

MONDAY, 27TH JUNE 2022

8:30	REGISTRATIONS OPEN		
9:00	WELCOME: Professors Maria Kavallaris, Cyrille Boyer & Kris Kilian		
9:15	OPENING: Professor Attila Brungs - Vice-Chancellor and President - UNSW Sydney		
9:30	<p>PLENARY: Prof Kristofer Thurecht - University of Queensland (Australia)</p> <p><i>When Nanomaterials Meet Biology: Understanding what contributes to success and failure of materials in nanomedicine</i></p> <p>CHAIR: Scientia A/Prof Kris Kilian    ROOM: Tyree Room @Scientia</p>		
10:10	MORNING TEA		
SESSION	DRUG DELIVERY	BIONANO INTERACTIONS	BIOACTIVE MATERIALS
Chair	Prof Clive Prestidge	Dr Ruirui Qiao	Prof Richard Tilley
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
10:40 Keynote	Prof Palli Thordarson - UNSW Sydney (Australia) - Non-spherical Polymersomes and the (new) RNA World	Prof Shelly Peyton - University of Massachusetts Amherst (USA) - Tissue-Inspired Synthetic Biomaterials	Prof Jadranka Travas-Sejdic - University of Auckland (NZ) - Novel Conducting Polymer Biointerfaces
11:10 Invited	Prof Nicolas Voelcker - Monash University (Australia) - Cancer Therapy using Porous Silicon Nanocarriers with Stimulus-Cleavable Linkers	A/Prof Ivan Kempson - University of South Australia (Australia) - 'Inert'-Nanoparticle Sensitization and Remodeling of Tumour	Prof Christoph Hagemeyer - Monash University (Australia) - Smart Materials for Cardiovascular Disease Therapy
11:30 Invited	A/Prof Juliana Hamzah - Harry Perkins Institute of Medical Research (Australia) - Barriers of Nanoparticle Delivery in Solid Tumours, how do we solve them?	Dr Pingping Han - University of Queensland (Australia) - Cell-material Interaction via Controlled Mechanotransduction	Dr Sophia Zi Gu - UNSW Sydney (Australia) - Engineering Nanosheets for Disease Diagnosis and Treatment
11:50 Invited	A/Prof Amirali Papat - University of Queensland (Australia) - Overcoming Biological Barriers using Stimuli Responsive Silica Nanoparticles	Dr Yi David Ju - RMIT University (Australia) - Impact of Person-Specific Biomolecular Coronas on Nanoparticle-Immune Cell Interactions	(Oral) Dr Eric Du - UNSW Sydney (Australia) - A 3D Bioprintable Hydrogel with Tuneable Stiffness for Exploring Cells Encapsulated in Matrices of Differing Stiffnesses
12:10	LUNCH		
1:10	<p>PLENARY: Prof Chwee Teck Lim - National University of Singapore (Singapore)</p> <p><i>Microfluidics for Disease Diagnosis and Monitoring</i></p> <p>CHAIR: Prof Alan Rowan    ROOM: Tyree Room @Scientia</p>		
SESSION	DRUG DELIVERY	SENSORS & IMAGING	TISSUE ENGINEERING & ORGANOID TECHNOLOGY
Chair	Dr Zi Sophia Gu	A/Prof Rona Chandrawati	Dr Tushar Kumeria
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
1:55 Keynote	Prof Youqing Shen - Zhejiang University (China) - Transcytotic Nanomedicine for EPR-Independent Cancer Drug Delivery	Prof Hossam Haick - Technion Israel Institute of Technology (Israel) - Artificially Intelligent Medical Nanosensors for Clinical Decisions	Asst Prof Hagar Labouta - Manitoba University (Canada) - Dynamic Organ-on-a-Chip models: Bringing Bio-relevance to In vitro Evaluation of Nanoparticles
2:25 Invited	Prof Clive Prestidge - University of South Australia (Australia) - Nanocarriers for Antimicrobials and Antimicrobial Photodynamics	Dr Ying Zhu - University of Technology Sydney (Australia) - Analysis of Circulating Extracellular Vesicles for Liquid Biopsy using Novel Biosensors and Bioassays	A/Prof Steven Wise - Sydney University (Australia) - Biological Applications of Plasma Dust Nanoparticles
2:45 Invited	Dr Kristian Kempe - Monash University (Australia) - Stealth Poly(2-oxazoline) Nanoparticles and Nanorods for Biomedical Applications	Miss Gayathri Subramaniam - University of Queensland (Australia) - Biologics as Peptide Delivery Vehicles for Immunotherapy	A/Prof Khoon Lim - Otago University (New Zealand) - Spatio-temporal Control of Physical Architecture within 3D-bioprinted Constructs for Enhanced Cellular Function
3:05	AFTERNOON TEA		
SESSION	DRUG DELIVERY	BIONANO INTERACTIONS	TISSUE ENGINEERING & ORGANOID TECHNOLOGY
Chair	A/Prof Khoon Lim	Prof Benjamin Thierry	Dr MoonSun Jung
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
3:40 Invited	Prof Wei Wei - Chinese Academy of Sciences (China) - Biomimetic Formulation Engineering for Anticancer Therapy	Dr Nghia Truong Phuoc - Monash University (Australia) - Boosting Vaccine Efficacy via Controlling Nano-Bio Interactions	A/Prof Jelena Rnjak-Kovacina - UNSW Sydney (Australia) - A Biomimetic Approach Toward Enhancing Angiogenesis & Vascularisation of Biomaterials
4:00 Invited/ Oral	A/Prof Arlene McDowell - University of Otago (New Zealand) - Nanomedicines for Use in Wildlife Applications	Dr Changkui Fu - University of Queensland (Australia) - Sulfoxide Polymers: A New Class of Low-fouling Polymers for Biological Applications	(Oral) Mr Ramanathan Yegappan - The University of Queensland (Australia) - Snake Venom Protein-Based Hydrogel Wound Sealant for Rapid and Stable Haemostasis
4:20 Oral	Dr Nicholas Hunt - University of Sydney (Australia) - Oral Nanotherapeutic Formulations of Insulin	Ms Qiaoyun Wang - The University of Queensland (Australia) - Low-Fouling Fluoropolymer Grafted Metal Organic Framework Nanotheranostics for <sup>19</sup> F MRI-guided Cancer Therapy	Dr Jan Lauko - The University of Queensland (Australia) - Synthetic and Hybrid Analogues of Biopolymer Networks for Tissue Engineering Applications.

