iomimetics In Bioengineering 4-6 AUGUST | BRISBANE, AUSTRALIA

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natureconterences

nature REVIEWS MATERIALS

QUT

ptocols materials

This is a draft program only and is subject to change

	Sunday 4 August 2019
9:00am	Registration Opens Room Three Sixty, Y Block, QUT Gardens Point Campus
10:30am - 10:45am	Welcome Dietmar W Hutmacher, Molly Stevens, Amos Matsiko, Katharine Barnes & Christine Horejs Queensland University of Technology, Imperial College London, Nature Protocols, Nature Materials, and Nature Reviews Materials
10:45am -	An Editor's perspective to publishing in Nature journals
11:45am	Katharine Barnes, Amos Matsiko & Christine Horejs
11:45am -	Perspectives on the field
12:15pm	Dietmar W Hutmacher, & Molly Stevens
12:15pm -	Lunch
1:15pm	Proudly sponsored by AESCULAP - a B. Braun brand
1:15pm -	Session 1: Bioinspiration for tissue engineering and regenerative medicine I
3:15pm	Chair: Dietmar W Hutmacher & Christine Horejs
1:15pm -	Understanding Osteoblast Bioenergetics: Lessons for Engineering Bone Biomimetics
2:00pm	Dr Thomas Clemens, Johns Hopkins Medicine, United States of America
2:00pm -	Bioinspired hydrogels to deconstruct morphogenetic processes
2:15pm	Kristopher Kilian, University of New South Wales, Australia
2:15pm -	Biomimetic vascular silk materials in regenerative medicine
2:30pm	Jelena Rnjak-Kovacina, University of New South Wales, Australia
2:30pm -	Developing biomimetic heparan sulphate for growth factor interactions
2:45pm	Brooke Farrugia, University of Melbourne, Australia
2:45pm -	Biomimetic currature supports in vitro podcovte differentiation
3:00pm	Anastasia Korolj, University of Toronto, Canada
3:00pm - 3:15pm	John Whitelock, University of New South Wales, Australia
3:15pm - 3:45pm	Afternoon Tea
3:45pm -	Session 2: Bioinspiration for tissue engineering and regenerative medicine II
6:00pm	Chairs: Dietmar W Hutmacher & Katharine Barnes
3:45pm -	Advancing the applications of human pluripotent stem cell-derived kidney organoids
4:30pm	Professor Melissa Little, Murdoch Children's Research Institute, Australia
4:30pm - 4:45pm	Harnessing biomimetic cues to generate functional tissue models in engineered cultivation systems Anastasia Korolj, University of Toronto, Canada Presenting work on behalf of Professor Milica Radisic, University of Toronto, Canada
4:45pm - 5:00pm	Smart biomimetic material strategies for functional tissue engineering and regenerative medicine Locke Davenport Huyer, University of Toronto, Canada Presenting work on behalf of Professor Milica Radisic, University of Toronto, Canada
5:00pm -	Polymer Electronic Materials for Biomedical Applications
5:15pm	Jadranka Travas-Sejdic, University of Auckland, New Zealand
5:15pm -	A bioengineered prostate microenvironment reduces prostate cancer metastasis to tissue-engineered human bone
5:30pm	Jacqui McGovern, Queensland University of Technology, Australia
5:30pm -	Engineering the "bio" in biomimetic bioinks for 3D Bioprinting and Bioassembly
5:45pm	Tim Woodfield, University of Otago, New Zealand
5:45pm -	Development of a robotic 3D bioprinting system for printing of tissues and organs
6:00pm	Charlotte A. Hauser, King Abdullah University of Science & Technology, Saudi Arabia
6:00pm	End of Day One

