



University
of Glasgow



TCES



TCES// JOINT CDT CONFERENCE

Hosted by University of Glasgow

19-21 JUNE 2024
PROGRAMME

DAY 1 - CDT SESSION

Wednesday 19th June 2024

James McCune Smith Learning Hub

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- 09:00 **Arrival and Admittance to Conference**, James McCune Smith Learning Hub
- 09:15 **Welcome: Prof Matt Dalby**, University of Glasgow
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- Chairs: Jiaqian Fan, Justine Clarke and Conor Robinson**
- 09:25 **Keynote Speaker: Dr Catherine Berry**, University of Glasgow, *Mesenchymal stem cell-derived extracellular vesicles in cancer dormancy*
-
- CDT Session Oral Presentations**
- 10:05 **Aleksander Atanasov**, University of Birmingham
Mechanical properties design of pectin-collagen I bioscaffolds for the recapitulation of native skin phenotype traits in vitro
- 10:20 **Elaine Duncan**, University of Glasgow
Developing a 3D in vitro adipocyte model to investigate metabolite-sensing GPCR function
- 10:35 **Louis Johnson**, University of Sheffield
Emulsion templated composites: Porous nerve guidance conduits for peripheral nerve regeneration
- 10:50 **Coffee Break**
- 11:15 **Emma Kelly**, University of Glasgow
Magnetic hydrogels for bone tissue engineering
- 11:30 **Jessica Roberts**, University of Glasgow
Modelling human immune responses to functionalised biomaterials
- 11:45 **Jennifer Willis**, Aston University
Optimising the use of degradable microcarriers in stirred tank bioreactors for the production of immunomodulatory human mesenchymal stromal cells
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- CDT Session Poster Flashes**
- 12:00 **Rachel Furnidge**, University of Sheffield
Porous poly(glycerol sebacate)-methacrylate scaffolds for vascularised adipose tissue engineering
- 12:05 **James Kennedy**, University of Birmingham
Exploring the role of TSPAN6 macrophage function and recruitment within the ductular reaction during chronic liver injury
- 12:10 **Gregor Mack**, University of Manchester
Towards the development of a novel tear collection device for point-of-care ocular and systemic disease diagnosis
- 12:15 **Xally Montserrat Valencia Guerrero**, University of Glasgow
Designing animal-free organoids based on engineered vegetables [VegFold]

DAY 1 - TCES SESSION

Bioengineered Models

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- 12:35 **Lunch Break and Poster Viewing,**
- 13:50 **Welcome: Prof Sarah Cartmell,** University of Manchester (TCES)/**Prof Matt Dalby,** University of Glasgow
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- Chairs: Peter Childs, Rebecca Downs-Ford and Elaine Duncan**
- 14:00 **Keynote Speaker: Prof Julien Gautrot,** Queen Mary University of London
Soft but tough! Engineering adipose tissue biomimetic microenvironments for stem cell technologies
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- Bioengineered Models Oral Presentations**
- 14:40 **Marta Clerici,** University of Keele
Promotion of extracellular vesicle production from human tendon stem/progenitor cells via dynamic cell culture
- 14:55 **Ana Valeria Gonzalez Abrego,** University of Nottingham
Incorporating complex anatomical features to hepatic tissue models through P μ SLA
- 15:10 **Priyanka Gupta,** University College London
Chemotherapeutic assessment on a dynamic, multicellular and spatially segregated model of pancreatic cancer
- 15:25 **Tea Break**
- 15:55 **Lauren Hope,** Paul O’Gorman Leukaemia Research Centre, University of Glasgow
Engineering a bone marrow endosteal niche model for drug screening in acute myeloid leukaemia
- 16:10 **Moira Lorenzo Lopez,** University of Liverpool
Label free nanoparticle tracking for eye in vitro models
- 16:25 **Dr Caroline Sarah Taylor,** University of Sheffield
Bioengineering peripheral nerve tissues: from scaffolds to models
Robert Brown Early Stage Investigator applicant
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- Bioengineered Models Flash Talks**
- 16:40 **Xenia Bubnova,** Paul O’Gorman Leukaemia Research Centre Glasgow, University of Glasgow
Constructing a 3D in vitro central nervous system leukaemia model
- 16:45 **Vera Citro,** University of Keele
Growth factor-loaded mesoporous silica particles, electrospun in PCL Fibres provide topographical and chemical cues for MSCs tenogenic differentiation
- 16:50 **Grzegorz Koc,** University of Oxford
Prototype of a novel bioreactor for finger flexor tendon tissue engineering
- 16:55 **Fatma Ozdemir,** University of Newcastle
Influence of cell density in an improved 3D bioprinted ACI/MACI model
- 17:00 **Abril Lorena Torres Bautista,** The Griffin Institute and Tecnológico de Monterrey
3D in vitro model of human burn wound
- Sponsor Talks**
- 17:05 **Dr Dammy Olayanju,** Qkine
- 17:10 **Robyn Parish,** Life Technologies/Thermofisher
- 17:15 **Sunaia Sapru,** Cell Guidance Systems
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- 17:20 **Drinks Reception (sponsored by Henry Royce Institute) and Poster Session**
- 18:15 **Evening Buffet**