4:40 Oral	Dr Andrew Care - University of Technology Sydney (Australia) - Harnessing the Potential of Encapsulin Protein Nanocages for Nanomedicine	Mr Samuel Cheeseman - RMIT University (Australia) - Understanding the Interface between Liquid Metal Droplets and Bacterial, Fungal and Mammalian Cells	Miss Kang Lin - UNSW Sydney (Australia) - Confined Growth Directs Fibroblasts Plasticity and Induces 3D Bio-Assembly through Epigenetic Reprogramming
--------------	------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------

**PROGRAM**

**TUESDAY, 28TH JUNE 2022**

8:30	REGISTRATIONS OPEN		
9:00	<p><i>PLENARY: Prof Jan Grimm - Memorial Sloan Kettering Cancer Center (USA)</i>  <i>Treating Cancer with an Iron Fist</i>  <i>CHAIR: Prof Maria Kavallaris   ROOM: Tyree Room @Scientia</i></p>		
SESSION	BIOACTIVE MATERIALS	BIONANO INTERACTIONS	SENSORS & IMAGING
Chair	Dr John Quinn	Dr Jiangtao Jason Xu	Prof Weibo Cai
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
9:45 Keynote	A/Prof Giorgia Pastorin - National University of Singapore (Singapore) - Design of Biohybrid Systems for Targeted Cancer Therapy	Prof Guangjun Nie - Chinese Academy of Sciences (China) - Intelligent Nanomedicines for Tumor Microenvironment Sensing, Targeting and Regulation	Prof Vicki L. Colvin - Brown University (USA) - Imaging Using Nanoparticles: From MRI to MPI
10:15 Invited	A/Prof Natalie Trevaskis - Monash University (Australia) - Lipid Conjugated Materials that Harness the Lymphatics to Enhance Immunity and Metabolism	A/Prof Pengyu Chen - Auburn University (USA) - Nanoplasmonic Material based Optofluidic Biosensors for Immune Functional Analysis towards Personalized Immune Therapy	Prof Jesse Jokerst - University of California San Diego (USA) - New Ways to See Disease via Nanomaterials
10:35	MORNING TEA		
SESSION	DRUG DELIVERY	BIONANO INTERACTIONS	SENSORS & IMAGING
Chair	Dr Kristian Kempe	Prof Christoph Hagemeyer	A/Prof Ivan Kempson
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
11:10 Invited	Asst. Prof Wei Tao - Harvard University (USA) - Smart Drug Delivery System	Dr Arnold Lining Ju - University of Sydney (Australia) - Cellular and Molecular Mechanobiology in Cardiovascular Health	Prof Benjamin Thierry - University of South Australia (Australia) - Fibroblast Activation Protein Specific MRI Improves Tumour Mapping in a Preclinical Orthotopic Model of Prostate Cancer Compared to PSMA
11:30 Oral	Dr Amy Holmes - University of South Australia (Australia) - Vaginal Epithelial Infections: an Unmet Clinical Need to be Addressed by Nano Drug Delivery Systems	Miss Santhi Subramaniam - University of South Australia (Australia) - Pulmonary Delivery of Lipid-Based Nanoparticles: Identification of Proteins that Mediate Cellular Uptake Kinetics	Dr Fei Deng - UNSW Sydney (Australia) - A CRISPR/Cas12a-assisted on-Fibre Immunosensor for Ultrasensitive Small Protein Detection in Complex Biological Samples
11:50 Oral	Dr Cong Vu - UNSW Sydney (Australia) - Can the Shape of Nanoparticles Enable the Targeting to Cancer Cells over Healthy Cells?	Dr Emily Pilkington - University of Melbourne (Australia) - Ligand-free Immune Cell Targeting by Lipid Nanoparticles	Dr Alain Wuethrich - University of Queensland (Australia) - Liquid Biopsy Nanodiagnostics for Monitoring Cancer and the Human Immune System