6:00pm - 8:00pm	Welcome Reception & Interactive Poster Presentations The Cube, P Block, QUT Gardens Point Campus
	POSITER SESSION 1 Biopolymer substrates for freeze-drying of human red blood cells
	Efficient drug delivery for pancreatic cancer treatment utilizing supramolecular reversible pegylated bromelain
	I asishi Higashi, Kumamoto University, Japan In vitro and in vivo assessment of strontium-substituted bioactive glass and polycaprolactone composite scaffolds produced via melt-electrowriting
	Robust super-hydrophobic coatings: countering the rise of the superbug Descur Advice Australian National University on Feature Australian
	Deepu Asnok, Australian National University, Australian Development of artificial garlic cell aimed for superficial applications
	Ondrej Kaspar, UCT Prague, Czech Republic Bio-inspired silica-polymer hybrid: a novel platform to achieve general or specific bacterial detection
	Mingyue Cui, Nanyang Technological University, Singapore Tissue engineering of an orthotopic humanised bone-organ as a platform for preclinical multiple myeloma research
	Alvaro Sanchez, Queensland University of Technology, Australia Nanocellulose hydrogel for organoids culture
	Rodrigo Curvello, Monash University, Australia The application of venom-activated biomimetic hydrogel to control bleeding
	Amanda Kijas, University of Queensland, Australia Brain extracellular-matrix mimicking hydrogels for long-term support of primary neurons
6:00pm -	Adam Martin, Macquarie University, Australia The future of biomimetics based on insects - medical, military and commercial applications
6:30pm	Gregory Watson, University of The Sunshine Coast, Australia The processing of hydroxyapatite from naturally occurring chloroapatite for orthopedic applications in the field of biomaterial engineering
	Rajitha Gunaratne, University of Sri Jayewardenepura, Sri Lanka
	Prostate cancer cells preferentially metastatsize to a humanized tissue-engineered bone construct in NSG mice but are not susceptible to the human-specific antibody denosumab Marietta Landgraf, Queensland University of Technology, Australia
	Complex coacervation of gelatin methacryloyl and alginate facilitates toughness and ductility of bioactive double-network hydrogels for functional cartilage tissue engineering
	Christoph Meinert, Queensland University of Technology, Australia The impact of 3D bioprinting on in vitro cemenogenic differentiation of periodontal ligament cells
	Nimal Thattaruparambil Raveendran, University of Queensland, Australia OCT-based 3D patient-specific coronary reconstruction and FSI simulation based on ansys workbench
	Jiaqiu Wang, Queensland University of Technology, Australia ZnO as an Enzyme Mimic to Achieve Localized Nitric Oxide Delivery
	Tao Yang, University of New South Wales, Australia Biomimetic Rec1-resilin based hybrid materials for biomedical applications
	Rajkamal Balu, RMIT University, Australia Two-photon polymerization of photo-click recombinant collagen-based hydrogels for tissue engineering applications
	Liesbeth Tytgat, Vrije Universiteit, Belgium Structure-behaviour relationships of the shells from two genetically closely related snall species: lessons from nature on building optimal structures
	Hortense Le Ferrand, Nanyang Technological University, Singapore
	Behrokh Abbasnejad, University of Technology Sydney, Australia
	Insect-wing mimetic bactericidal nanomaterials for healthcare applications
	A novel transdermal delivery method for nano and macro molecules via temporal pressure technology inspired by traditional Chinese Medicine's Tui Na Desigl Lis Menutore Technological Listeria Listeria
	Fabrication of dual micro-nano dental implants towards tailored bioactivity
	Soft Network Composites: from nature to advanced soft engineering materials
	Beyond RGD; nanoclusters of syndecan- and integrin-binding ligands synergistically enhance cell/material interactions
	Microfluidic approach for nanoparticle synthesis and site-specific targeting
	Engineering of long-term culturable ex vivo avscularized tissues using biologically derived matrices
	Cancer cell osteominicry revealed using bioengineering and patient-derived xenografts
	Controlled local drug delivery of an anticancer drug and an antibiotic using a biomimetic hydrogel
	A bioengineered microenvironment model of prostate cancer to study cancer angiogenesis
6:30pm -	Anna Jaeschke, Queensiand University of Technology, Australia Multivalency in AIPs-AgrC Interaction in S.aureus utilising Holliday junctions as a nanoscaffold and DNA-PAINT for AgrC localizing)
7:00pm	Heba Khateb, Aarhus University, Denmark Targeted camptothecin-loaded nanoparticles for breast cancer therapy in a bioengineered mouse model
	Marietta Landgraf, Queensland University of Technology, Australia Concept of an automated biomanufacturing and high-content analysis platform for hydrogel-embedded 3D tumour models
	Melanie Kahl, Queensland University of Technology, Australia Tissue engineered replacement for corneal endothelial donor tissue
	Karl David Brown, Centre for Eye Research Australia, Australia Self-assembling block copolymer for signalling molecules delivery by collagen layer degradation
	Isabela Monteiro, University of Auckland, New Zealand Biomimetic engineering of soft and hard nanomaterials for drug delivery
	Yue Hui, University of Queensland, Australia Development of in situ 3D bio-printer for wound healing
	Wan Doo Kim, Korea Institute of Machinery and Materials, South Korea Novel 3D in vitro models for translational breast cancer research
	Maria Koch, Queensland University of Technology, Australia Mussel-inspired comb-like copolymer coated polypropylene and its application as anti-adhesive mesh
	Tianzhu Zhang, Southeast University, China 3D Bioprinted Scaffolds with a Spatially Defined Release System for Osteogenic Differentiation Factors
	Silvia Cometta, Technische Universität Dresden, Germany Characterization of the anti-cancer activity of the problotics using 2d vs 3d culture in cancer
	Hee Min Yoo, Korea Research Institute of Standards and Science, South Korea Quantitative proteomic comparison of 2d and 3d adipocyte cell models co-cultured with macrophages using online 2d-nanoic-esi-ms/ms
	Dukjin Kang, Korea Research Institute of Standards and Science, South Korea