DAY 1 - POSTER SESSION

CDT Session Poster Presentations

1. **Amaziah Alipio**, University of Birmingham
Augmented cell adhesion of regenerative hepatic progenitors via click-mediated surface recruitment of macromolecular biopolymers
2. **Megan Bannister**, University of Birmingham
Recapitulating the liver tumour endothelium in vitro: a key tool for novel drug delivery studies
3. **Clara Cosa-Garcia**, University of Glasgow
Wearable sensors for medical diagnostics and monitoring health and wellbeing
4. **W. Sebastian Doherty-Boyd**, University of Glasgow
A synthetic bone marrow niche model for testing a novel leukaemia treatment
5. **Rebecca Downs-Ford**, University of Manchester
Polysaccharide-based hydrogels as 3D systems for modelling of chronic wounds
6. **Konstantina Evdokimou**, University of Glasgow
Engineering viscoelastic hydrogels for mimicking the tumour microenvironment and investigating breast cancer cell mechanosensing
7. **Martha Gallagher**, Aston University
Developing printable hyaluronic acid-heparin gels for sustained support of neural cultures
9. **Rosanna Mae Hood**, University of Sheffield
Growing biohybrid scaffolds in the lab: Controlling the culture environment to create biohybrid scaffolds with pre-determined compositions and functionalities
8. **Louis Hutchings**, Aston University
Edible blends of natural materials for biofabrication of animal tissue
10. **Julia Isakova**, University of Glasgow
Linking cell glycome changes to rheumatoid arthritis phenotypes via Raman spectroscopy
11. **Paris Alexandros Kalli**, University of Glasgow
Enhanced MSC growth using polymers that organise growth factors
12. **Rebekah Kay**, University of Manchester
Modelling mechanical properties of hydrogels for precision in-vitro scaffold development
13. **Oscar Lavery**, University of Glasgow
Organ-on-chip: Animal-free methods for drug safety
14. **Athena Mattheou**, University of Glasgow
From the bee's knees to biotechnology: Resilin-based hydrogels for cell culture and bioprinting
15. **Emily Maxwell**, University of Glasgow
Advanced viscoelastic 3D bioprinted alginate/DNA scaffolds for stem cell engineering
16. **Samruddhi Mujumdar and Syed Mohammad Daniel Syed Mohamad**, University of Sheffield
A polyhydroxyalkanoate (PHA) based 3D in vitro lung model
17. **Euan Purdie**, University of Glasgow
Exploiting metabolite GPCR mechanotransduction to find new treatments for metabolic disorders
18. **Erin Reardon**, University of Limerick
Investigating the role of the brain-meninges interface in traumatic brain injury
19. **Shaima Maliha Riha**, University of Glasgow
The role of matrix stiffness in protein folding machineries
20. **Fraser Shields**, University of Manchester
Precision biofabrication for menical tissue engineering: Leveraging MEW and microvalve bioprinting to enable tuneable mechanical and cellular gradients
21. **Nevena Slavova**, University of Sheffield
Tissue engineered blood vessels
22. **Lineta Stonkute**, University of Glasgow
Multicomponent supramolecular hydrogels for nerve repair

