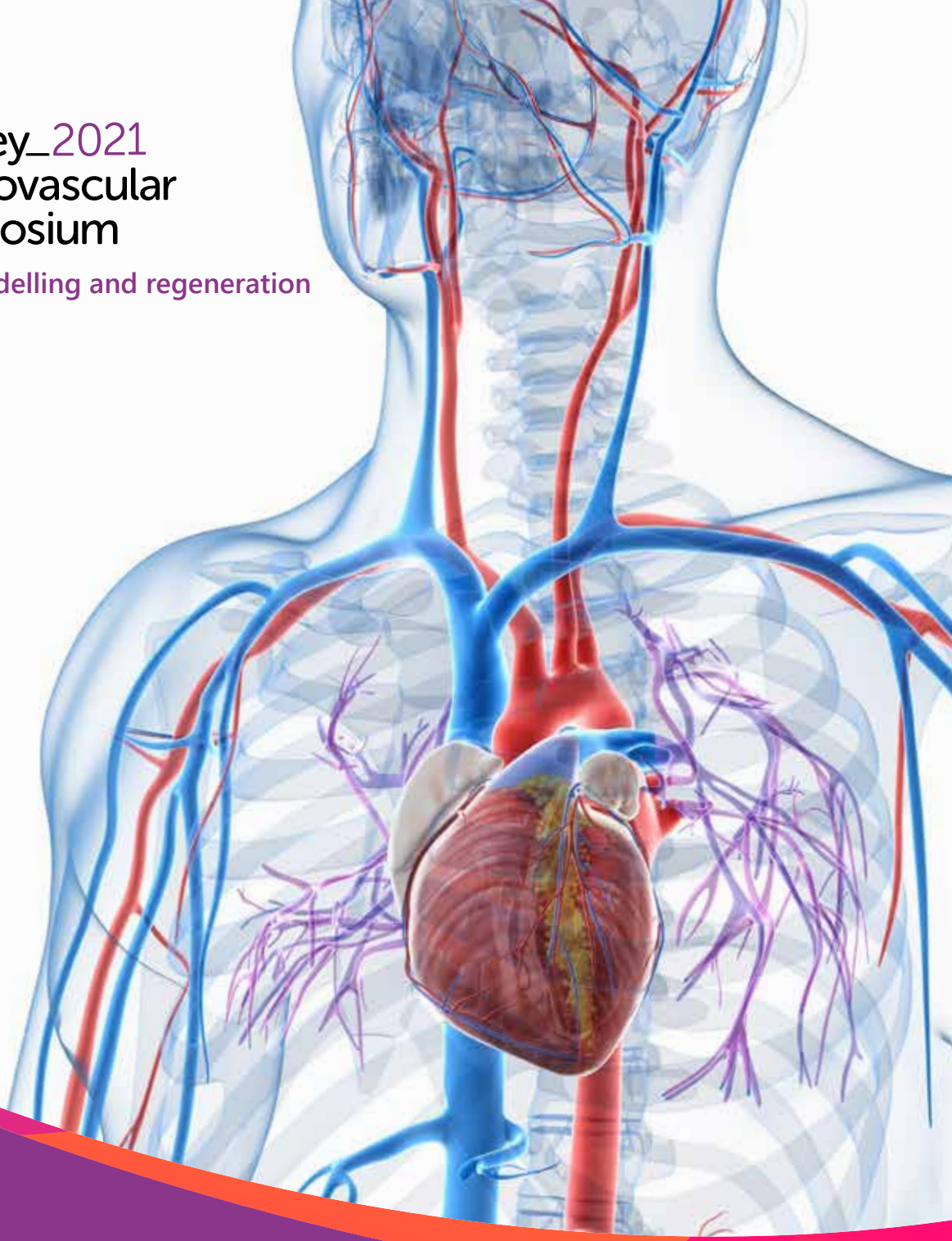
Sydney_2021
Cardiovascular
Symposium

> Remodelling and regeneration



Sydney Cardiovascular Symposium

Remodelling and regeneration

9 – 10 December

HRI
HEART RESEARCH INSTITUTE

Victor Chang
Cardiac Research Institute

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Welcome

Welcome to the Sydney Cardiovascular Symposium

The Heart Research Institute (HRI) and the Victor Chang Cardiac Research Institute (VCCRI), as joint hosts, are delighted to welcome you to the virtual 2021 Sydney Cardiovascular Symposium.

This year's Symposium will be dedicated to the innovative theme of cardiovascular remodelling and regeneration in research and clinical practice, with some discussion around COVID-19 and the heart, and the impact of the pandemic on medical research. Sessions will include hot topics such as novel treatment strategies for heart failure, and mechanisms of cardiac remodelling, as well as the latest research and clinical developments in stroke, hypertension and vascular disease.

