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TCES

UK Society for Biomaterials



**TCES-UKSB 2019**  
**11-13 June**

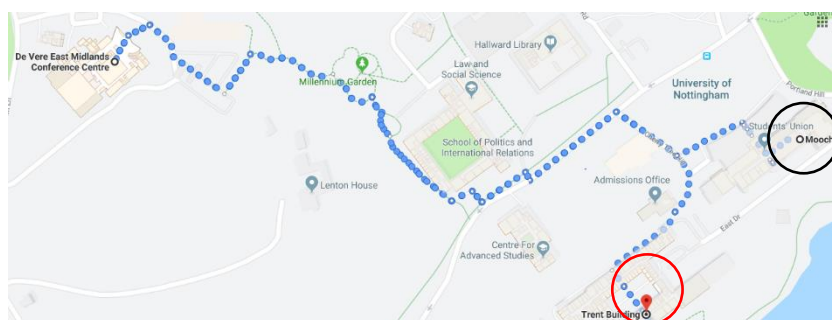
**East Midlands Conference Centre**  
**University of Nottingham, UK**



## TCES-UKSB 2019 Programme & Abstracts



<https://bit.ly/TCES-UKSB2019>



**EARLY CAREER RESEARCHER SOCIAL – MOOCH, STUDENTS UNION**

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## Tuesday 11<sup>th</sup> June 2019: Development of New Models, Tools and Technologies

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- 08:00 – 10:00 TCES-UKSB 2019 Registration and Poster Set-up
- 10:00 – 10:15 Welcome and Introduction to TCES-UKSB 2019**  
*Dr Lisa White, University of Nottingham*
- 10:15 – 11:15 SESSION 1: IMAGING IN TERM**  
*Chair: A/Prof Colin Scotchford, University of Nottingham*
- 10:15 – 10:45 **Keynote - Professor Chris Sammon**, Sheffield Hallam University  
*'Using infrared imaging and spectroscopy to support the development of regenerative therapies'*
- 10:45 – 11:00 Mr Dan Merryweather, Loughborough University  
*Influence of sample preparation methods on the organizational presentation of collagen fibrils in hydrogel electron microscopy*
- 11:00 – 11:15 Prof Elisa Budyn, ENS Paris-Saclay  
*Reforming the Haversian network in a bone-on-chip*
- 11:15 – 12:15 SESSION 2: Turbo Talks I**
- Ms Lydia Beeken, University of Nottingham (Poster No. 144)  
*Development of a topical cell therapy for ocular surface disorders*
  - Ms Charlotte Lee-Reeves, Imperial College London (Poster No. 264)  
*Improving stem cell therapies for traumatic brain injury using bioactive ECM scaffolds to attenuate inflammation*
  - Mr David Hiram Ramos Rodriguez, University of Sheffield (Poster No. 136)  
*Development of topographically controlled electrospun scaffolds to deliver proangiogenic agents for wound healing*
  - Ms Man Li, University of Liverpool (Poster No. 54)  
*Nitric oxide releasing electrospun nanofibers for antimicrobial bone tissue engineering*
  - Ms Kathryn Thomas, University of Nottingham (Poster No. 240)  
*Phosphate based glass coatings for rapid Ga3+ release: the challenges of balancing cytocompatibility with antimicrobial effects*
  - Mrs Shirin Hanaei, Nottingham Trent University (Poster No. 109)  
*Modelling and emulating 3D multi-tissue interactions by microfluidic chip technology*
  - Ms Flavia Bonalumi, University of Brighton (Poster No. 104)  
*Development of a multi-layered cryogel bioreactor with optimised fluid dynamics for bioartificial liver application*
  - Mrs Alison Wilson, University of York (Poster No. 73)  
*Clinical translation of regenerative medicines: a regulatory primer*
  - Mr Paul Mardling, Sheffield Hallam University (Poster No. 194)  
*Auxetic and composite scaffolds show potential for use in tissue engineering*
  - Ms Thunyaporn Srisubin, University of Manchester (Poster No. 80)  
*Phosphonate-modified graphene-laponite composites for bone repair*
- 12:15 – 13:30 Lunch and UKSB Annual General Meeting
- 13:30 – 15:15 SESSION 3: NEXT GENERATION BIOMATERIALS DISCOVERY**  
*Chair: Prof Morgan Alexander, University of Nottingham*
- 13:30 – 14:00 **Keynote - Professor Jan de Boer**, Eindhoven University of Technology  
*'Life at the cell-material interface'*

