# Program

## Opening Remarks

**Welcome/Acknowledgement of Country**

8:30 - 8:50 AM

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Position</th>
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<tbody>
<tr>
<td>James Chong, MBBS, PhD, FRACP</td>
<td>Associate Professor University of Sydney Head Cardiac Regeneration Laboratory and Faculty Westmead Institute for Medical Research</td>
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<tr>
<td>Anne O’Neill</td>
<td>Associate Director NSW Office for Health and Medical Research, Ministry of Health</td>
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<tr>
<td>Denis Buxton, PhD</td>
<td>PCBC and PCTC Director, Basic and Early Translational Research Program Division of Cardiovascular Sciences NHLBI</td>
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## Cardiovascular Regenerative Medicine I

**Moderators:** Jianyi (Jay) Zhang, MD, PhD – UAB Robert Graham MBBS, PhD – Victor Chang Cardiac Research Institute

8:50 AM – 10:10 AM

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<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Position</th>
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<tbody>
<tr>
<td>8:50 – 9:10 AM</td>
<td>Creating and validating new tools to characterize the electrical behavior of hPSC derived cardiac grafts in vivo</td>
<td>Michael Laflamme, MD, PhD</td>
<td>Senior Scientist, Toronto General Hospital Research Institute (TGHRI) Robert McEwen Chair in Cardiac Regenerative Medicine, University Health Network Staff Pathologist, University Health Network Associate Professor, Laboratory Medicine and Pathobiology, University of Toronto</td>
</tr>
<tr>
<td>9:10 – 9:30 AM</td>
<td>Cardiac regeneration and the application of stem cells for the treatment of heart diseases</td>
<td>Bob Graham, MBBS, PhD, FRACP</td>
<td>Professor of Medicine, UNSW Medicine Victor Chang Cardiac Research Institute, Sydney Darlinghurst, NSW 2010 Australia</td>
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<tr>
<td>9:30 - 9:50 AM</td>
<td>Translation of Tissue Engineered Heart Repair</td>
<td>Wolfram Zimmermann, MD</td>
<td>Director, Institute of Pharmacology and Toxicology Universitätsmedizin Göttingen</td>
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<tr>
<td>9:50 – 10.10 AM</td>
<td>PDGF for cardiac repair after myocardial infarction</td>
<td>James Chong, MBBS, PhD, FRACP</td>
<td>Associate Professor, University of Sydney School of Medicine Head Cardiac Regeneration Laboratory and Faculty, Westmead Institute for Medical Research Cardiologist, Westmead Hospital Hon. Faculty Victor Chang Cardiac Research Institute, Sydney</td>
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10:10 – 10:40 AM Morning Tea
### Cardiovascular Development and Disease Modeling

**MODERATORS:** Eddy Kizana - Westmead Clinical School, University of Sydney  
James Hudson - QIMR Berghofer, Brisbane

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<tr>
<th>Time</th>
<th>Session</th>
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| 10:40 – 11:00 AM | The Convergence of Life Sciences and Engineering: hiPSC to Rebuild the Failing Heart — Roadblocks to Overcome  
Jianyi (Jay) Zhang, MD, PhD  
Chair, Department of Biomedical Engineering  
T. Michael and Gillian Goodrich Endowed Chair of Engineering Leadership  
Professor of Medicine, of Engineering  
School of Medicine, School of Engineering  
UAB | The University of Alabama at Birmingham |
| 11:00 – 11:20 AM | Induced Cardiac Progenitor Cells  
Timothy J. Kamp MD, PhD  
Professor of Medicine  
Co-director, Stem Cell and Regenerative Medicine Center  
Cellular and Molecular Arrhythmia Research Program  
University of Wisconsin-Madison School of Medicine and Public Health |
| 11:20 – 11:40 AM | Isolation of chamber-specific cardiomyocytes from pluripotent stem cells  
Reza Ardehali MD, PhD  
Associate Professor of Medicine  
Division of Cardiology  
Advanced Heart Failure, Mechanical Circulatory Support and Transplantation  
Broad Stem Cell Research Center, UCLA School of Medicine |
| 11:40 – 12.00 PM | Molecular mechanisms of heart development and regeneration  
Enzo Porrello, PhD  
Murdoch Children's Research Institute, Royal Children's Hospital, Melbourne, Australia  
Senior Research Fellow, School of Biomedical Sciences, University of Melbourne |