DAY 1 - POSTER SESSION

Bioengineered Models Poster Presentations

23. **Nagavaishnavi V Bhaskara**, Royal Cornwall Hospitals NHS Trust
Engineering a novel bone-tendon junction scaffold for transplantation
24. **Ece Melis Er**, University College London
A novel method of quantification and visualisation of angiogenesis of a 3D porous scaffolds on ex ovo cam models
25. **Beatriz Gil Garrido**, The Griffin Institute
Decellularisation-by-perfusion: A novel approach to engineer >50cm off the shelf small intestine graft for treatment of intestinal failure
26. **Amelia Heslington**, Newcastle University
Development of a 3D in vitro synovium model to study immune response in inflammatory bowel disease
27. **Kavin Hettiarachchilage**, Newcastle University
Engineering viscoelastic hydrogels for mimicking the tumour microenvironment and investigating breast cancer cell mechanosensing
28. **Dariusz Konrad Kosk**, University of Southampton
Perfusion chamber for the investigation of microbubble oscillation in bone fractures
29. **Dr Sukanya Kyopun**, University College London
Novel composites for combined dental pulp capping and tooth restoration
30. **Hannah Lamont**, University of Birmingham
Automated biofabrication of biomimetic glaucoma in vitro models
31. **Rui Ling Lee**, University of Glasgow
Investigating the immunomodulatory and anti-cancer effects of acemannan in acute myeloid leukaemia
32. **Dr Stephen Richardson (representing Grace McDermot)**, University of Manchester
3D bioprinting tissue engineered meniscal constructs
33. **Mahmood Metwally**, University of York
Development of an experimentally tractable in vitro human model of osteogenesis
34. **Anabela Moreira**, University of Minho
Mimicking dopaminergic neurodegeneration in a human 3D in vitro model of Parkinson's disease
35. **Dr Dammy Olayanju**, QKINE
Optimised animal-free growth factors for reproducible stem cell and organoid cultures
36. **Piaopiao Pan**, University of Glasgow
Developing in vitro 3D systems to study gut function and immunity
37. **Sneha Ravi**, University of Edinburgh
Novel method to create tubular protein-based hydrogels for tissue engineering
38. **Diego Reyes**, University of Westminster
N-linked glycosylation in triple-negative breast cancer and Chromosomal instability studies in 2D and 3D models.
39. **Ioanna Rigou**, University of Glasgow
Nanovibrational control of chondrogenic differentiation
40. **Marie E. Sandison**, University of Strathclyde
Hormone-responsive, patient-derived models of the uterine wall in a microfluidic array
41. **Kamalnath Kumar**, University of Limerick
Representative preclinical models of the human testis
42. **Kasia Stefaniak**, University of Edinburgh
Chemically crosslinked protein hydrogels with genetically encoded bioactive domains as customised matrices for 3D cell culture
43. **Salma T. Rafik**, University College London
Engineering a biomimetic 3D breast tumour model for therapeutic screening
44. **Ioannis Angelos Tsigkos**, University of Glasgow
Mimicking the leukemic microenvironment via using soft polyethylglycol gels
45. **Natalie Wildman**, University of Sheffield
Uncovering the secreted secrets of adipose tissues to engineer novel cell-free therapies for scar tissue regeneration.

DAY 2 - AM SESSION

Thursday 20th June 2024

Biomaterials

09:00 **Arrival and Admittance to Conference**, James McCune Smith Learning Hub

09:15 **Welcome: Prof Manuel Salmeron-Sanchez**, University of Glasgow

Chairs: Linh Nguyen, Samantha Heslop, Julia Isakova, and Euan Purdie

09:25 **Keynote Speaker:** Dr Amaia Cipitria, Biogipuzkoa Health Research Institute
Biomaterials in cancer dormancy and early bone metastasis

Biomaterials Oral Presentations

10:05 **Arjan Atwal**, University of Keele
A photocrosslinkable injectable hydrogel system to facilitate the repair of cartilage lesions

