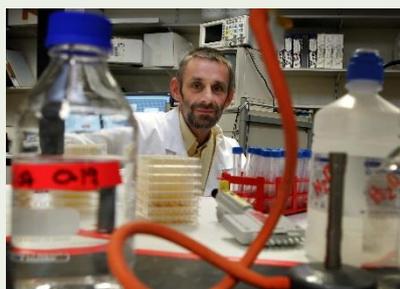
Surface-Modified Gold Nanoparticles Possessing Two-Channel Responsive Eu^{III}/Tb^{III} Cyclen Complexes as Luminescent Logic Gate Mimics

Dr. Laura K. Truman, Samuel J. Bradberry, Dr. Steve Comby, Dr. Oxana Kotova, Prof. Dr. Thorfinnur Gunnlaugsson

First published: 12 June 2017 Full publication history
DOI: 10.1002/cphc.201700440 View/save citation
Cited by (CrossRef): 0 articles Check for updates Citation tools



GRANTS AND AWARDS



Dr Karen Dixon (Mentor: Kingston Mills) Marie Skłodowska-Curie Individual Fellowship, in collaboration with Prof Vijay Kuchroo, Brigham & Women's Hospital and Harvard University, Boston. 'Use of novel techniques to identify pathogenic versus non-pathogenic Th17 cells in experimental autoimmune encephalomyelitis, a murine model of multiple sclerosis. €248,063,



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Kyle Cunningham (Mentor: **Kingston Mills**) Irish Research Council, Government of Ireland Postgraduate Scholarship 2016. 'The role of trained innate immunity in parasite-mediated protection against autoimmune disease' €96,000.

Kingston Mills, lead applicant, SFI Infrastructure award. Imaging Flow Cytometer. €554,769.

Grainne Cunniffe – SFI grant award [SFI press release](#) [siliconrepublic news](#)

Dr Gráinne Cunniffe at TBSI will work on the development of novel 3D bio-printing technology to develop a product for cartilage regeneration, in an effort to cure osteoarthritis

MINISTER MITCHELL O'CONNOR ANNOUNCES €4.6 MILLION SFI INVESTMENT TO SUPPORT 37 RESEARCH COMMERCIALISATION PROJECTS



Prof Mark Ferguson, Director General of Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, with Dr Gráinne Cunniffe, Research Fellow with the Trinity College Centre for Bioengineering, who is one of the TIDA Awards recipients, working on adding biological function to 3D printed bones, Minister for Jobs, Enterprise and Innovation, Mary Mitchell O'Connor TD and Ann Riordan, Chairperson of the Board of SFI.

More SFI funding news €100,000 each award plus overheads

Prof. Isabel Rozas: Rationally designed inhibitors of staphylococcus aureus colonization



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Dr. Emma Creagh: Inflammatory Caspases – Expression and Function in Treatment-Resistant Oesophageal Cancer.

Dr. Grainne Cunniffe: Mosaic scaffolding for osteochondral regeneration: modular biomimetic PCL templates functionalised with cartilage and bone specific extracellular matrix (ECM) components

Prof. Andrew Bowie: Novel anti-inflammatory therapeutics derived from a human adapted poxvirus

Dr. Nigel Stevenson: Restoration of anti-viral responses to Interferon- α towards the development of a therapeutic cure for HIV

Collaboration on €1.4m Project. It will be led by Prof Fergal O'Brien from RCSI's Department of Anatomy, and the Deputy Director in AMBER, in partnership with TBSI's [Prof Conor Buckley](#) from the Trinity Centre for Bioengineering



Trinity Researchers to collaborate on project to regenerate damaged nerves.



Twitter feed



ISI PUBLIC LECTURE AWARD 2017: Professor Andrew Bowie (School of Biochemistry and Immunology, Trinity Biomedical Sciences Institute, TCD) was presented with the 2017 ISI Public Lecture Award, on Thursday 27th April at an event hosted in association with the Irish Times. As part of his award ceremony, Professor Bowie presented a public lecture entitled: "Viruses and us: playing host to the enemy. "In his lecture, he discussed the fascinating relationship between us and viruses – how viruses invade our cells, how our cells are equipped to detect and thwart such an invasion, and why the same cellular anti-viral detectors that protect us from these invaders can also cause damage, chronic inflammation and autoimmunity.