Early and mid-career researchers (EMCRs) encompass a significant and important portion of the research community. With that in mind, the Symposium features research presentations and plenty of career development and mentorship opportunities for EMCRs, through panel discussions and workshops. Art in Science and Graphical Abstract competitions, as well as Rising Star awards and Flash Talks, are also available for EMCRS to participate in.

We welcome you all and are confident you will find the meeting interesting and stimulating as you hear from world leaders at the forefront of cardiovascular research. We encourage you to interact and take advantage of the opportunity to network by joining virtual " coffee tables" within the lounge area of the meeting platform in between sessions.

In these challenging times where we have been forced apart, and forced out of our laboratories in many cases, we challenge you to use this Symposium to regenerate and remodel the discovery and clinical cardiovascular research landscape. Reach out and establish new collaborations, push the limits of innovation, mentor promote and champion our EMCRs, and together let's lead the field to diminish the terrible cost of cardiovascular disease.

On behalf of the Organising Committee,

Melissa Farnham

Symposium Chair

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Program - Thursday 9 December

8:30-8:40	ACKNOWLEDGEMENT OF COUNTRY *Dr Melissa Farnham* WELCOME *Prof Mark Scott, Prof Ian Jacobs*	
8:45-9:45	**PLENARY CLINICAL LECTURE: Prof Eduardo Marbán, Smidt Heart Institute at Cedars-Sinai Medical Center – Novel RNA drugs for HFpEF: the long and winding road** *Moderator: A/Prof Eddy Kizana*	
9:45-10:15	**Session I: Meet the Scientist/Discussion Panels**	
	STREAM 1: COVID and the heart Prof Jason Kovacic, Dr Richard Mills, Dr Freda Passam *Chairs: Dr Kathryn Wolhuter, Dr Chris Stanley*	
	STREAM 2: How COVID affected research Prof Chris Semsarian, Prof Sarah Palmer, Prof Annemarie Hennessy *Chairs: Dr Cindy Kok, Dr Dhanya Ravindran*	
10:15-10:25	**BREAK**	
	Session II: Rising Star Session *Chairs: Prof Jamie Vandenberg, Dr Melissa Farnham*	
10:25-10:40	A/Prof Eddy Kizana	*Generation of Novel Vectors for Cardiac Gene Therapy*
10:40-10:55	Dr Gillian Blue	*Insights into the genetic architecture underlying complex, critical congenital heart disease*
10:55-11:10	Dr Christopher Roche	*Cardiac patch transplantation instruments for robotic minimally invasive cardiac surgery: initial proof-of-concept designs and surgery in a porcine cadaver*
11:10-11:25	Dr Kathryn Wolhuter	*Unravelling PHACTR1: using multi-omics to understand the functions of the important gene in vascular disease signal*
11:25-11:40	Dr Candice Delcourt	*Recovery from stroke, clinician's perspective*
11:40-11:55	**Advanced Research Translation Centres – SHP/SPHERE/Rural Health** Prof Mark Parsons, A/Prof Angela Todd, Prof Andrew Boyle *Chair: Prof Gemma Figtree*	
11:55-12:10	**BREAK**	
	Session III: Data-blitz/Flash-talks *Chairs: Dr Chris Stanley, Dr Zoe Clayton*	
12:10-12:15	Dr Amy Nicks	*Standardised cardiomyocyte isolation and purification for cell-type specific study of individual hearts at any postnatal age*
12:15-12:20	Dr Dimuthu Alankarage	*TGF signalling dysregulation and congenital disease*
12:20-12:25	Nicholas Murray	*Functional investigations of the Nkx2-5 non-coding landscape in heart development and disease*

Program - Thursday 9 December

12:25-12:30	Aster Pijning	*Identification of an alternate covalent form of platelet αIIbβ3 integrin that selectively partitions into focal adhesions where it has extended residency time and altered function*
12:30-12:35	Renping Liu	*The differential metabolic, hypertensive, exercise, and ketone parameters in male vs female heart failure with preserved ejection fraction*
12:35-12:40	Questions for flash talks	
12:40-12:50	**BREAK**	
12:50-12:55	Manisha Patil	*Endothelial cell-pericyte crosstalk: novel interactions for generating stable and functional blood vessels in hypoxia and ischaemia*
12:55-13:00	Clara Liu Chung Ming	*In vitro modelling of human heart hypoxia/reoxygenation- and drug-induced myocardial damage*
13:00-13:05	Dr Osvaldo Contreras	*Modelling human cardiomyocyte cell cycle using multiparametric flow cytometry*
13:05-13:10	Dr Jordan Thorpe	*Development of iPSC models for atrial arrhythmia*
13:10-13:15	Dr Monique Bax	*The first induced pluripotent stem cell-derived models for spontaneous coronary artery dissections*
13:15-13:20	Dr Ralph Patrick	*Single-cell cross-disease mapping of cardiac fibroblasts*
13:20-13:25	Questions for flash talks	
13:25-13:40	**BREAK**	
	Session IV: Workshops *Chairs: Dr Belinda Di Bartolo, Dr Jeanette Villanueva*	
13:40-14:25	Difficult Discussions	
14:25	**CLOSE OF THE DAY**	
	Sydney Cardiovascular Symposium EMCR Networking Drinks	
17:30-21:00	The Grandstand Heritage Room, The University of Sydney *Note: Attendees must have RSVPed with their Symposium registration*	