12:10 Oral	Dr Ernest Moles - Children's Cancer Institute (Australia) - Targeted Delivery of PEGylated Liposomal Doxorubicin by Bispecific Antibodies Improves Treatment of High-Risk Childhood Leukaemia	Dr Nicholas Fletcher - The University of Queensland (Australia) - Together or Apart: Optimising the Pre-Targeting of Polymeric Nanocarriers	Ms Angie Davina Tjandra - UNSW Sydney (Australia) - Polydiacetylene-Based Colorimetric Sensor Array for Rapid Volatile Organic Compounds Detection to Diagnose Early Lung Cancer
12:30	Lunch		
1:30	<p><i>PLENARY: Prof Bin Liu - National University of Singapore (Singapore)</i>  <i>Aggregation-Induced Emission: Materials and Biomedical Applications</i>  <i>CHAIR: Prof Andrew Whittaker   ROOM: Tyree Room @Scientia</i></p>		
SESSION	CLINICAL CHALLENGES	INDUSTRY SESSION	DRUG DELIVERY
Chair	Dr Angelica Merlot	Dr Kang Liang	Dr Andrew Care
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
2:15 Invited	A/Prof Michelle Farrar - Sydney Children's Hospital (Australia) -	Dr Noushin Nasiri - Macquarie University (Australia) - Wearable Nano-Sensors for Personalised and Preventive Medicine	Prof Ran Mo - China Pharmaceutical University (China) - Nanotherapeutic Strategy to Overcome Anticancer Therapeutic Resistance
2:35 Invited	Professor Andrew Lloyd - Kirby Institute (Australia) -	Dr Elisa Mokany - SpeeDx (Australia) - Two Halves Equal a Whole: the Opportunities in Translating Research	Dr Peter Wich - UNSW Sydney (Australia) - Protein Biohybrid Materials for Degradable and Functional Nanoparticles
2:55 Invited	Dr Marion Mateos - Sydney Children's Hospital (Australia) - Clinical Challenges in Paediatric Oncology - Opportunities for NanoMedicine?	Mr Matthew Britland - Amgen (Australia) - From Bench to Boardroom - bringing science to practice	A/Prof Sarah Shigdar - Deakin University (Australia) - Developing a Platform Technology to Cross the Blood Brain Barrier and Deliver Drugs to Specific Populations
3:15	AFTERNOON TEA		
3:50	POSTER PRESENTATION COMPETITION - Tyree Room @Scientia		

	<i>Chair: Dr David Herman</i>
5:00 - 6:00	POSTER SESSION - Tyree Room @Scientia
6:00	ACS JOURNALS POSTER PRIZE AWARDS ANNOUNCEMENT & PRESENTATION - Tyree Room @Scientia
6:15 - 8:30	CONFERENCE DINNER - The Lounge UNSW, Level 11, Library Building F21 (entry from rear of building)

Poster presentations at the 12th International Nanomedicine Conference will take place in two sessions:

- 1) Three minute poster presentation session from 3:50pm in Tyree Room @Scientia
  - a. Through this session presenters must succinctly highlight the unique aspects of your research, as well as comment on commercial opportunities using no more than three PowerPoint slides.
  - b. Presenters in this session are eligible for one of five (5) poster prizes to be judged during the session.
  - c. Presenters in this session must also display their posters in the traditional session (described below).
- 2) Traditional poster display from 5:00 in Tyree Room @Scientia
  - a. All poster presenters must display their paper in the traditional poster session, and be with their poster on Tuesday evening to discuss their work.
  - b. Please submit your poster to registration desk by 9am on Tuesday.
  - c. Please collect your poster at the conclusion of the poster session, or from the registration desk on Wednesday.