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Ms Elisabeth Sitte, a new PhD student in **Professor Mathias Senge's** laboratory with a M.S. in Chemical Biology from Karlsruhe Institute of Technology, was awarded the notable Trinity and Sydney E. Auchinleck Postgraduate Research Studentship. The award was announced in 2017 for the first time and is intended to honour Sidney E. Auchinleck as the first female graduate in Chemistry at Trinity College. The scholarship fully covers the PhD salary and tuition fees for four years.



Congratulations to **Dr. Rita Petracca** from **Eoin Scanlan's group** on her recent 2017 IRC Postdoctoral Fellowship Award



Dr Mary Canavan, Molecular Rheumatology Group, TBSI, who won first prize at the EWRR, Greece, for her research entitled 'Identification of novel DC subsets in the RA joint which induce T cell function, and activation of which are potentiated by the hypoxic environment of the joint'

Congratulations to **Paola Aprile** on winning the PhD paper competition





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Luke O'Neill was recently listed in '10 European Scientists who are best at co-founding Biotech Companies'. His work has identified several targets for drugs and vaccines, and he has filed patents surrounding a number of key proteins in the innate immune cascade. In 2004, he co-founded Opsona Therapeutics, where he remains as director and CSO. Last year, he also co-founded Inflazome, which made a splashy debut with Novartis' investment. Labiothech.eu [article](#)

SFI Future Research Leaders: Professor Lydia Lynch named amongst Ireland's top 25 most powerful women for 2017 [silicon republic reports](#) Lydia Lynch is spearheading research into the role our immune system has in regulating metabolism, with the aim of understanding how we might one day use our own immune systems to target cancer. Lydia added.. "I am delighted to be recognised with this award for the work we are doing here in Trinity and in Harvard,"



Congratulations to **Dr Fergus Poynton** (The second-ever Irish person to win a prestigious international award from the World Chemistry), (centre) who was formally presented with the RIA Young Chemist Prize today. The prize is awarded annually by the Royal Irish Academy for the most outstanding chemistry thesis in Ireland. Fergus received



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his doctorate in December on Ru(II) polypyridyl DNA-targeting agents. Fergus won the prize in March for his thesis “Spectroscopic Investigations into the Excited-State Processes and Reactivity of Ruthenium(II) Polypyridyl Complexes”, he has since won one of the five IUPAC-Solvay International Awards for Young Chemists, and will receive the prize at the 46th IUPAC World Chemistry Congress in São Paulo this July

Fergus was formally awarded the prize in May, and has been nominated by the RIA for the IUPAC-Solvay International Award for Young Chemists.

EDUCATION



QS World Rankings: Professor John J. Boland, Dean and Vice President for Research wrote to staff members

I am delighted to share with you the news that Trinity has risen 10 places in the latest QS World University Rankings to 88th in the world. Trinity is not only the highest-placed Irish university in the QS rankings, but is also the only Irish university placed in the Top 100. According to QS this new ranking sees Trinity in the top 1% of universities worldwide.

Across the majority of indicators, Trinity’s performance improved. This rise in our ranking comes at a time when more than 50 ranked universities out of about 70 in the UK have seen their rankings fall, and there have been similar declines in many parts of Western Europe. Against this backdrop, and mixed results for universities here in Ireland, Trinity’s performance is very heartening. Trinity is currently ranked first in Ireland for research impact, reflecting our important role in job creation and the country’s economic development. Trinity’s employer reputation score also rose, and is a clear indication of the employability of Trinity’s graduates with domestic and international employers.

As well as research impact, Trinity is also the top-ranked Irish university for academic reputation, international students and faculty showing that we continue to attract the top students and staff from around the world.

I would like to thank everyone who was involved in preparing the returns to QS for this latest round of rankings. But most importantly, I would like to take a moment to recognise the continued dedication and sustained excellence of the entire Trinity community that makes results like this possible. While the University remains ambitious that we can improve our international rankings even further, it is important to take the time to celebrate significant achievements such as this, particularly in light of the challenging landscape in which universities must now operate

MSc in IMMUNOLOGY: Trinity’s M.Sc in Immunology is celebrating its 5th successful year. Congratulations to all our graduates, many of whom are now studying for PhDs, working in Pharma or have moved in to further education, such as Medicine or Veterinary. Also, congratulations the winning



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Immunotherapeutics and Product Development Team, who pitched their exciting therapeutic to a team of “Dragons”!