- 14:00 – 14:15 Dr Mahetab Amer, University of Nottingham  
*Differentiation by design: Varying surface topographical features of polymeric microparticles influences mesenchymal stem cell fate*
- 14:15 – 14:30 Mr Chinnawich Phamornnak, University of Manchester  
*Non-woven mats of electroactive composites of silk-PEDOT:PSS for peripheral nerve regeneration*
- 14:30 – 14:45 Dr Jenny Aveyard, University of Liverpool  
*Nitric oxide releasing contact lens bandages*
- 14:45 – 15:00 Mr David Richards, University of Manchester  
*Utilising a novel photoresponsive hydrogel with defined surface topography and photoswitchable stiffness to analyse the biophysical regulation of mesenchymal stem cells*
- 15:00 – 15:15 Dr Laura Ruiz, University of Nottingham.  
*Rapid screening of inks for 3D printing personalised drug delivery implants*
- 15:15 – 16:15 Coffee Break and Posters
- 16:15 – 18:00** **SESSION 4: INNOVATIVE BIOMATERIALS**  
*Chair: Dr Jude Curran, University of Liverpool*
- 16:15 – 16:30 Platinum Exhibitor: **Jellagen**
- 16:30 – 17:00 **Keynote - Professor Sandra Van Vlierberghe**, University of Ghent  
*'Versatile hydrogel platform for 3D printing applications'*
- 17:00 – 17:15 Dr Maxine Chan, Imperial College London  
*Fabrication and characterisation of endometrial extracellular matrix hydrogel for endometrial regeneration*
- 17:15 – 17:30 Mr George Fleming, University of Liverpool.  
*Dual-action nitric oxide-releasing micropatterned antibacterial PDMS surfaces*
- 17:30 – 17:45 Dr Richard Balint, University of Manchester.  
*Graphene-polymer composites for the engineering of cardiac tissue*
- 17:45 – 18:00 Prof Bikramjit Basu, Indian Institute of Science  
*3D inkjet printing of biomaterials with strength reliability and cytocompatibility: Quantitative process strategy for Ti-6Al-4V*
- 18:00 – 20:00** **TCES-UKSB Welcome Reception**
- 20:00 onwards** **TCES-UKSB Early Career Researchers Social, Mooch, Students Union**

## Wednesday 12<sup>th</sup> June 2019: Translational Research: Barriers and Breakthroughs

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- 08:00 – 09:00 Meet the Mentor 1
- 09:00 – 10:45** **SESSION 5: BIOMATERIALS AND TERM**  
*Chair: Dr Araida Hidalgo-Bastida, Manchester Metropolitan University*
- 09:00 – 09:15 Platinum Exhibitor: **TA Electroforce**
- 09:15 – 09:45 **Keynote - Professor Stephen Badylak**, University of Pittsburgh  
*'Clinical Translation of an acellular therapy for Barrett's Oesophagus'*