7:00pm -	Conference Welcome
7:15pm	Dietmar W. Hutmacher, Queensland University of Technology
	POSTER SESSION 3
	Understanding the biophysical properties of gelatin-derived biopolymer systems using molecular dynamics simulations Nicolas Tardiota, Queensland University of Technology, Australia
	Osmosis-powered hydrogel microneedles for extracting microliters of skin interstitial fluid within minutes Mengjia Zheng, Nanyang Technological University, Singapore
	Resilin-mimetic protein polymers: multi-responsiveness in intrinsic disorder Naba Dutta, RMIT University, Australia
	Bio-inspired design of hybrid metamaterials for tissue-engineered composites with high elongation and toughness Mina Mohseni, Queensland University of Technology, Australia
	The Role of Nanoscale Distribution of Fibronectin in Staphylococcus Aureus Adhesion to Interfaces and the multivalency of Fn-FnBPs interaction Heba Khateb, Aarhus University, Denmark
	Transdermal drug delivery with nucleic acid-based nanoparticles Chenjie Xu, Nanyang Technological University, Singapore
	Leveraging automation and high-throughput approaches to manufacture and screen biomimetic extracellular matrices for 3D cell culture and tissue engineering applications Sebastian Eggert, Queensland University of Technology, Australia
	Biomimetics multiscale porous scaffolds for bone tissue regeneration Hoang Phuc Dang, Queensland University of Technology, Australia
	Design principles for transition metal oxides-based peroxidase mimics Hui Wei, Nanjing University, China
7:15pm -	Biomimetic phosphatase of nanozyme and its application Yingqiu Xie, Nazarbayev University, Kazakhstan
7:45pm	Bactericidal effect on the nanostructural surface: mimicking the cicada wing Takeshi Ito, Kansai University, Japan
	Reinforcement scaffolds of biofabricated articular human cartilage Stephanie Doyle, RMIT University, Australia
	Bioinspired peptide nanowires Armin Solemanifar, University of Queensland, Australia
	A self-adhesive microneedle for controlled drug loading and release Wan Ting Sharon Chew, Nanyang Technological Liniversity, Singapore
	Polypeptide-affined tough hydrogels with tunable physicomechanical properties similar to soft tissues Earchad Oueissi University of Sydney Australia
	In vivo modelling of a fibrotic component of fissure reaction to implantation of biomaterials Alevev Favrullin, Sechenov Iniversity Russia
	Organ-specific tissue engineering constructs as pre-clinical alternative models of normal and diseased tissues for experimental biomedicine Anna Guiller. Liniversity of New South Wales. Australia
	Bioinspired antibacterial surfaces for sustainable drug-free applications Ondrei Kasnar, UCT Praque, Czech Republic
	Biomimicry in cell culture of tissue scaffolds for large bone defects
	Buckling of Parallel Met Electrowritten Flaments Under Compression
	Fabricating hybrid hydrogel containing peptide and collagen
8:00pm	End of Welcome Reception