10:20 **Dr Rosalia Cuahtecontzi Delint**, University of Glasgow
Nanotopography influences host-pathogen quorum sensing and selection of antimicrobial metabolites in mesenchymal stromal cells and Pseudomonas aeruginosa co-cultures ***Robert Brown Early Stage Investigator applicant***

10:35 **Dr Joshua Jones**, University of Nottingham
Use of naturally derived chemical crosslinkers to enhance mechanics of Bone-ECM hydrogels

10:50 **Coffee Break**

Biomaterials Flash Talks

11:15 **Elliot Amadi**, University of Sheffield
3D printed bacterial cellulose based hydrogel patches for wound healing

11:20 **Justine Clarke**, University of Glasgow
Mesenchymal stromal cell derived extracellular vesicle immobilisation onto vascular grafts

11:25 **Ella-Louise Handley**, University of Edinburgh
Delivery of ascorbic acid from electrically conductive electrospun fibres for cardiac tissue engineering

11:30 **Maria Heim**, University of Edinburgh
Towards effective RIHT therapies: Identifying proteins for in vitro thyroid scaffold evaluation

11:35 **Andrew Johnston**, University of Edinburgh
Examining vascular cell behaviour on dimpled electrospun fibre topography within a 3D printed millifluidic bioreactor

Sponsor Talks

11:40 **Isabella Bondesson**, CELLINK

11:45 **Marco Domingos**, Henry Royce Institute

11:50 **Luke McMullan**, Reprocell Europe Ltd

12:00 **TCES AGM - for all TCES members**

DAY 2 - PM SESSION

12:35 **Lunch Break and Poster Viewing**

Chairs: Nick Evans, Omar Haroun, James Kennedy and Shaima Riha

13:50 **Keynote Speaker: Dr Michele Zagnoni**, University of Strathclyde
Engineering complex in vitro models of disease with microfluidics

Biomaterials Oral Presentations

14:30 **I-Ning Lee**, University of Nottingham
Immunomodulatory liver-targeting microparticles impact THP-1 differentiated macrophage phenotype

14:45 **Sanjana Mukundan**, University of York
Unlocking the potential of thermally responsive nanoparticles in precision drug delivery to enhance bone regeneration

15:00 **Dr Neville Murphy**, University of Galway
Development of in vitro triple negative breast cancer model for TME characterisation

15:15 **Tea Break**

15:40 **Kirsten O'Brien**, University of Southampton
Perfluoropentane nanodroplets for oxygen delivery to osteoclasts and osteoblasts for bone repair

15:55 **Thanh Nhi Tra**, University of New South Wales
A conductive hydrogel with self-healing properties

16:10 **Lorna Westwood**, University of Edinburgh
The influence of irradiation on the growth and survival of HSG cells on antioxidant scaffolds

Biomaterials Flash Talks

16:25 **Amy Morgan**, University of Sheffield
Manufacture of pseudo-rete ridges in a bilayer for skin regeneration

16:30 **Kerime Ebrar Okur**, University of Birmingham
Decellularized human liver and skin tissues: Profiling with ambient vibrations optical coherence elastography and insights into decellularization and 3D hydrogel fabrication

16:35 **Chithrambary Reghukumar**, University of Manchester
Role of exogenous electrical stimulation on in vitro cell function in human mesenchymal stem cells

16:40 **Dr Jordan Roe**, University of Leeds
Developing an innovative bioprosthetic heart valve utilising decellularised pericardium

16:45 **Genevieve Schleyer**, University of Liverpool
Label-free tracking to quantify nanoparticle diffusion above cell monolayer

16:50 **Cagla Erdas**, Newcastle University
Enhancing stem cell viability in corneal tissue engineering through hybrid peptide amphiphile formulations