OUTREACH:

Filming in TBSI: Nigel s's lab HIV awareness



Whipsmart Media @whipsmartie · 1h
Filming in @tcdTBSI today for a promotional film about research that could one day lead to a cure for #HIV pic.twitter.com/nW5ZpnBE8

Dr. Nigel Stevenson was recently awarded an HRB KEDS grant entitled "Together against HIV: raising awareness and knowledge through documented real-life experiences and research discover". In collaboration with HIV Ireland, the Science Gallery and the broadcaster Jonathan McCrea, Dr Stevenson and his Intracellular Immunology Team at Trinity are creating a series of films explaining their HIV research at TCD. The launch event will be held in the Science Gallery on the 8th February 2018

ISI Outreach during Maths and Science Week in TBSI

Irish Immunology @irishimmunology · 1h
Welcome to students from our lady of Lourdes Inchicore visiting @tcdTBSI for maths and science week with @AccessTCD and ISI outreach



Irish Immunology @irishimmunology · 10m
Our next visitors to learn about the immune system are students from our lady of good council, Drimnagh. @AccessTCD @tcdTBSI

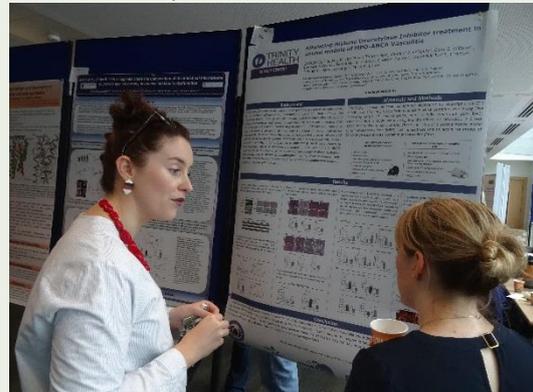
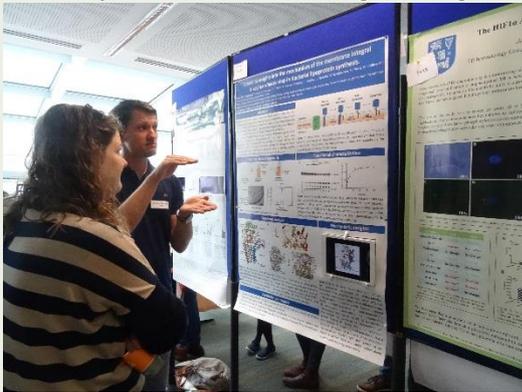




EVENTS

Postdoc Research Day 23rd June 2017. Update given by Stephanie Longet below:

The TBSI Postdoctoral Research Day 2017 took place on the 23rd of June 2017 in the Trinity Biomedical Sciences Institute. This event was open for all postdoctoral researchers, PhD students, undergraduate students and faculty members. Following a poster session, Professor Orla Hardiman, Academic Director of the TBSI, welcomed everyone to the Research Day and opened the talks for the afternoon. In order to valorise the contribution in research of the postdoctoral researchers and promote the networking among them, the best of research underway within the institute was showcased during this event. Very interesting talks and poster presentations were given by postdoctoral researchers and final year PhD students from the School of Biochemistry and Immunology, the School of Medicine, the School of Chemistry, the School of Bioengineering, and the School of Pharmacy and Pharmaceutical Sciences.



Our first keynote speaker, Dr. Darrin Morrissey, Science Foundation Ireland Director of Programmes, gave a nice talk about the SFI missions, SFI programmes and SFI grant opportunities for postdocs. It was a great honour to welcome a SFI representative at this event. Our second invited keynote speaker, Mr. Ryan Quigley, Vice President Region North, Western Europe, Canada of AbbVie Limited, gave an overview of the company AbbVie and its goals. He also described the job opportunities for postdocs in the company.