	Monday 5 August 2019
7:30am	Registration Opens Room Three Sixty, Y Block, QUT Gardens Point Campus
8:30am -	Session 3: Structure and function in adaptive biomimetics and tissue engineering I
10:00am	Chairs: Molly Stevens & Christine Horejs
8:30am -	Skin repair regeneration and integration – the role of bio mimetics?
9:15am	Winthrop Professor Fiona Wood, University of Western Australia, Australia
9:15am -	Engineering freestanding hierarchical vascular structures using ice templates
9:30am	Richard Wang, University of Sydney, Australia
9:30am -	Eyelid tarsus tissue mechanics as a guide to tissue engineering scaffold design
9:45am	Andrea O'Connor, University of Melbourne, Australia
9:45am -	Oxygen tolerant polymerisations for the design of biomaterials
10:00am	Robert Chapman, University of New South Wales, Australia
10:00am -	Morning Tea
10:30am	Proudly sponsored by MTPConnect
10:30am -	Session 4: Structure and function in adaptive biomimetics and tissue engineering II
12:30pm	Chairs: Molly Stevens & Christine Horejs
10:30am -	Supramolecular Materials from Metal-Phenolic Networks
11:15am	Professor Frank Caruso, University of Melbourne, Australia
11:15am -	Biomimetic tough hydrogel for biomedical applications
11:30am	Namita Roy Choudhury, RMIT University, Australia
11:30am -	Enzyme mimic containing artificial organelles to counteract oxidative stress
11:45am	Edit Brodszkij, Aarhus University, Denmark
11:45am -	Polysaccharides and proteins as versatile biopolymers for active nanomaterials
12:00pm	Peter Wich, University of New South Wales, Australia
12:00pm -	Body-in-a-Cube: A Human Body Mimic With Physiologic Amounts of Blood Surrogate
12:15pm	Mandy Esch, National Institute of Standards and Technology, United States of America
12:15pm -	Molecular hydrogels to support human embryonic stem cell grafts
12:30pm	David Nisbet, Australian National University, Australia