**12:00 – 1:30 PM Lunch and Poster Session**

### Mechanisms of Action and Cardiac Development

**MODERATORS:** Gemma Figtree - University of Sydney  
Lei Ye, MD, PhD – Singapore

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<tr>
<th>Time</th>
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| 1:30 – 1:50 PM | Molecular Mechanisms of Heart Failure  
Burns C. Blaxall, PhD, FAHA, FACC, FAPS |
| 1:50 – 2:10 PM | Transcriptional Mechanisms of Heart Development and Regeneration  
William Pu, M.D.  
Professor of Pediatrics, Harvard Medical School  
Department of Cardiology, Boston Children’s Hospital |
| 2:10 – 2:30 PM | Cardiac stromal stem cells and fibroblast biology – insights from single cell transcriptomics and animal models  
Richard Harvey, PhD  
Professor of Heart Research  
Co-deputy Director and Head, Development and stem cell biology division  
Victor Chang Cardiac Research Institute, University of New South Wales, Sydney |
| 2:30 – 2:50 PM | Molecular basis of cardiomyocyte specification and maturation  
Li Qian, PhD  
Associate Professor  
Department of Pathology and Laboratory Medicine UNC, Chapel Hill |
### Cardiovascular Tissue Engineering and Biomaterials I

**MODERATORS:** Joel L. Berry, PhD – UAB  
Hala Zreiqat, PhD – Sydney

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<th>Time</th>
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<th>Speaker</th>
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<tr>
<td>3:05 – 3:25 PM</td>
<td>Vascularized heart tissues for myocardial repair</td>
<td>Nenad Bursac, PhD</td>
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<td></td>
<td>Professor of Biomedical Engineering Associate Professor of Medicine</td>
<td>Duke University School of Medicine</td>
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<td>3:25 - 3:45 PM</td>
<td>Cardiac organoids for drug discovery</td>
<td>James Hudson, PhD</td>
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<td>QIMR Berghofer Medical Research Institute</td>
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<td>Brisbane, Australia</td>
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<td>3:45 - 4:05 PM</td>
<td>Bioengineering New Synthetic Conduits for Arterial Revascularisation</td>
<td>Steve Wise PhD</td>
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<td>Applied Materials Group Unit Leader</td>
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<td>Heart Research Institute</td>
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<td>Sydney, Australia</td>
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<tr>
<td>4:05 – 4:25 PM</td>
<td>A liquid surface coating to reduce thrombosis in blood-contacting medical devices</td>
<td>Anna Waterhouse, PhD</td>
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<td>Cardiovascular Medical Devices Group Leader and Senior Lecturer</td>
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<td>Heart Research Institute and Central Clinical School</td>
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<td>Faculty of Medicine and Health</td>
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<td>University of Sydney</td>
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### Early Career Researcher Presentations