Dr. Darrin Morrissey, SFI Director of Programmes & Mr. Ryan Quigley Vice President Region North, Western Europe, Canada of AbbVie Ltd



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For the first time, the Postdoc Society decided to invite two guest speakers so that they could share their career experience in academia and industry. Dr. Parvaneh Mokarian-Tabari, Specialist in research commercialisation and industry collaborations, and Prof. Michael Monaghan, a new appointed Ussher Assistant Professor in Mechanical & Manuf. Eng, gave very encouraging and inspiring talks and highlighted the broad and diverse career opportunities in Science.



Dr. Parvaneh Mokarian-Tabari



Prof. Michael Monaghan

The Research Day was wrapped up by a wine reception held at the Knowledge Exchange where the Postdoc Society announced the winners for the best oral and poster presentations based on the basis of excellence. The 1st prize for the best oral presentation was awarded to Dr. Louise Glover for her talk entitled “Assisted Reproductive Technology (ART) Outcomes in Endometriosis-associated Infertility - A Role for Uterine NK Cells? The runner-up for oral presentation was Dr. Cairnan Duffy.

The prize for the best poster presentation was won by Dr. Nicole Howe for her poster entitled “A structure approach to rational design and discovery of antibiotics targeting bacterial cell wall synthesis”. The runner-up for best poster presentation was Dr. Celine De Looze. In addition, a special prize for poster presentation was awarded to Dr. Christine White. We would like to sincerely acknowledge our numerous sponsors for their precious contribution as well as Prof. Orla Hardiman, Mr. Tony Byrne, Ms. Caroline Levis and Mr. Gerard Ecock for their help and support. And we hope this event may encourage people to collaborate across the disciplines between and within the Schools of TBSI





Bottom left (Dr. Louise Glover) p 18
Top left (Dr. Nicole Howe)



Bottom right p 18 (Dr. Cairnan Duffy)
Top right (Dr. Celine De Looze)



Louise Glover



Nicole Howe



Cairnan Duffy



Celine De Looze



Stephanie, Samira with Orla Hardiman



CONCUSSION:

A National Direction

Hosted by The Concussion Research Interest Group at Trinity College Dublin

24 February 2017 at 2pm

Stanley Quek Theatre, Trinity Biomedical Sciences Institute, Trinity College Dublin



Concussion: A National Direction

📅 February 24th, 2017 📍 Dublin

Enjoy a Friday afternoon of debate on one of the most critical issues impacting sports in Ireland and globally. Our discussion will draw from the scientific, medical and sporting experience. Our sporting panel will have players from the world of rugby, GAA, and horse racing, and other leading Irish sports. Eoin McDevitt, of Second Captains, will host the event. We start at 2pm and we will continue the conversation with refreshments post event.



Tickets

Concussion: A National Direction

Join us for a Friday afternoon debate on concussion in sport, from a scientific, medical and players perspective. The event starts at 2pm at the Stanley Quek Theatre, TBSI Building.

free × 1



Act of Remembrance and Thanksgiving

on

Thursday 9th MARCH 2017

at

5.15 pm

College Chapel

This ceremony is a tribute to those who in death have served the living

It is an opportunity for students and staff to express their gratitude to those who have donated their bodies to medical science.

A central part of the ceremony is calling out the name of each donor while lighting a candle in their memory.

The ceremony lasts approx 45 minutes during which the Chaplains, Choir, Students, Staff and Donor Families, contribute religious and secular readings, singing and music, creating a truly fitting acknowledgement to the donor community.

Everyone is welcome to attend



TED^x Trinity College Dublin

x = independently organized TED event

Theme: Place your bets

This event occurred on

March 27, 2017

4:00pm - 10:00pm IST
(UTC +1hr)

**Dublin, Dublin
Ireland**

Radius MAR 15, 2017

Celebrating Trinity Women in Science

DU General Science society hosted an evening dedicated to celebrating women in science and exploring barriers that hinder diversity in the workplace.

Grace D'Arcy
CONTRIBUTING WRITER



TBSI was well represented. Monday night 13th March 2017 saw faculty members and students come together in an open event dedicated to Trinity women in science. The event, organised by DU General Science Society, aimed to bring women studying and working in science to come together and celebrate their achievements in honour of International Women's Week the week before. . The female guests represented a diverse range of fields within science, this consisted of Prof Cliona O'Farrelly, Dr Mary Bourke, Prof Louise Bradley, Dr Aine Kelly, Dr Glynis Robinson, Dr Joan Geoghegan, Prof Celia Holland, Prof Marina Lynch, Dr Rachel Evans, Prof Nicola Marples, Dr Kim Roberts and Dr Jean Fletcher, who are leaders in the fields of immunology, geography, nanoscience, physiology, biochemistry, microbiology, zoology, neuroscience and chemistry.