Program - Friday 10 December

13:00-13:10	ACKNOWLEDGEMENT OF COUNTRY *Dr Melissa Farnham* WELCOME *Prof Shaun Jackson*	
	Session I: Cardiovascular remodelling and regeneration *Chairs: Prof Shaun Jackson, Dr Zoe Clayton*	
13:10-13:25	Dr John O'Sullivan	*On the ketogenic potential of stiff failing hearts*
13:25-13:40	Dr Renjing Liu	*A new player in vascular calcification*
13:40-13:55	Dr Charles Cox	*Piezo channels as drivers of cardiac remodelling*
13:55-14:10	Prof Andrew Boyle	*Molecular targets in LV remodelling*
14:10-14:30	**BREAK**	
	Session II: Cardiovascular remodelling and regeneration *Chairs: Dr Mary Kavurma, Dr Kavitha Muthiah*	
14:30-14:45	Dr Pierre Qian	*Innovations in ablation technologies for cardiovascular diseases*
14:45-15:00	Dr Freda Passam	*Study of the platelet proteome in health and type 2 diabetes*
15:00-15:15	Prof Peter MacDonald	*Funnel web spider venom and myocardial ischaemia: applying the acid test*
15:15-15:30	Prof Liza Thomas	*Left atrial remodelling: implications in chronic kidney disease*
15:30-15:45	**BREAK**	
15:45-16:00	**AWARDS AND THANKS**	
16:00-17:00	**PLENARY PRINCESS'S LECTURE: Prof Ralf Adams, Max Planck Institute for Molecular Biomedicine – Organ-specific and functional specialization of vascular cells** *Moderator: Prof Richard Harvey*	
17:00	**MEETING CLOSE**	
	Sydney Cardiovascular Symposium Dinner	
18:30-22:30	The Grandstand Heritage Room, The University of Sydney *Note: Attendees must have RSVPed with their Symposium registration*	

Plenary speakers

Professor Ralf Adams

Ralf became a director at the Max Planck Institute for Molecular Biomedicine and Professor for Vascular Biology at the Westphalian Wilhelms-University in 2007. He currently leads the Department of Tissue Morphogenesis research group where he conducts research in developmental biology, vascular cell biology and molecular biology. His current projects include interactions at the neurovascular interface, artery formation and vessel-tissue interactions in different organ systems such as bone.

Professor Eduardo Marbán

Eduardo is an international leader in cardiology and a pioneering heart researcher. His 30-plus years of experience in patient care and research have led to key discoveries in gene and stem cell therapies for heart disease. In 2007, he became founding director of the Smidt Heart Institute. One research theme within the Marbán Laboratory is in cell therapy and regenerative medicine, which the team has pursued for 16 years and spans from mechanistic discovery science through advanced clinical trial design and analysis. Currently, the Marbán Laboratory is pioneering biologically based therapies for cardiac regeneration and biological pacemakers.

Chairs and speakers

Dr Dimuthu Alankarage

Dimuthu works in Professor Sally Dunwoodie's lab at the Victor Chang Cardiac Research Institute, working on genetic causes of congenital disease. The team were able to publish the first Australian genome sequenced cohort of patients with congenital heart defects in 2019. They are now using the sequencing data to look more closely at the pathways involved in causing congenital defects.

Dr Monique Bax

Monique is a postdoctoral scientist at the Victor Chang Cardiac Research Institute. She uses induced pluripotent stem cells to model spontaneous coronary artery dissections, a major cause of myocardial infarctions in women under 50.

Chairs and speakers

Dr Gillian Blue

Gillian is a Postdoctoral Scientist and Genetic Counsellor at the Heart Centre for Children, based at The Children's Hospital at Westmead. She is a Clinical Senior Lecturer at the Discipline of Genetic Medicine, The University of Sydney and a Visiting Scientist at the Victor Chang Cardiac Research Institute. Her primary research interest is understanding the genetic mechanisms underlying congenital heart disease using genomic technologies, as well as the associated clinical and psychosocial implications.

Professor Andrew Boyle

Andrew is Professor of Cardiovascular Medicine at the University of Newcastle (UoN), and an Interventional Cardiologist at John Hunter Hospital. He is Director of the Priority Clinical Centre for Cardiovascular Health at UoN and Co-Lead of the Cardiovascular Research Theme at the Hunter Medical Research Institute. His clinical and scientific research programs focus on left ventricular remodelling.