**MODERATOR:** Richard Harvey, PhD – Victor Chang Cardiac Research Institute

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<tbody>
<tr>
<td>4:25 – 4:35 PM</td>
<td>In silico modeling of existing and ideal right ventricle to pulmonary artery conduits</td>
<td>Pegah Ebrahimi</td>
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<td></td>
<td>School of Chemical and Biomolecular Engineering</td>
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<td>University of Sydney</td>
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<td>4:35 – 4:45 PM</td>
<td>Novel single cell mechanobiology approach reveals an intermediate state of integrin alfa3 that mediates platelet aggregation under disturbed flow</td>
<td>Arnold Ju</td>
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<td>Heart Research Institute and Charles Perkins Centre</td>
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<td>4:45 – 4:55 PM</td>
<td>ASIC1a inhibition with novel spider venom peptide, Hi1a, for the treatment of cardiac ischemia</td>
<td>Meredith Redd</td>
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<td>Institute for Molecular Bioscience</td>
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<td>University of Queensland</td>
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<td>4:55 – 5:05 PM</td>
<td>Characterisation of NKX2-5 gain-of-function mutations causative for congenital heart disease</td>
<td>Alex Ward</td>
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<td>Victor Chang Cardiac Research Institute</td>
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### 6:30 – 10:30 PM – Symposium Dinner
### Clinical and Preclinical Perspectives  9:00 – 10:20 AM

**MODERATOR:** Andrew Boyle, MBBS, PhD - University of Newcastle

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<tr>
<th>Time</th>
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| 9:00 – 9:20 AM | **Cell therapy with human ESC-derived cardiac cells- clinical perspectives**  
Philippe Menasché, MD, PhD  
Professor of Thoracic and Cardiovascular Surgery, University of Paris Descartes  
Chief of the Heart Failure Surgery Unit of the Hôpital Européen Georges Pompidou  
Director of an INSERM (National Institute of Health and Medical Research) laboratory devoted to cell therapy of cardiovascular diseases |  

| 9:20 – 9:40 AM | **Perspective of the clinical application of HLA-matched iPS cell derived purified into cardiomyocytes into the patients with DCM**  
Keiichi Fukuda, MD, PhD  
Professor, Department of Regenerative Medicine and Advanced Cardiac Therapeutics  
Graduate School of Medicine, Keio University |  

| 9:40 – 10:00 AM | **Preclinical transplantation study of iPS cell-derived cardiomyocytes in simian myocardial infarction model**  
Yuji Shiba, MD, PhD  
Head of the Department of Biotechnology and Biomedical Engineering  
Academic Assembly Associate Professor (Institute of Medicine), Shinshu University |  

| 10:00-10:20 AM | **Cardiac cell therapy in non-human primate model**  
Xinyang Hu, MD, PhD  
Professor and Director, Science and Education  
Zhejiang University School of Medicine, Zhejiang, China |  

### Cardiovascular Regenerative Medicine II  10:35 AM – 11:35 AM

**MODERATORS:** Timothy J. Kamp, MD, PhD - University of Wisconsin  
David Elliott, PhD - Murdoch Children's Research Institute

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<tr>
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| 10:35 – 10:55 AM | **Cardiac repair in guinea pigs with human engineered heart tissue from induced pluripotent stem cells**  
Florian Weinberger, MD  
Professor of Pediatric Cardiology  
Group Leader in the Institute of Experimental Pharmacology and Toxicology  
University Medical Center Hamburg-Eppendorf |  

| 10:55 – 11:15 AM | **Circulating exosomes: A novel mechanism for ischemic heart to recruit bone marrow cells.**  
Gangjian Qin, MD  
Professor of Medicine and Biomedical Engineering  
Department of Biomedical Engineering, School of Medicine, School of Engineering  
UAB | The University of Alabama at Birmingham |  

| 11:15 – 11:35 AM | **Early regenerative capacity in the porcine heart**  
Lei Ye, PhD  
Principal Investigator  
National Heart Research Institute Singapore, National Heart Centre Singapore |  

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**Saturday March 2nd 2019**
### Cellular Mechanisms and Cardiovascular Science I