MARCH FOR SCIENCE, IRELAND

SATURDAY 22 APRIL | EARTH DAY
2PM | GRAND CANAL SQUARE | DUBLIN 2

An international initiative to stand up for science and evidence in the face of an alarming trend toward discrediting scientific consensus.

We will march to support international collaboration, evidence-based policy, and science in society.



@ScienceMarchIE #ScienceMarchIE
sciencemarchie.wordpress.com



A huge congratulations to **Shaun O'Boyle** who organised this event! Thank you Conor Courtney, March for Science Ireland, for the photographs and Luke of O'Neill who was interviewed. See below what he had to say:

On April 22nd, several hundred thousand scientists and supporters of science took to the streets all over the world in over 600 cities including Dublin. Trinity was well represented with our students' union front and centre, our Chancellor, Mary Robinson; Provost; Registrar and many staff past and present. What drove a normally laboratory-bound community to down pipettes, make banners reading "Up with this sort of thing" and "There is no Planet B" and chant slogans like "two-four-six-eight everybody vaccinate"?

For me, it was about a celebration of science which, at its most fundamental, is a force for good in the world: revealing our curious human nature, promoting collaboration and diversity, discovering things about the wonder of the world and ultimately bringing huge benefits to humanity through technology and new medicines. But the time had come to "Stick it to the Man" – the Man in this case being the



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dreaded Trump and his acolytes, who are notable for being anthropogenic climate change deniers, vaccine deniers, anti-intellectual and anti-reason.

Instead of funding critically needed medical research, there's a strong possibility that money will be given to racists and warmongers.

When lead organiser, Shaun O'Boyle, (formerly of our superb [Science Gallery](#)) asked me to speak at the event, I immediately said yes. I contacted a senior collaborator working at the US government-supported National Institutes of Health (NIH) in Bethesda, the world's largest medical research organisation whose work has brought huge advances for patients suffering from many diseases, including arthritis, asthma, many cancers and multiple sclerosis. I asked him what he now feared. He replied with a chilling one-line email: "not on my government email." I subsequently learnt that the NIH is facing a 20 per cent cut in their budget. Guess where that money will go?

We can speculate: the wall with Mexico and the Department of Defence. Instead of funding critically needed medical research, there's a strong possibility that money will be given to racists and warmongers. I also learnt that labs in NIH will have new administrative staff, who it is feared will report back to high command to ensure obedience. Even more worrying, NIH and Environmental Protection Agency (EPA) staff were obliquely told not to go on the March in Washington DC. All of us can therefore be proud to have marched for those who couldn't.

I also marched to stand against the climate change deniers. In a stroke of genius, a scientist in my lab suggested I sing a paraphrased version of John Lennon's anti-Vietnam war song, so I sang "Give Bees a Chance.... As for vaccine deniers, I spoke about Robert Kennedy and Robert De Niro, who are offering a prize of \$100,000 for whoever can prove that vaccines are safe. First, this is a preposterous proposition from a scientific point of view – try proving water is safe. An answer on Twitter read "How about 7 billion people without polio?" We must stand up to this kind of nonsense, as it only bolsters people in Ireland to deny climate change and advocate against vaccines.

I also marched for the international nature of science which is under threat. There are eight nationalities in my lab in Trinity. I collaborate with labs all over the world. Everybody is welcome in science and it is diversity, be it in gender, culture, age, orientation and even being a supporter of Bray Wanderers that brings new ideas.

During the darkest days of World War II, in a little country on the edge of Europe, Erwin Schrodinger gave a lecture in our Physics department called "What is Life?" that sparked the DNA revolution.

So can Ireland make a difference? Of course. I mentioned how Mary Robinson stuck it to the US when she was High Commissioner for Human Rights at the UN. How, in 1943, Ireland welcomed a refugee family from Austria. During the darkest days of World War II, in a little country on the edge of Europe, Erwin Schrodinger gave a lecture in our Physics department called "What is Life?" that sparked the DNA revolution. We can all make a difference if we try and what better way than to stand up for science and if need be march.