Dr Joyce Chiu

Joyce is a Senior Research Officer at the Centenary Institute. She pioneers in the field of mechano-redox biology with her discovery of integrin de-adhesion essential for thrombosis and haemostasis. Joyce is currently working on anti-platelet drug resistance and neutrophil migration during inflammation.

Dr Osvaldo Contreras

Osvaldo is a Postdoctoral Scientist and Conjoint Lecturer (Faculty of Medicine & Health, UNSW Sydney) working on cell-based strategies for improving our understanding of heart development and repair under the supervision of Prof Richard Harvey at the Victor Chang Cardiac Research Institute.

Dr Charles Cox

Charles completed his PhD in 2013, following on from a Master's degree (Honours 1st class) in Pharmacy, both at Cardiff University, UK. As a qualified pharmacist, Charles practiced in both hospital and community settings (2008-2013) before joining the Victor Chang Cardiac Research Institute (VCCRI). As a NSW Health EMCR Fellow (2018-2021) Charles was appointed as a Group Leader at the VCCRI (2019-present) and currently holds an appointment (0.2FTE) at the University of New South Wales. The primary focus of Charles' cardiac mechanobiology group is to understand the role of mechanosensitive ion channels in cardiac health and disease. The principle molecules of interest are Piezo-type ion channels and the roles they play in detecting physiological and pathological biomechanical cues in both myocytes and non-myocytes.

Chairs and speakers

Dr Zoe Clayton

Zoe is a postdoctoral scientist at the Westmead Institute for Medical Research. Her research interests lie in the development of novel strategies for cardiovascular repair and regeneration, with particular focus on pluripotent stem cell-derived cardiomyocytes as a potential therapy for heart failure.

Dr Candice Delcourt

Candice is a clinician researcher. She joined The George Institute in 2008. She completed her PhD in 2017 at The University of Sydney on the imaging of haemorrhagic stroke. Candice holds an NHMRC Investigator grant. She leads the Neurology Program at the George Institute and is a Senior Research Fellow at The University of New South Wales and Associate Professor at Macquarie University. She is a Fellow of the European Stroke Organisation and is on the steering committee of the Australian Stroke Trial Network. Her research focuses on improving stroke care and treatment.

Dr Belinda Di Bartolo

Belinda is a cardiovascular research scientist, an advocate for women and mothers in the science and health sector, and a firm believer in the power of mentoring. Currently her research investigates the effects of calcification and inflammation in heart disease, diabetes and ageing.

Dr Melissa Farnham

Melissa heads the Cardiovascular Neuroscience Group at the Heart Research Institute. Her research centres around the central (brain) mechanisms responsible for the cardiometabolic consequences of obstructive sleep apnoea (OSA). She has a specific interest in neuropeptide signalling within autonomic neural circuits.

Professor Gemma Figtree

Gemma is a Professor in Medicine at the University of Sydney. She co-leads the Cardiovascular Theme for Sydney Health Partners, a NHMRC Advanced Health Research and Translation Centre and is the Chair of the University of Sydney's multi-disciplinary Cardiovascular Initiative. Gemma completed her DPhil at Oxford University in 2002 supported by a Rhodes Scholarship making fundamental discoveries regarding estrogen's actions and factors regulating NO/redox balance in the cardiovascular system. She is committed to improving the care for heart attack patients – using her knowledge of molecular and cellular biology to develop methods of identifying those at highest risk of adverse outcome, and discovering novel therapies to prevent and treat events, inspired by her clinical work as an interventional cardiologist. She has dedicated herself throughout her career to unravelling key mechanisms underlying susceptibility

and response to heart attack, with studies extending from the bench to large cohort studies and clinical trials. Discoveries in her Laboratory have been published in leading journals including The Lancet (x2 in 2021); Circulation (x6); European Heart Journal, with ~9250 citations. Gemma has >190 publications which reflect translation of research from molecular discoveries to the clinic and are driven by the patients she cares for as an interventional cardiologist, with ~60% as 1st or senior author. Gemma is a principal investigator on grants >$18.0 mill. She is CIA of an NHMRC Centres of Research Excellence and Partnership grant, bringing together multi-disciplinary leaders from across the world. She is also CIA on a successful MRFF Frontier Heath and Medical Research Initiative, which provides Stage 1 support and opportunity to prepare a bid for $40-50 Mill Stage 2 funding to push the boundaries and develop new diagnostic and therapeutic approaches for coronary artery disease with a strong commercialisation and translation pipeline. Having recently completed a co-funded NHMRC CDF and Heart Foundation Future Leader Fellowship, she was awarded a National Health and Medical Research Council (NHMRC) Excellence Award for Top Ranked Practitioner Fellow (Australia), commencing in 2018. In 2019 she received the prestigious NSW Ministerial Award for Cardiovascular Research Excellence.