12:30pm - 1:30pm	Lunch
1:30pm -	Session 5: Self-organising biomaterials Chair: Dietmar W Hutmacher & Amos Matsiko
1:30pm - 2:15pm	Encoding "Living" Bioactivity in Biomaterials Professor Liam Palmer, Northwestern University, United States of America Presenting work on behalf of Professor Samuel Stupp from Northwestern University
2:15pm - 3:00pm	Biomimicry in Blood-Contacting Medical Devices Dr Anna Waterhouse, University of Sydney, Australia
3:00pm - 3:15pm	Time-resolved observations of liquid-liquid phase separation at the nanoscale using in situ liquid transmission electron microscopy Hortense Le Ferrand, Nanyang Technological University, Singapore
3:15pm - 3:30pm	Fabrication of bacteria-propelled microparticles (bacteriabots) and their use in biomedical applications such as drug delivery Oliver Schauer, Max Planck Institute For Terrestrial Microbiology & Loewe Research Center For Synthetic Microbiology, Germany
3:30pm - 3:45pm	Shape-controlled synthesis and enzyme-mimicking activities of zinc oxide Rona Chandrawati, University of New South Wales, Australia
3:45pm - 4:00pm	Polymer-guided biomineralization methods to mimic the native bone 3D microenvironment on the nanoscale - engineering cell-laden, vascularized and innervated bone-like tissue constructs in-vitro Luiz Bertassoni, Oregon Health & Science University, United States of America
	Afternoon Tea & Poster Session The Cube, P Block, QUT Gardens Point Campus
	POSTER SESSION 4
	Engineering and Testing Novel Fibrinogen Paper Diagnostics for Blood Analysis Marek Bialkower, Biopria, Australia
	Learning from mesocarp of Brazil Nut (Bertholletia Excelsa): microstructure and mechanical behavior in c-ring tests Marilia Sonego, Universidade Federal De São Carlos, Brazil
	Validation of a microfluidic human microvasculature model for radiobiological studies Zhaobin Guo, University of South Australia, Australia
	Comparing histomorphometric image analysis systems using a critical-sized bone defect image data set Flavia Medeiros Savi, Queensland University of Technology, Australia
	Gyroid structures for the additive manufacture of radiotherapy phantoms Rance Tino, RMIT University, Australia
	3D-printed microporous multifuctional scaffolds for tissue engineering applications Tara Shabab, Queensland University of Technology, Australia
	Novel breast implants with customized biomechanical and architectural features for large-volume regeneration Mina Mohseni, Queensland University of Technology, Australia
	Design and development of data-driven in-process control for melt electrowriting Pawel Mieszczanek. Queensland University of Technology. Australia
	The rapid biomineralisation of additively biomanufactured increases physical properties and in vitro osteogenicity Maria Natividad Gomez Cerezo, University of Queensland, Australia
4:15pm -	Computational modelling of strut defects in slm manufactured lattice structures Bill Lozanovski, RMIT University, Australia
4:45pm	Advanced manufacturing for burn injury treatment: an evaluation of methods and materials Sean Powell Queensland University of Technology Australia
	Control of osteocytes by Control of Control
	Free-Standing 3D Micro-Fiber Scafford, 5Through Melt-Electrowriting On Sacrificial Collectors
	Ph/enzyme responsive has fusion abort, or vincent a respectively and welcounte, Australia
	Biomimetic cell culture system for early cancer diagnosis
	Sharda Yadav, Griffith University, Australia Templated 3D microwells for minetic tumour modeling using 3D printing techniques
	Liquid tornado: spontaneous droplets gyrating after impacting on heterogeneous surfaces
	Huizeng Li, Chinese Academy of Sciences, China Development of software for the quantitative analysis of cellular interactions within a 3d microarchitecture using ordered melt electrospun scaffolds
	Mattnew Lanaro, Queensiand University of Technology, Australia Effect of gelatin source and photoinitiator type on chondrocyte redifferentiation in gelatin methacryloyl-based tissue-engineered cartilage constructs
	Stephen Paholf, Queensland University of Technology, Australia Functional polyester materials that harness antibacterial and immunoregulatory power of innate immunity
	Locke Davenport Huyer, University of Toronto, Canada Self-assembled peptide-based materials inspired by the Humboldt Squid's sucker ring teeth
	Shu Hui Hiew, Nanyang Technological University, Singapore Photosensitizing protein nanocages for photodynamic therapy
4:45nm	Andrew Care, Macquarie University, Australia