19:00 **Drinks Reception**, Glasgow Grosvenor Hotel

19:30 **Dinner and Ceilidh**

DAY 2 - POSTER SESSION

Biomaterials Poster Presentations

- 1. Sadaf Akbari**, Kingston University
The effects of pore size and geometry on the performance of bone tissue scaffolds
- 2. Kubra Nur Albayrak**, University of Manchester
Adipose derived decellularized extracellular matrix for soft tissue applications
- 3. Renad N. AlQurashi**, University of Jeddah
Performance assessment of 3D printed PLA scaffolds for wound healing and antibacterial activity
- 4. Arjan Atwal**, Keele University
Platelet lysate-loaded alginate microparticle hydrogel for cartilage lesion repair
- 5. Yusuf Ayten**, University of Glasgow
Bioengineering surfaces to preserve mesenchymal stromal cell growth in vitro
- 6. Clara Barbut**, The University of Manchester
Development of dermal matrix with revascularization properties to advance the integration of skin substitutes
- 7. Evangelia Bocthi**, University of Glasgow
Hydrogel encapsulated bone marrow stem cell derived extracellular vesicles for bone regeneration
- 8. Merve Demir**, University of Nottingham
The re-creation of the intestinal epithelium using induced pluripotent stem cell derived progenitors and 3D bioprinting for regenerative medicine applications
- 9. Mingzu Du**, University of Leeds
Mussel-inspired chitosan/hyaluronic acid interpenetrating hydrogel as cartilage mimic scaffold
- 10. Zarina Issabekova**, University of Glasgow
Tuneable microgels for guiding cellular response in tissue repair
- 11. Nuno Honrado**, University College London
Bilayer scaffold combining electrospun PCL and a porous gel layer for enhanced guided bone regeneration
- 12. Dewi Fox Jones**, University of Edinburgh
Manufacturing electrospun polycaprolactone fibre scaffolds for liver tissue engineering
- 13. Xinyu Li**, University of Glasgow
Development of a novel plant-derived polysaccharide-based hydrogel for bone tissue engineering
- 14. Ying Betty Li**, Carleton University
3D bioprinted vascular network with alginate-collagen based bioink to monitor angiogenesis mediated extracellular remodelling
- 15. Maria Martingo**, Catholic University of Portugal
From nature to treatment: A bio-hybrid haemodialysis membrane
- 16. Kozim Midkhatov**, University of Manchester
Optimising extracellular matrix analogues for 3D modelling of osteosarcoma
- 17. Katanchalee Nampuksa**, University of Sheffield
Preparation and characterisation of synthetic hydroxyapatite using a microwave-assisted method for biomedical application
- 18. Tina Nath Varma**, University College London
Jellyfish collagen filled titanium matrix for large bone defect repair
- 19. Laura Sabio**, University of Glasgow
Light-responsive engineered living material for lycopene synthesis
- 20. Tasneem KamalEldin Osman Salih**, University of Bristol
Development of decellularized extracellular matrix scaffolds for their potential use as valve leaflets for the treatment of congenital heart disease
- 21. Sunaina Sapru**, Cell Guidance Systems
Microspheres with PODS® enabling sustained supply of biofunctional protein
- 22. Alice Upton**, Canterbury Christ Church University
Utilising the 'Design of Experiment' statistical tool for bioink composition for soft tissue engineering
- 23. Lukas Weber**, University of Manchester
Regeneration of the rotator cuff enthesis through biofabrication
- 24. Lorna Westwood**, University of Edinburgh
Comparison of primary submandibular gland epithelial cells and HSG cell line compatibility with antioxidant scaffolds
- 25. Kubra Yigit**, University of Edinburgh
Influence of N-acetylcysteine-loaded PCL fibres on oxidative stress for cartilage tissue engineering
- 26. Stamatia Zafeiri**, University College London
Novel biomimetic cell-aided scaffold for skin tissue engineering
- 27. Kritika**, University of Birmingham
Iron oxide nanoparticles for bimodal hyperthermia coupled with biophysical and in silico evaluation with human haemoglobin