Gemma is committed to the advancement of her field and serves as a member of the Editorial Board of leading international cardiovascular journals Circulation and Cardiovascular Research, as well as being a founding editorial board member for Redox Biology, and an Associate Editor for Heart, Lung and Circulation. Her research and clinical perspective and leadership are recognised by her membership of the Scientific Board of Cardiac Society of Australia and New Zealand (responsible for International Relations), and her appointment to the Expert Advisory Panel for NHMRC Structural Review of Grants Program (2016-17), and as well as the Clinical Committee of the Heart Foundation. She is committed to the promotion and advocacy of cardiovascular research, working as President of the Australian Cardiovascular Alliance with a national team to secure $220 Million Federal funding for the Mission for Cardiovascular Health, as well as a member of the NSW CVD Advisory Committee. She now chairs the Mission (CV) Expert Advisory Panel. She is a graduate of the Australian Institute of Company Directors and serves/has served as a non-executive Director on multiple community Boards.

Professor Richard Harvey

Richard received his PhD in molecular biology in 1982 from the University of Adelaide. He undertook postdoctoral studies in embryology at Harvard University, then joined the Walter and Eliza Hall Institute in Melbourne, establishing an independent group. In 1998, he relocated to the Victor Chang Cardiac Research Institute, where he is currently Co-Deputy Director and Head of the Cardiac Developmental and Stem Cell Biology Division. His research focuses on the genetic basis and systems biology of heart development and

Chairs and speakers

congenital heart disease pathology, as well as adult cardiac stem and stromal cells, and heart regeneration.

Distinguished Professor Annemarie Hennessy AM

Annemarie is the leader of the Vascular Immunology Group and the Dean and Foundation Chair of Medicine at the Western Sydney University. She has 19 years' experience in preeclampsia research and is actively involved in clinical and laboratory research into the causes of high blood pressure during pregnancy. She directs two PhD students at the Heart Research Institute (USYD) and one at Western Sydney University. Annemarie is also the Managing Director of PEARLS, a non-profit organisation established under the auspices of the Heart Research Institute, Royal Prince Alfred Hospital and Campbelltown Hospital to raise funds to support ongoing research into the cause of preeclampsia in pregnancy.

Professor Shaun Jackson

Shaun has been an NHMRC Australia Fellow and Senior Principal Research Fellow over the last 10 years and is currently recipient of an NHMRC Investigator Grant (Leadership 3). In 2004 he was appointed as the Research Director of the Australian Centre for Blood Diseases (ACBD), Monash University, received an Australia Fellowship from the NHMRC and an Adjunct Professorial appointment at The Scripps Research Institute, San Diego. In 2013, Shaun was appointed the Inaugural Director of Cardiovascular Research, at the Heart Research Institute and Charles Perkins Centre, The University of Sydney. Most recently, he was appointed the title of Honorary Visiting Fellow at the Department of Haematology, University of Cambridge.

Dr Mary Kavurma

Mary is Group Leader of the Vascular Complications Group and Associate Director of Research and Education at the Heart Research Institute. She is also a conjoint Senior Lecturer at The University of Sydney. Mary's most significant contributions are in cellular mechanisms of atherosclerosis, the main cause of cardiovascular disease, and the pathological process underlying coronary artery disease and peripheral artery disease.

Associate Professor Eddy Kizana

Eddy is a physician/scientist at the Westmead Health Precinct and Associate Professor with Sydney Medical School. He is a cardiologist/electrophysiologist at Westmead Hospital and Co-director for the Centre for Heart Research and Cardiac Gene Therapy Group Leader at the Westmead Institute for Medical Research. Eddy divides his time between caring for patients with heart disorders and developing novel gene therapy approaches for the same.

Chairs and speakers

Dr Cindy Kok

Cindy is a postdoctoral researcher from the Westmead Institute for Medical Research. She works in the area of cardio-oncology, with the aim to develop protective therapies against cardiotoxic anti-cancer drugs.

Professor Jason Kovacic

Jason graduated from The University of Melbourne Medical School in 1994, and then undertook residency and cardiology specialty training at St Vincent's Hospital in Sydney. Jason then completed a PhD at the Victor Chang Cardiac Research Institute (VCCRI), before relocating to the USA, to the National Heart, Lung and Blood Institute (NHLBI) at the National Institutes of Health (NIH) in Bethesda, Maryland. At the NIH, Jason undertook a postdoctoral fellowship with the then Director of the NHLBI, Dr Elizabeth Nabel. In 2009 Jason moved to Mount Sinai in New York. As a physician-scientist and investigator at the Icahn School of Medicine at Mount Sinai, Jason established a cardiovascular research laboratory with a strong interest in the cellular, molecular and genetic mechanisms underlying cardiovascular disease. He also established a large clinical practice as an interventional and clinical cardiologist. Major career achievements include successful investigator-initiated clinical studies of cardiovascular progenitor cell therapy, molecular characterization of a novel vascular progenitor cell population, unravelling the pathobiology of fibromuscular dysplasia and spontaneous coronary artery dissection, numerous basic and translational studies on the biology and manifestations of atherosclerosis, and pioneering studies regarding the role of endothelial to mesenchymal transition (EndMT) in adult vascular biology and disease.