- 09:45 – 10:00 Dr Victoria Robertson, University College London  
*Local suppression of the T cell response to peripheral nerve allografts using drug-eluting PCL fibres*
- 10:00 – 10:15 Mr James Reid, University of Edinburgh  
*Biofunctionalizing tailored electrospun scaffolds for influencing vascular cellular performance*
- 10:15 – 10:30 Ms Azadeh Rezaei, University College London  
*Role of silicate and silicate-bioactive glasses in bone nodule formation*
- 10:30 – 10:45 Ms Roxanna Ramnarine, University of Southampton  
*Self-assembling structured laponite hydrogels with spontaneous 3D micropatterning of bioactive factors for tissue regeneration*
- 10:45 – 11:15 Coffee break
- 11:15 – 12:45** **SESSION 6: ADVANCES IN TERM**  
*Chair: Dr James Phillips, University College London*
- 11:15 – 11:30 Platinum Exhibitor: **Cell and Gene Therapy Catapult**
- 11:30 – 12:00 **Keynote - Professor Alicia El Haj**, University of Birmingham  
*'Translation of cell therapy control platforms to the clinic'*
- 12:00 – 12:15 Dr Lucy Bosworth, University of Liverpool  
*Electrospun scaffolds containing decellularised tissue matrix support conjunctival epithelial and goblet cells*
- 12:15 – 12:30 Dr Emily Britchford, University of Nottingham/NuVision Biotherapies  
*Validation and assessment of an antibiotic decontamination manufacturing protocol for vacuum-dried human amniotic membrane*
- 12:30 – 12:45 Mr Jonathan May, University of Southampton  
*Study of the effects of microbubbles on bone formation using micro-CT*
- 12:45 – 14:00 Lunch and TCES Annual General Meeting
- 14:00 – 15:30** **SESSION 7: DEVELOPMENT OF TRANSLATIONAL & 3D MODELS**  
*Chair: Dr Paul Roach, Loughborough University*
- 14:00 – 14:15 Platinum Exhibitor: **BioTek**
- 14:15 – 14:45 **Keynote - Professor Katja Schenke-Layland**, University of Tübingen  
*'Non-invasive high content analysis of 3D in vitro test systems'*
- 14:45 – 15:00 Ms Bethany Ollington, University of Sheffield  
*Generation of an immuno-responsive tissue engineered oral mucosal equivalent containing primary human macrophages*
- 15:00 – 15:15 Dr Laura Macri-Pellizzeri, University of Nottingham  
*Porous glass microspheres show biocompatibility, tissue ingrowth and osteogenic onset in vivo.*
- 15:15 – 15:30 Mr Jeremy Mortimer, University of Edinburgh  
*Investigations of human tendon width for the anatomical design of an in vitro flexor digitorum profundus enthesis model*
- 15:30 – 16:30 Coffee and Posters

- 16:30 – 18:00**    **SESSION 8: ROBERT BROWN EARLY STAGE INVESTIGATOR AND UKSB PRIZES**  
*Chair: Dr Nick Evans, University of Southampton*
- 16:30 – 16:45    Dr Jennifer Ashworth, University of Nottingham  
*Peptide gels of fully-defined composition and mechanics for modelling cell-matrix interactions in breast cancer*
- 16:45 – 17:00    Dr Nazia Mehrban, University College London  
*In vivo response to injectable hydrogels: from decellularised ECM to de novo peptides*
- 17:00 – 17:30    **Alan Wilson Memorial Lecture – Professor David Wood**, University of Leeds  
*'The Minimata convention: challenges and opportunities for aesthetic dental materials'*
- 17:30 – 18:00    **UKSB President's Prize – Professor Kevin Shakesheff**, University of Nottingham  
*'Minimally invasive delivery of temperature sensitive biomaterials*
- 19:00 – 23:00**    **TCES-UKSB Conference Gala Dinner** *Drinks reception in Council Room (A21); dinner in the Senate Chamber at 20:00, Trent Building.*