## PROGRAM

WEDNESDAY, 29TH JUNE 2022

8:30	REGISTRATIONS OPEN		
9:00	<b>PLENARY: Professor Gordon Wallace - University of Wollongong (Australia)</b> <i>Graphene – the wonder material!</i> <b>CHAIR: Prof Cyrille Boyer    ROOM: Tyree Room @Scientia</b>		
SESSION	DRUG DELIVERY	BIOENGINEERED & MICROFLUIDIC MODELS	SENSORS & IMAGING
Chair	A/Prof Amirali Popat	Dr Peter Wich	Dr Nicholas Veldhuis
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
9:45	Prof Chunxia Zhao - University of Adelaide (Australia) - Role of nanoparticle stiffness in regulating nano-bio interactions	Prof Sungsu Park - Sungkyunkwan University (Korea) - Social Games of Tumour and Virus on Microfluidic Device with Interconnected Microchambers	Prof Fan Zhang - Fudan University (China) - NIR-II Fluorescent Probes for in vivo Multiplexed Biodetection
10:15	Dr Pegah Varamini - University of Sydney (Australia) - A Multimodal Targeted Nanodiamond-based Theranostic Drug Delivery System: Precision therapy of triple negative breast cancer	Dr Anna Waterhouse - University of Sydney (Australia) - Biomimetic Vascular Nanomaterials for Next Generation Medical Devices	Dr Karen Alt - Monash University (Australia) - Welcome to Magnetic Particle Imaging – A new era in preclinical imaging
10:35	MORNING TEA		
SESSION	DRUG DELIVERY	BIOENGINEERED & MICROFLUIDIC MODELS	SENSORS & IMAGING
Chair	Prof Nicolas Voelcker	A/Prof Jelena Rnjak-Kovacina	A/Prof Shery Chang
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia
11:10	A/Prof Rona Chandrawati - UNSW Sydney (Australia) - Nanozymes and Polymers for Nitric Oxide Delivery from Endogenous and Exogenous Prodrugs	A/Prof Thomas Cox - Garvan Institute of Medical Research (Australia) - Deconstructing Solid Tumour Heterogeneity: The Stromal Matrix Perspective	A/Prof Xiaowei Wang - Baker Heart and Diabetes Institute (Australia) - Molecular Imaging of Activated Platelets: Cardiovascular and Malignant Diseases
11:30	Dr Nicholas Veldhuis - Monash University (Australia) - Developing Nanostar Systems for Sustained Endosomal Release of a Neurokinin-1 Receptor Antagonist to Provide Long-Lasting Relief of Chronic Pain	Dr MoonSun Jung - Children's Cancer Institute (Australia) - A High-Throughput 3D Bioprinted Cancer Cell Migration and Invasion Model with Versatile and Broad Biological Applicability	Dr Sang Eun Hong - Hannam University (Korea) - Reactive Oxygen Species Scavenging and Improvement Effect of Inflammatory Disease Treatment by Interaction of Nanoparticles and Intracellular Organelle
11:50	Dr Manisha Singh - Jaypee Institute of Information Technology (JIIT) (India) - Ameliorating the Expression of Amyloid – $\beta$ in cortical region of mice brain after Intranasal Delivery of Gingko biloba (EGB 761) Extract Loaded Nanoemulsions	Miss Amber Prior - University of Queensland (Australia) - Understanding Nanoparticle Accumulation in a Complex in vitro Tumour-on-a-chip Model	Miss Zhen Zhang - The University of Queensland (Australia) - Tracking Epithelial-Mesenchymal Transition in Liquid Biopsy using Surface-Enhanced Raman Scattering Nanotechnologies
12:10	Dr Federico Mazur - UNSW Sydney (Australia) - Wearable Platform for Therapeutic Nitric Oxide Delivery	Mr Zhao Wang - The University of Queensland (Australia) - Defined 3D Fibrin Networks for 'Scarless' Wound Healing Studies	Miss Xin Xu - The University of Queensland (Australia) - Antifouling and Antibacterial Surfaces Grafted with Hydrophilic and Hydrophobic Copolymers
12:30	LUNCH		
SESSION	DRUG DELIVERY	BIOACTIVE MATERIALS	BIONANO INTERACTIONS
Chair	Dr Belamy Cheung	Dr Yi David Ju	Dr Jan Lauko
Room	Tyree Room @Scientia	Gallery 1 @Scientia	Gallery 2 @Scientia