The last speaker was our own Mary Robinson, and it was wonderful to hear our students chanting "Mary! Mary" as she grabbed the loud hailer. She read a moving poem by Jane Hirschfield, which spoke



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of how now that scientists are being silenced in the US, it is the rivers and the wind that are left to speak for our environment.

Importantly, we see this as a new beginning, and plans are afoot to form a new association for scientists in Ireland to keep the issues we marched for alive and on the agenda nationally and internationally. I'll say one thing for Trump: he's bringing people together in ways I would think he didn't anticipate. You talkin' to me Robert de Niro? You talkin' to me Donald Trump? Well me and hundreds of thousands of scientists. That's who.



Prof Luke O'Neill and Mary Robinson, Chancellor of the University of Dublin and former President of Ireland, at Dublin's March for Science



Cliona O'Farrelly and Cathal Harmon



In the extreme right we can see Professor Dermot Kelleher, formerly of this Parish!





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Public Lectures:

Kingston Mills Public lecture on **Vaccines** in TBSI on 15th Feb 2017 received media coverage in the Irish Times, including an editorial article, The Journal.ie, Irishhealth.com and Newstalk radio

The Fountain of Youth: Autophagy and Ageing-Related Diseases by Professor **James Murray** on 5th April



PUBLIC LECTURE: Dr. Nigel Stevenson gave a Public Lecture entitled "**Immune Wars**" at this year's Trinity Week EngAGE/U3A Public Forum - Health in Our Changing World. Dr. Stevenson gave an overview of global viral threats and his Intracellular Immunology lab's research solutions that aim to restore innate immunity against viral infection



Luke O'Neill took part in a debate on **Bad Science** at the recent **Body and Soul festival** held in Ballinlough, Co Westmeath. Here he is with Blindboy Boathouse who chaired the discussion

NEW STAFF



Hayley Furlong

Dr. Hayley Furlong began a career in Biotechnology (BSc. NUI Maynooth) and then moved on to develop her academic research training, gaining a PhD in Radiobiology (Dublin Institute of Technology, Ireland) and Postdoctoral training in Reproductive Biology (McMaster University, Ontario, Canada). Hayley recently returned from Canada and joined the Trinity Research and Innovation Office as part of the Research Development team in March 2017 and is the Research Programme Officer for TBSI.



Calendar of Events: January – June 2017

25/01/2017	Gaeltacht Debate
25/01/2017	GSU Meeting
26-27/01/17	(Pathology) HPV Day
28-29/01/2017	DUSAC student course
07/02/2017	GSU Meeting
07/02/2017	CRANN meeting
15/02/2017	Public Lecture Series: Kingston Mills
15/02/2017	Trinity News Meeting
17-18/02/2017	21st Cent Teaching, PG Cert
21/02/2017	GSU Meeting
23/02/2017	IAT Course
23/02/2017	Prof. Fearon Inaugural Lecture
25/02/2017	Concussion Symposium
06/03/2017	Neurological Alliance of Ireland
06/03/2017	Accuscience Roadshow
07/03/2017	WiSER – Women in Research
08/03/2017	Public Lecture Series
08/03/2017	TCD MSA – Muslim Student Association
09-10/03/2017	Academic Paediatric Society
13/03/2017	General Science Soc: Women in Science
17/03/2017	TCD MSA meeting
14/03/2017	GSU - Multidisciplinary Research Showcase
15/03/2017	GenSoc Event
15/03/2017	Department of Physiology outreach evening
16/03/2017	Afro-Caribbean Society - Wild n' Out
21/03/2017	Postdoc Society Meeting
22/03/2017	Rising Sophister Information Event
22/03/2017	Science Gallery – Learning Revolution
22/03/2017	CRANN Event
23/03/2017	Senior Academic Promotions – RSS Roadshow
23/03/2017	School of Psychology FYP Poster Session
27/03/2017	TEDx Society – TEDx Trinity College Dublin
28/03/2017	DU GenSoc AGM
01/04/2017	DUSEAS - Malaysian Medics International Ireland
05/04/2017	General Science Society “Arms Race”
05/04/2017	Public Lecture Series: James Murray
06/04/2017	Christine Monahan: Postgrad Presentation Seminars & reception
07/04/2017	Gaby McCabe: B&I Poster Day
10/04/2017	Trinity Week: Keynote Address by Conor Walsh