In early 2020 Jason was recruited to return to Australia, and to take on the role of the Executive Director of the VCCRI. Jason has now established his research program at the VCCRI, where he continues his focus on cardiac and vascular diseases, including fibromuscular dysplasia and spontaneous coronary artery dissection. Jason currently holds the positions of the Robert M Graham Chair and Professor of Cardiovascular Research at University of New South Wales, and continues his appointment as Professor of Medicine (Cardiology) at Icahn School of Medicine at Mount Sinai, New York, USA.

Miss Clara Liu Chung Ming

Clara is currently doing her first year of a Doctor of Philosophy in Biomedical Engineering at UTS. She is from Mauritius and did her Bachelor of Science at The University of Melbourne, and then pursued her Master of Philosophy in Biotechnology at UTS. She had the opportunity to develop a project alongside Dr Carmine Gentile during her honour's year concerning biofabrication of myocardial damage 3D in vitro models and cardiac regeneration and is now

Chairs and speakers

progressing with the project during her PhD course, and has joined up with Sydney Heart Bank at the Charles Perkins Centre/The University of Sydney.

Dr Renjing Liu

Renjing undertook postdoctoral training at the Yale Stem Cell Center with one of the pioneers in human iPSC research and epigenetics. Receiving the Yale Brown-Coxe Fellowship, she then did a second postdoc at the Yale Cardiovascular Research Center, where she identified a role of TET2 in vascular diseases. Renjing recently joined the Victor Chang Cardiac Research Institute as Faculty and leads the Vascular Epigenetics Laboratory.

Miss Renping Liu

Renping is a PhD student in Dr John O'Sullivan's Cardiometabolic Disease research group at the Heart Research Institute. Her research primarily focuses on addressing the fundamental mechanisms in heart failure, particularly stiff heart failure. Today she will be talking about a model that she has established at HRI modelling stiff heart failure and the key differences observed between male and female mice with heart failure with preserved ejection fraction.

Professor Peter MacDonald AM

Peter is a Conjoint Professor of Medicine in the University of New South Wales, Medical Director of the Heart Transplant Unit at St Vincent's Hospital, Sydney and Head of the Transplantation Research Laboratory at the Victor Chang Cardiac Research Institute. He is a past President of the Transplantation Society of Australia & New Zealand (TSANZ). His major research interests over the last 30 years have been in the areas of heart failure, pulmonary hypertension, heart transplantation, donor management and organ preservation. He has co-authored over 360 peer-reviewed manuscripts (H index 68). In 2015 his research into the recovery and transplantation of hearts from DCD donors was recognised by the NSW Government with the NSW Ministerial Award for cardiovascular research excellence and by the ACT Gift of Life Organisation with the Terry Connolly Award for Healthcare Leadership and Innovation. In 2017, he was made a member of the Order of Australia for his contributions to cardiovascular research and medicine.

Dr Jessica Maclean

Jessica is a postdoctoral researcher at the Heart Research Institute, working under the supervision of Professor Shaun Jackson and Associate Professor Simone Schoenwaelder. Her research interests focus on understanding blood clot development in stroke and investigating new thrombolytic drugs for vascular diseases.

Chairs and speakers

Dr Richard Mills

Richard is an interdisciplinary scientist working at the interface of bioengineering, stem cell biology and muscle physiology. He is currently a senior research officer in the Cardiac Bioengineering Lab at QIMR Berghofer Medical Research Institute. Richard has developed bioengineered human cardiac and skeletal muscle systems to discover novel biology and therapeutic targets for disease.

Mr Nicholas Murray

Nick is a PhD candidate at the Victor Chang Cardiac Research Institute, studying the role of non-coding RNAs in the network regulation of heart development and disease. Previously, as part of his honours research, Nick studied the role of the NOTCH pathway in the acquisition of T cell effector functions in virus-specific responses at the Biomedicine Discovery Institute, Melbourne. Prior, he completed his undergraduate studies at Monash University, Melbourne, majoring in microbiology and molecular biology.

Dr Kavitha Muthiah

Kavitha is an Advanced Heart Failure and Transplant Cardiologist at St Vincent's Hospital, Clinical Faculty at VCCRI and Conjoint Associate Professor at UNSW. Her clinical and research interests focus on Left Ventricular Assist Devices and Mechanical Circulatory Support.