**Thursday 13<sup>th</sup> June 2019:**  
**Emerging Research and New Frontiers**

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- 08:00 – 09:00    Meet the Mentor 2
- 09:00 – 09:45**    **SESSION 9: SENSING & CONTROLLING CELL BEHAVIOUR I**  
*Chair: Prof Sarah Cartmell, University of Manchester*
- 09:00 – 09:30    **Keynote - Dr Roisin Owens**, University of Cambridge  
*'A 3D bioelectronics model of the human gut'*
- 09:30 – 09:45    Dr Frankie Rawson, University of Nottingham  
*Stimulative 3D conducting architectures to modulate cellular phenotype*
- 09:45 – 10:45**    **SESSION 10: TURBO TALKS II**
1. Ms Jazz Stening, University of Nottingham (Poster No. 243)  
*Optimisation of microparticle formulations for cytokine delivery for macrophage modulation for potential application in spinal cord injury*
  2. Ms Rina Maruta, Kyoto Institute of Technology (Poster No. 150)  
*3D culture of epidermis by use of recombinant silk materials containing FGF-7 protein microcrystals*
  3. Ms Eleanor Porges, University of Southampton (Poster No. 148)  
*Stable encapsulation of rifampicin and doxycycline in polymersome nanoparticles for delivery to intracellular bacteria*
  4. Mr George Bullock, University of Sheffield (Poster No. 159)  
*Bisphosphonate toxicity to the oral mucosa is inhibited in vitro by hydroxyapatite granules*
  5. Ms Jamie Thompson, University of Nottingham (Poster No. 161)  
*Investigating glycosaminoglycans in development and disease using fully defined 3D cell culture environments and human pluripotent stem cells*
  6. Mr Alexander Sturivant, University of Edinburgh (Poster No. 182)  
*Use of antifreeze proteins to modify pores in directionally frozen alginate sponges for cartilage tissue engineering*
  7. Ms Anastasia Polydorou, University of Southampton (Poster No. 122)  
*Acoustically-stimulated drug carriers for bone fracture repair*
  8. Dr Valentina Barrera, NHS Blood and Transplant, Tissue and Eye Services R&D (Poster No. 236)  
*Decellularisation of human femoral nerves in a closed system: towards introducing a new*

*nerve allograft in healthcare in the UK*

9. Mr Jordan Roe, Loughborough University (Poster No. 197)

*Magnetic hydrogels: tissue engineering constructs with switchable stiffness*

10. Ms Michaela Petaroudi, University of Glasgow (Poster No. 149)

*Bacterial engineering for the ex-vivo expansion of HSCs*

10:45 – 11:45 Coffee and Posters

## **11:45 – 12:30 SESSION 11: SENSING & CONTROLLING CELL BEHAVIOUR II**

*Chair: Dr Adam Celiz, Imperial College London*

11:45 – 12:00 Dr Nuria Oliva Jorge, Imperial College London

*Bioinspired nanomaterials for cell-selective activation of growth factors*

12:00 – 12:15 Mr Manohar Prasad Koduri, University of Liverpool

*Cytotoxicity and functionality of nano oxy-ph sensors in HMSC environment*

12:15 – 12:30 Mrs Eva Barcelona, University of Glasgow

*Engineering ligand mobility in the adhesive crosstalk to control stem cell differentiation*

12:30 – 13:30 Lunch and Meet the Mentor 3

## **13:30 – 14:45 SESSION 12: BIOMATERIALS CHEMISTRY AND CHARACTERISATION I**

*Chair: Dr Cheryl Miller, University of Sheffield*

13:30 – 14:00 **Keynote - Professor Elizabeth Cosgriff-Hernandez**, University of Texas

*'Integrin-targeting materials in regenerative medicine'*

14:00 – 14:15 Dr Caroline Taylor, University of Sheffield

*The potential of pressurised gyration to fabricate polyhydroxyalkanoate aligned fibre scaffolds for peripheral nerve repair*

14:15 – 14:30 Mr Morgan Lowther, University of Birmingham

*Formulation of an antimicrobial silver-doped magnesium oxychloride cement*

14:30 – 14:45 Dr Rachel McCormick, University of Liverpool

*Designing a novel bioengineered substrate as a treatment for AMD*

14:45 – 15:15 Coffee break

## **15:15 – 16:00 SESSION 13: BIOMATERIALS CHEMISTRY AND CHARACTERISATION II**

*Chair: Prof Felicity Rose, University of Nottingham*

15:15 – 15:45 **Larry Hench Young Investigators Prize – Dr Asha Patel**, Imperial College

London *'Chemically diverse materials for cell and gene therapy applications'*

15:45 – 16:00 Ms Maha Omran, University of Sheffield

*Evaluating two powder-based 3d printing techniques for the manufacture of implants for orbital floor repair*

16:00 – 17:00 **Prizes and Closing Address**