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11/04/2017	Trinity Week: Public symposium (Trinity EngAGE)
11/04/2017	Irish Cancer Society Research Talk
11/04/2017	Trinity Week: The Fightback (panel discussion)
12/04/2017	Biochemistry Poster Presentations
12/04/2017	Trinity Week: public symposium
13/04/2017	Trinity Week: Transgender Event
21/04/2017	Hibernia College
25/04/2017	Carrick Therapeutics
25/04/2017	Meeting for Postdocs: TBSI RPO
26/04/2017	TAP: immunology workshop, math and science exploration
27/04/2017	Meeting of the Implementation Network
27/04/2017	Irish Society for Immunology Public Lecture
28/04/2017	HR Workshop
27/04/2017	Rice Steele
29-30/04/2017	TR&I - NASA Hackathon
05/05/2017	2nd Med Undergraduate Poster Evening
05-06/05/2017	GSU Postgrad education event
17-18/05/2017	Implementation Science for National Clinical Guidelines - Training Event
19/05/2017	School of Biochemistry and Immunology Bruno Bash - Margaret Ciotti Award
29/05-02/06/2017	TCD Project -EUNCL 2nd Yearly Meeting
24/05/2017	IAT Symposium
31/05/2017	Trinity MBA McKinsey Way
31/05/2017	Bio-Sciences Equipment Roadshow
01/06/2017	7th Annual Irish Next Generation Sequencing Meeting
08/06/2017	Houghton Mifflin Harcourt CEO Presentation
08-09/06/2017	M.Sc in Health Services Management June Guest Lectures
14/06/2017	Women's Network Summer Event
23/06/2017	PostDoc Research Day 2017

FEEDBACK

Please provide us with feedback, ideas and also news (apologies for any omissions) as we aim to establish TBSI as an Institute of which we can all be proud.

TBSI DIGITAL SIGNAGE

The lift lobby screens on each of the floors can be used by all areas within TBSI to upload information. Contact Caroline if you require information on this at clevis@tcd.ie

SOCIAL MEDIA

Missing out on engaging with Social Media such as Facebook, Twitter, Instagram, snapchat etc. could mean missing out on the ripple effect that can happen by the use of a simple # (hashtag). Sharing your news with friends and colleagues on social media can have such a positive reaction that it could multiply your research contacts and enhance your personal research footfall and may well help in



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catapulting you onto the world stage! There has been an enormous shift on how people engage with news stories over the years since TBSI opened its doors in June 2011 and published its first newsletter. TBSI has gained over 1000 followers* to date, one single tweet can be retweeted within seconds by any one of our 1000+ followers, gathering significant momentum during the course of 24 hours. Here are two images grabbed from Facebook and Twitter. Statistics speak volumes. I think a mere 25% of PIs engage with TBSI on social media so perhaps it might be time to increase the numbers

TBSI's Facebook stats over 5 days at the end of June.

Your 5 Most Recent Posts

Reach: Organic/Paid Post Click

Published	Post	Type	Targeting	Reach
28/06/2017 11:00	 Trinity Biomedical Sciences Institute - TBSI shared TCD Alumni's p			75
27/06/2017 17:32	 https://www.facebook.com/universitytimes/posts/1015493494297			198
27/06/2017 09:30	 http://www.universitytimes.ie/2017/06/trinity-researchers-to-collab			143
26/06/2017 09:59	 Trinity Biomedical Sciences Institute - TBSI shared The University			72
22/06/2017 18:00	 Trinity Biomedical Sciences Institute - TBSI shared TCD Alumni's p			66

Post engagements
20 June – 26 June

337
Post engagement ▲283%

Twitter stats over a week in June

<p>Profile visits</p> <p>479 ▲0.6%</p> 	<p>Mentions</p> <p>25</p> 	<p>Followers</p> <p>1,062 ▲16</p> 
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*examples being: SFI, Enterprise Ireland, IRC, MarieS-Curie Ireland, HEA, RTE, Will Goodbody

I am always available to show how Social Media can be used to increase one's profile, just send me a quick email at clevis@tcd.ie