Dr Amy Nicks

Amy is a postdoctoral scientist at the Victor Chang Cardiac Research Institute in Professor Bob Graham's lab studying postnatal murine cardiac growth. She has developed expertise in isolating high-quality cardiomyocytes from neonatal through to adult mouse hearts using Langendorff perfusion. Through her work, she is investigating the molecular and morphological profile of cardiomyocytes to gain insights into the coordinated events that govern postnatal cardiomyocyte development.

Dr John O'Sullivan

John is a Clinical-Academic Cardiologist at the Royal Prince Alfred Hospital and Group Leader in Cardiometabolic Disease at the Heart Research Institute and Charles Perkins Centre of The University of Sydney, and a National Heart Foundation Future Leader Fellow. John specialises in heart failure and cardiac MRI. John studies the cardiac consequences of obesity and related diseases such as diabetes. He is particularly interested in heart failure with preserved ejection fraction, or "stiff" heart failure, which is now the most common form of heart failure and has no therapies. He utilises several clinical and pre-clinical tools to address mechanistic questions in this disease. Recent work has focussed on how metabolic stress changes the way heart uses fuel substrates and how this leads to pathological change.

Chairs and speakers

Professor Sarah Palmer

Sarah is the Co-Director of the Centre for Virus Research at the Westmead Institute for Medical Research and Professor in the Faculty of Medicine and Health at The University of Sydney School of Medicine. From 2000 to 2008, she headed the Virology Core Facility of the HIV Drug Resistance Program, National Cancer Institute, US National Institutes of Health. Her principal areas of research interest focus on molecular and medical virology and the application of innovative techniques and assays which provide new insights into disease pathogenesis and treatment, especially for HIV. Sarah has her PhD in Medical Sciences (Virology) from the Karolinksa Institutet, Stockholm, Sweden, and conducted her post-doctoral studies at the Center for AIDS Research, Stanford University Medical School.

Professor Mark Parsons

Mark is an internationally recognised leader in stroke medicine and a highly sought-after speaker, instructor and mentor, both nationally and internationally, in all aspects of clinical neuroscience. Earlier this year he was appointed as Executive Director of Maridulu Budyari Gumal, the Sydney Partnership for Health, Education, Research and Enterprise (SPHERE). He is Professor of Medicine and Neurology at UNSW South Western Sydney Clinical School; as well as Professor in Neurology in the Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne. He is an international leader in stroke clinical trials and brain imaging and has translated much of his research into clinical practice change.

Dr Freda Passam

Freda received her medical degree and PhD in Greece in 2007. She continued postdoctoral thrombosis research, initially in the University of New South Wales, under Steve Krilis, and then in Harvard University, under Bruce Furie, supported by an International Award from the American Society of Hematology. She joined the Heart Research Institute and The University of Sydney in 2018, after receiving a $1 million Sydney Cardiovascular Fellowship. Freda's research group studies thiol isomerases, and their potential as antithrombotic targets using preclinical models. She also has a keen interest in the application of microfluidic devices for the evaluation of thrombotic tendency in patients. More recently, she has initiated a multidisciplinary collaborative study of the diabetic platelet-ome (proteome, metabolome, lipidome) to identify new biomarkers of cardiovascular risk and potential therapeutic targets for type 2 diabetes.

Chairs and speakers

Miss Manisha Patil

Manisha is a PhD student in the Vascular Complications Group at HRI under the supervision of Dr Mary Kavurma and Dr Siân Cartland. She studied a Bachelor of Medical Science with Honours at The University of Sydney. Her motivation to study science emerged when she was a child, after watching Backyard Science and the Magic School bus and learning that she could win a Nobel Prize.

Dr Ralph Patrick

Ralph is a postdoctoral scientist in the lab of Professor Richard Harvey at the Victor Chang Cardiac Research Institute (VCCRI), where he has been since 2016. Previously, he completed his undergraduate studies and a PhD specialising in bioinformatics at the University of Queensland, under A/Prof Mikael Boden, working on data integration and Bayesian network approaches for kinase phosphorylation target prediction. Ralph's current work at the VCCRI focusses on using single-cell RNA-seq to understand the role of cardiac fibroblasts in heart injury and repair, and how these processes are modulated in different contexts such as therapy models or genetic knockouts.

Miss Aster Pijning

Aster is a PhD student at the ACRF-Centenary Cancer Research Centre under the supervision of Professor Phil Hogg and Dr Joyce Chiu. She has a BSc in biomedical sciences and MSc in infection biology from the University of Utrecht in The Netherlands and has previously worked in the fields of HIV infection and T cell biology.