DAY 3- AM SESSION

Friday 21st June 2024

Enabling Technologies|Mechanobiology

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- 09:00 **Arrival and Admittance to Conference**, James McCune Smith Learning Hub
- 09:15 **Welcome: Prof Nick Evans**, University of Southampton/**Dr Lisa White**, University of Nottingham
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- 09:25 **Chairs: Lisa White, Emma Kelly, and Lukas Weber**
- Keynote Speaker: Dr James Armstrong**, University of Bristol
Controlling the assembly of biomaterials and engineered tissues
-
- Enabling Technologies Oral Presentations**
- 10:05 **Dr Hoda Eltaher**, University of Nottingham
Pressure-mediated topical non-viral gene therapy up to milli/centimetre-scales
- 10:20 **Dr Akhil Jain**, University of Manchester
Quantum bioelectronics for the treatment of hard-to-treat cancers
- 10:35 **Poppy O. Smith**, University College London
HiPSC-derived endothelial cell nerve repair constructs
- 10:50 **Coffee Break**
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- Mechanobiology Oral Presentations**
- 11:15 **Finlay Cunniffe**, University of Glasgow
Viscoelasticity in the integrin-growth factor crosstalk
- 11:30 **Fatmah Ghuloum**, University of Manchester
Designing topographically-textured microparticles as cell-instructive bone matrix mimetics via modulation of hedgehog signalling
- 11:45 **Rui Pedro Pereira Sousa**, University of Strathclyde
High throughput mechanical phenotyping of nano-vibrated mesenchymal stem cells using real-time deformability cytometry
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- Enabling Technology Flash Talks**
- 12:00 **James Hague**, The Open University
Computational intelligence for cultured tissue vascular design
- 12:05 **Dr Savvas Ioannou**, University of York
Extracellular vesicle bioactivity and potential for clinical utility is determined by mesenchymal stromal cell clonal subtype
- 12:10 **Isobel Jobson**, University of Nottingham
Combining cell-induced polymerisation and electric field stimulation for cancer treatment
- Mechanobiology Flash Talks**
- 12:15 **Akash Garhwal**, University of Galway
Towards the generation of a gliosis in vitro model
- 12:20 **Dr Juan Gonzalez-Valdivieso**, University of Glasgow
The boron transporter NaBC1 mediates mechanotransduction via fibronectinbinding integrins
- 12:25 **Olivia Johnson-Love**, University of Strathclyde
MSC donors show varied response to nanovibrational stimulation
- 12:30 **Theodora Rogkoti**, University of Glasgow
The role of viscoelasticity in soft 3D matrices

12:35

Lunch Break and Poster Viewing

13:35

Prizes: Prof Sarah Cartmell and Prof Nick Evans, TCES

14:00

Close: Prof Manuel Salmeron-Sanchez, University of Glasgow

Poster Session

Enabling Technology Poster Presentations

1. **Jaspreet Kaur Bansal**, Aston University
Does GDF11 affect the immunomodulatory properties of older and younger donor human bone marrow mesenchymal stromal cells?

2. **Dr Hoda Eltaher**, University of Nottingham
Mucus penetrating non-viral gene therapy for cystic fibrosis via pulmonary administration

3. **James Hague**, The Open University
Computational design of cultured tissue structures with biophysics and machine intelligence

4. **Joshua Weygant**, University of Cambridge
Cryoprinting enables 3D printing of low viscous materials towards hydrogel-based electronic devices

Mechanobiology Poster Presentations

5. **Omolola Ajayi**, University of Glasgow
Collagen microarchitecture drives breast cancer cell fate independently of matrix stiffness

6. **Udipt Ranjan Das**, University of Glasgow
Nanovibrational stimulation of mesenchymal stromal cell osteogenesis - investigating the relationship between osteogenesis, senescence and inflammation

7. **Graham Day**, University of Glasgow
Altering cross-linking density of PEG hydrogels to tune their viscoelastic properties for 3D chondrogenic culture of MSCs

8. **Hussain Jaffery**, University of Glasgow
An axis of Wnt and proinflammatory signals underlies mechanically driven osteogenesis

9. **Dr Hadi Hajiali**, University of Birmingham
Remote activation of mechanotransduction via integrin alpha-5 aptamer conjugated magnetic nanoparticles promotes osteogenesis

10. **Anna Maria Kapetanaki**, University of Glasgow
Towards high throughput cell mechanosensitivity assays

11. **Ziyuan Luo**, University of Glasgow
PEG-based viscoelastic hydrogels to investigate stem cell mechanotransduction

12. **Vasco Miguel Medeiros**, University College London
The inhibition of herpes simplex virus via cathelicidin LL-37 peptide: Potential eye dropper delivery mechanism

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