Links referred to within this newsletter:

Growth Plate Extracellular Matrix-derived Scaffolds for Large Bone Defect Healing RALA complexed α -TCP nanoparticle delivery to mesenchymal stem cells induces bone formation in tissue engineered constructs in vitro and in vivo

www.reuters.com video: Bone maps

<http://www.ecmjournal.org/journal/papers/vol033/vol033a10.php>

<http://pubs.rsc.org/en/content/articlelanding/2017/tb/c6tb02881k#!divAbstract>

<http://www.reuters.com/video/2017/02/24/3d-bone-maps-could-spot-early-signs-of-o?videoid=371185009&videoChannel=6>

<http://www.jbiomech.com/article/S0021-9290%2817%2930097-0/abstract>

<http://www.sciencedirect.com/science/article/pii/S0021929017300970>

Oscillatory fluid flow induces the osteogenic lineage commitment of Mesenchymal Stem Cells: The effect of shear stress magnitude, frequency, and duration

Lorraine O'Driscoll. EV TRACK

<https://www.ncbi.nlm.nih.gov/pubmed/28245209>

<http://www.nature.com/nmeth/journal/v14/n3/full/nmeth.4185.html>

Jean Fletcher: Ex-Th17 (Nonclassical Th1) Cells Are Functionally Distinct from Classical Th1 and Th17 Cells and Are Not Constrained by Regulatory T Cells.

Orla Hardiman:

Motor neurone disease and schizophrenia are linked – study Orla Hardiman:

<http://www.jimmunol.org/content/198/6/2249>

<http://www.nature.com/articles/ncomms14774>

http://www.irishtimes.com/news/health/motor-neurone-disease-and-schizophrenia-are-linked-study-1.3023499?utm_content=sf-man

<https://vimeo.com/209609526>

http://www.tcd.ie/news_events/articles/scientists-discover-shared-genetic-origin-for-mnd-and-schizophrenia/7681

Video Orla Hardiman:

Collaboration: TBSI researchers from both the Schools of Chemistry, and Biochemistry and Immunology

David Hoey

<http://www.sciencedirect.com/science/article/pii/S004040201730368X>

<http://www.jbiomech.com/article/S0021-9290%2817%2930097-0/abstract>

Immunology and Tissue Engineering Collaboration

Surface-Modified Gold Nanoparticles Possessing Two-Channel Responsive

<https://www.nature.com/articles/s41598-017-03086-0>

<http://onlinelibrary.wiley.com/doi/10.1002/cphc.201700440/epdf> PDF



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EuIII/TbIII Cyclen Complexes as Luminescent Logic Gate Mimics
Senge and Lyons

<http://www.sciencedirect.com/science/article/pii/S004040201730368X>

The Journal of Immunology: Jean Fletcher March 2017
SFI press release

<https://doi.org/10.4049/jimmunol.1600737>

<http://www.sfi.ie/news-resources/press-releases/minister-mitchell-o%E2%80%99connor-announces-%E2%82%AC4.6-million-sfi-investment-to-support-37-research-commercialisation-projects.html>

Silicon Republic article

https://www.siliconrepublic.com/innovation/research-funding-science-foundation-ireland?utm_source=dlvr.it&utm_medium=twitter

Michael Monaghan ACS publication

<http://pubs.acs.org/doi/abs/10.1021/acsami.7b04017>

Biotechnology&Bioengineering publication

<https://www.ncbi.nlm.nih.gov/pubmed/28627740>

Luke O'Neill, Labiotech.eu article

https://labiotech.eu/10-european-scientist-best-co-founding-biotech-companies/?utm_campaign=Contact+Quiboat+For+More+Referrer&utm_medium=twitter&utm_source=quiboat

Eoin Scanlan

<https://www.nature.com/articles/ncomms15655>



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



85 PARTNERSHIPS WITH INDUSTRY




Ireland's EU Structural Funds
Programmes 2007 - 2013
Co-funded by the Irish Government
and the European Union



EUROPEAN REGIONAL
DEVELOPMENT FUND



An Roinn Post, Fiontar agus Nuálaíochta
Department of Jobs, Enterprise and Innovation



HIGHER EDUCATION AUTHORITY
AN tÚDARÁS um ARD-OIDEACHAS

Investing in your future