1:30 Oral	Ms Aria Ahmed-Cox - Children's Cancer Institute (Australia) - Visualisation and Efficacy of Nanoparticle Delivery for Brain Cancer	Dr Lan Xiao - Queensland University of Technology (Australia) - Gold Nanocluster-Induced Immunomodulation for Tissue Regeneration via Mitophagy Regulation: a Perspective on Materiobiology	Dr Ibrahim Javed - The University of Queensland (Australia) - Molecular and Cellular Insights into the Role of Gut-Bacteria for Neurodegeneration
1:50 Oral	Dr Md Musfuzir Hassan - UNSW Sydney (Australia) - Sustained Drug Release from Nanoparticles Functionalized by a Neural Tracing Protein for Treatment Respiratory Dysfunction of Spinal Cord Injury	Mr Changzhuang Bai - UNSW Sydney (Australia) - Visible Light Switchable Peptide-Based Hydrogel for Cell Culture	Ms Haritha Kirla - Murdoch University (Australia) - LyP-1 Conjugated Methylene Blue Encapsulated Mesoporous Silica Nanoparticles for Targeted Photodynamic Therapy in Breast Cancer
2:10 Oral	Dr Wenqian Wang - UNSW Sydney (Australia) - Controlling the Axonal Transport of Gold Nanoparticles with Neural Circuit Tracing Proteins	Ms Luyao Sun - University of Queensland (Australia) - Structurally Tailored Drug-free Layered Double Hydroxide Nanoparticles for Synergized Photothermal/Photodynamic/Chemodynamic Therapy	Ms Sonia Sebastian - University of South Australia (Australia) - Linking the Intracellular Journey of Gold Nanoparticles to Protein Expression Changes in Prostate Cancer Cells
2:30 Oral	Miss Lara Westwood - University of Sydney (Australia) - Quantum Dot Nanomedicine Formulations Dramatically Improve Pharmacological Properties and Alter Uptake Pathways of Metformin and Nicotinamide Mononucleotide in Aging Mice	Mr Hien Tran - UNSW Sydney (Australia) - Photocrosslinked Silk Hydrogels for Biomedical Applications: Understanding Complex Gelation Mechanisms	Miss Qianyi Zhang - UNSW Sydney (Australia) - Cell-Derived Biomimetic 2D Nanoparticles to Improve Cell-Specific Targeting and Tissue Penetration for Enhanced Magnetic Resonance Imaging
2:50	AFTERNOON TEA		
SESSION	DRUG DELIVERY	SENSORS & IMAGING	TISSUE ENGINEERING & ORGANOID TECHNOLOGY
Chair Room	Dr Changkui Fu Tyree Room @Scientia	Dr Ying Zhu Gallery 1 @Scientia	Dr Wenqian Wang Gallery 2 @Scientia
3:20 Oral	Miss Yingzhu Zhou - UNSW Sydney (Australia) - Tunable Gasotransmitter Generation and Delivery using Nanozymes	Miss Yixin Chang - University of Queensland (Australia) - Low-fouling Gold Nanorods Enabled by Sulfoxide Polymer Coating	Mr Gagan Jalandhra - UNSW Sydney (Australia) - Bone-Cartilage Interfaces via Printing of Ceramic Ink in Stem Cell-Laden Microgel Suspensions
3:40 Oral	Mr Zijie Luo - UNSW Sydney (Australia) - Tunable Nitric Oxide Delivery by Nanomaterials and Polymers	Miss Yuan Gao - UNSW Sydney (Australia) - Inkjet Printing of Polydiacetylene Quick Response Codes on Packaging for Food Spoilage Detection	Ms Maria Ai Kristine Tolentino - UNSW Sydney (Australia) - Cell Migration in Well-Defined 3D Biomimetic Extracellular Matrices
4:00 Oral	Mr Mohammad Abdallah - Monash University (Australia) - An $\alpha$ -Terminal Lipid Dictates Hitchhiking on Endogenous Lipid Trafficking Pathways, Influencing the Lymph Uptake, Plasma Half-Life and Tissue Distribution of Brush PEG Polymers	Miss Qingqing Fan - UNSW Sydney (Australia) - Colorimetric Detection of a Neurodegenerative Biomarker Using a Metal-Organic Framework-based Nanozyme	Miss Ashley Nguyen - UNSW Sydney (Australia) - Design and Development of Novel Peptide Hydrogels as Biomimetic Organoid Matrices
4:30	CLOSING CEREMONY & ORAL PRIZES ANNOUNCEMENT - Tyree Room @Scientia		
	Australian Centre for NanoMedicine (UNSW)		