	Tuesday 6 August 2019
7:30am	Registration Opens Room Three Sixty, Y Block, QUT Gardens Point Campus
8:00am - 9:30am	Session 6: Building biomimetics into biomaterial synthesis and design Chair: Molly Stevens & Christine Horejs
8:00am - 8:45am	Biomimetic Materials Controlling Cellular Activity Professor Alan Rowan, University of Queensland, Australia
8:45am - 9:00am	Biomimetic approaches to changing sensory behaviour in sharks Shaun Collin, La Trobe University, Australia
9:00am - 9:15am	Early development of biomimetics to control of crown-of-thorns starfish outbreaks on the Great Barrier Reef Bernard Degnan, University of Queensland, Australia
9:15am - 9:30am	Combat marine biofouling with biomimetic surface morphologies Haimin Yao, The Hong Kong Polytechnic University, Hong Kong
	Session 7: Rapid Fire Presentations I Chair:Amos Matsiko & Katharine Barnes
	Novel breast implants with customized biomechanical and architectural features for large-volume regeneration Mina Mohseni. Queensland University of Technology, Australia
	In vivo modelling of a fibrotic company of this extension of this extension of the public data and the pub
	Alexey Fayzulin, Sechenov University, Russia Nanocellulose hydrogel for organoids culture
9:30am -	Rodrigo Curvello, Monash University, Australia Tissue engineered replacement for corneal endothelial donor tissue
10.00am	Karl David Brown, Centre for Eye Research Australia, Australia Cancer cell osteomimicry revealed using bioengineering and patient-derived xenografts
	Nathalie Bock, Queensland University of Technology, Australia Engineering of long-term culturable ex vivo vascularized tissues using biologically derived matrices
	Michael Hu, University of California San Diego, United States of America
	Yi Pei, University of New South Wales, Australia
10:00am -	Jafar Hasan, Queensland University of Technology, Australia
10:30am	Morning Tea
10:30am - 12:00pm	Session 8: Biophysics in Biomimetics Chair: Dietmar W Hutmacher & Amos Matsiko
10:30am - 11:15am	Biomimetic Tissues: How simple is complex enough? Professor Chris Chen, Boston University, United States of America
11:15am - 11:30am	Fungal growth in confining geometries follows optimal paths computed by intracellular algorithmsan Dan Nicolau, McGill University, Canada
11:30am - 11:45am	Probing intracellular trafficking of nanomedicines and nanosensors by super-resolution and quantitative microscopy Francesca Cavalieri, University of Melbourne, Australia
11:45am - 12:00pm	A New Approach for Dental Implantation and Socket Preservation Procedure Fariba Dehghani, University of Sydney, Australia
12:00pm - 1:00pm	Lunch
	Session 9: Rapid Fire Presentations II Chair: Christine Horejs & Katharine Barnes
	Two-photon polymerization of photo-click recombinant collagen-based hydrogels for tissue engineering applications Liesbeth Tytgat, Vrije Universiteit, Belgium
	Design principles for transition metal oxides-based peroxidase mimics
	Beyond RGD; nanoclusters of syndecan- and integrint and integrint and synergistically enhance cell/material interactions
	Daniel Heath, University of Melibourne, Australia The Role of Nanoscale Distribution of Fibronectin in Staphylococcus Aureus Adhesion to Interfaces and the multivalency of Fn-FnBPs interaction
	Heba Khateb, Aarhus University, Denmark Self-assembling block copolymer for signalling molecules delivery by collagen laver degradation
1:00pm -	Isabela Monteiro, University of Auckland, New Zealand Photosensitizing protein nanocages for photodynamic therapy
2:00pm	Andrew Care, Macquarie University, Australia
	Taishi Higashi, Kumamoto University, Japan
	Osmosis-powered hydrogel microneedles for extracting microliters of skin interstitial fluid within minutes Mengjia Zheng, Nanyang Technological University, Singapore
	Brain extracellular-matrix mimicking hydrogels for long-term support of primary neurons Adam Martin, Macquarie University, Australia
	Learning from mesocarp of brazil nut (bertholletia excelsa): microstructure and mechanical behavior in c-ring tests Marilia Soneno Universidade Enderal De São Carlos Brazil
	Resilin-mimetic protein polymers: multi-responsiveness in intrinsic disorder
	Naba Dutta, RMI I University, Australia Bio-inspired silica-polymer hybrid: a novel platform to achieve general or specific bacterial detection
2:00nm -	Mingyue Cui, Nanyang Technological University, Singapore
3:30pm	Chair: Molly Stevens & Katharine Barnes
2:00pm - 2:45pm	A materials science perspective on bone growth and regeneration Professor Peter Fratzl, Max-Planck-Institut fur Kolloid-und Grenzflachenforschung, Germany
2:45pm - 3:30pm	Protein Engineering of Multi-functional Biomaterials for Regenerative Medicine Associate Professor Sarah Heilshorn, Stanford University, United States of America
3:30pm - 4:30pm	Round Table session with invited speakers: Professor Chris Chen, Professor Peter Fratzl & Associate Professor Sarah Heilshorn Chair: Molly Stevens & Dietmar W. Hutmacher
4:30pm - 4:45pm	Conference Close Dietmar W Hutmacher, Molly Stevens, Amos Matsiko, Katharine Barnes & Christine Horejs Queeensland University of Technology, Imperial College London, Nature Protocols, Nature Materials, and Nature Reviews Materials
4:45pm	End of Day Three