**11:35 AM – 12:35 PM**

**MODERATORS:** Rong Tian, MD, PhD – University of Washington  
Zoe Clayton PhD – University of Sydney

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<tr>
<th>Time</th>
<th>Title</th>
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| 11:35 – 11.55 AM | Cardiovascular developmental biology | Sean M. Wu MD, PhD, FACC  
Associate Professor of Medicine (Cardiovascular Medicine)  
Institute of Stem Cell and Regenerative Medicine  
Stanford University |
| 11.55 – 12.15 PM | Stem Cell Autophagy | Asa Gustafsson PhD  
Professor  
Skaggs School of Pharmacy and Pharmaceutical Sciences  
Department of Pharmacology, School of Medicine  
UCSD |
| 12:15 – 12:35 PM | Metabolism and cell growth | Rong Tian, MD, PhD  
Director of Mitochondria and Metabolism Center  
Professor of Anesthesiology & Pain Medicine, and Bioengineering  
Adjunct Professor, Biochemistry and Pathology  
University of Washington |

**12:35 – 1:20 PM – Lunch**

### Cellular Mechanisms and Cardiovascular Science II

**1:20 PM – 2:40 PM**

**MODERATORS:** Asa Gustafsson PhD – UCSD  
Zoe Clayton PhD – University of Sydney

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<tr>
<th>Time</th>
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| 1:20 – 1:40 PM | Rho A in heart failure | Maria Kontaridis, PhD  
Director of Research  
Masonic Medical Research Laboratory |
| 1:40 – 2:00 PM | The contribution of monocyte regeneration and differentiation to atherosclerosis | Hong Wang MD, PhD  
Interim Chair, Microbiology and Immunology  
Professor and Director, Center for Metabolic Disease Research  
Professor, Pharmacology  
Professor, Cardiovascular Research Center  
Temple University Lewis Katz School of Medicine |
| 2:00 – 2:20 PM | Integrated omics dissection of proteome dynamics during cardiac remodeling | Peipei Ping, PhD  
Professor, Physiology  
Professor, Medicine/Cardiology, and Bioinformatics  
Director, NIH BD2K Centers-Coordination Center at UCLA |
| 2:20 – 2:40 PM | Cardiac directed differentiation from pluripotency at single cell resolution | Nathan Palpant, PhD  
Lab head: Institute for Molecular Bioscience, Centre for Cardiac and Vascular Biology  
Director: Queensland Facility for Advanced Genome Editing  
The University of Queensland, Brisbane, Queensland, Australia |

**2:40 – 2.55 PM – Afternoon Tea**
### Cardiovascular Tissue Engineering and Biomaterials II

**MODERATOR:** Carmine Gentile PhD – University of Sydney  
Rob Hume PhD – University of Sydney

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<th>Time</th>
<th>Presentation</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
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</table>
| 2:55 - 3:15 PM | 3D aggregates of human mesenchymal stem cells in cardiovascular diseases     | Teng Ma, PhD  
Professor and Chair  
Department of Chemical and Biomedical Engineering  
Florida A and M University  
Florida State University College of Engineering |                                                                                                  |
| 3:15 – 3:35 PM | Light-Sheet: Fast and Deep Photon Penetration to Elucidate Cardiovascular Structure and Function | Tzung K. Hsiai, MD, PhD  
Professor of Medicine and Bioengineering  
UCLA Cardiovascular Engineering & Light-Sheet Imaging Laboratory  
Maud Cady Guthman Chair in Cardiology |                                                                                                  |
| 3:35 - 3:55 PM | Strategies to promote vascular regeneration on biomaterials                  | Jelena Rnjak-Kovacina, PhD  
Graduate School of Biomedical Engineering  
UNSW, Sydney |                                                                                                  |

### Meet the Editor Session

**MODERATOR:** Jay Zhang, MD, PhD UAB

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<th>Time</th>
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<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>3:55 – 4:25 PM</td>
<td>Caitlin A. Czajka, PhD</td>
<td>Associate Editor</td>
<td>Science Translational Medicine</td>
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### Concluding Remarks – 4:25 PM

Jay Zhang, MD, PhD  
Chair, Department of Biomedical Engineering  
T. Michael and Gillian Goodrich Endowed Chair of Engineering Leadership  
Professor of Medicine, of Engineering  
School of Medicine, School of Engineering  
UAB | The University of Alabama at Birmingham