Dr Pierre Qian

Pierre is a clinician (cardiologist) scientist who leads a cardiovascular engineering group at Westmead Applied Research Centre/Westmead Hospital. His PhD was awarded in innovation of microwave ablation catheter technology for endovascular ablation. Last year he returned from a fellowship at Brigham and Women's Hospital/Harvard Medical School where his focus was in clinical cardiac electrophysiology and human trials of novel cardiac ablation technology. He is Senior Lecturer at The University of Sydney, supported by an NSW Health Early-Mid Career Grant and a Heart Foundation Postdoctoral Fellowship.

Dr Dhanya Ravindran

Dhanya is an early-career postdoctoral researcher working under Associate Professor Eddy Kizana at the Centre of Heart Research in The Westmead Institute for Medical Research. Dhanya is working on developing novel therapeutics for cardiac arrhythmias using gene therapy in pre-clinical models.

Chairs and speakers

Dr Christopher Roche

Chris is a cardiothoracic surgical trainee and a PhD student in cardiac bioengineering. During his PhD he worked on heart patches for transplantation to the heart surface to protect against infarction-induced myocardial damage. Chris realised during this work that most heart patch bioengineering approaches have envisaged transplantation at open surgery but that robotic minimally invasive transplantation methods may be needed.

Professor Christopher Semsarian

Chris is a cardiologist with a specific research focus in the genetic basis of cardiovascular disease. He trained at The University of Sydney, Royal Prince Alfred Hospital, and Harvard Medical School. A focus area of his research is in the investigation and prevention of sudden cardiac death in the young, particularly amongst children and young adults. Chris has an established research program which is at the interface of basic science, clinical research and public health, with the ultimate goal to prevent the complications of genetic heart diseases in our community.

Dr Christopher Stanley

Chris leads the Microvascular Research Unit at the Heart Research Institute. The primary objective of the unit is to investigate the structure, function and signalling of microvascular arteries. Chris' most recent work aims to discover a treatment to halt microvascular decline seen in patients with septic shock.

Professor Liza Thomas

Liza is a Conjoint Professor at The University of Sydney and Adjunct Professor at the University of New South Wales, and is the Clinical Lead for cardiac imaging at Westmead Hospital. Her research focuses particularly on echocardiographic evaluation of atrial dynamics and function, chemotherapy related cardiomyopathy, amyloid and Fabry cardiomyopathies, cardiac involvement in chronic kidney disease and pulmonary hypertension. Liza is actively involved in teaching and supervises PhD and Masters students. She has been an invited speaker at national and international meetings and has published over 170 papers in peer-reviewed journals. She is on the editorial board of JACC CV Imaging, JASE and is section editor for Heart, Lung and Circulation.

Chairs and speakers

Dr Jordan Thorpe

Jordan is currently utilising human induced pluripotent stem cells (iPSCs) to generate atrial cardiomyocytes and cardiac fibroblasts, exploring changes in atrial cardiomyocyte functionality in co-culture experiments involving multi-electrode arrays. Additionally these cell types are being combined with endothelial cells and pericytes to form vascularised quad-culture organoid models on 3D printed scaffolds. Previously during his PhD, high-throughput polymeric arrays were used to discover novel biomaterials for long-term stem cell culture.

Associate Professor Angela Todd

Angela is the Research Director for Sydney Health Partners, where she leads research support and improvement projects including streamlining governance approvals, supporting clinical trial activity, and strengthening consumer and community involvement in research. She has previously worked in various roles across the health sector, including health research, research funding, service development, service evaluation, policy development, education and training, and strategic planning, both in Australia and Canada.

Professor Jamie Vandenberg

Jamie is Co-Deputy Director and Laboratory Head at the Victor Chang Cardiac Research Institute. His research focuses on the molecular basis of inherited and drug-induced arrhythmia syndromes. He is Deputy Chair of the Australian Cardiovascular Alliance and sits on the Executive Committee of the NSW Cardiovascular Research Network.

Dr Jeanette Villanueva

Jeanette graduated with a Bachelor of Science (Hons) from the University of NSW in 2005 and completed her PhD in 2014 at the Garvan Institute of Medical Research. She is currently a senior postdoctoral scientist in the Transplantation Laboratory at the Victor Chang Cardiac Research Institute. Her research focuses on donor heart preservation strategies that can help increase donor heart utilisation.

Dr Kathryn Wolhuter

Kathryn completed her PhD investigating the role of reactive nitrogen species in the vasculature at King's College London in 2018. She then moved to the Victor Chang Cardiac Research Institute (VCCRI) working under Professor Stocker to study signalling events mediated by a novel tryptophan-derived oxidant during sepsis. Last year, Kathryn joined Professor Kovacic's lab at the VCCRI and is currently using multi-omics to understand how the most important gene in vascular disease signals.

Thank you for participating in the 2021 Sydney Cardiovascular Symposium

Steering Committee

Dr Candice Delcourt (The George Institute)

Prof Ben Freedman (HRI)

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