



Science Pathways 2016 Future Leaders



LAW BUILDING (BUILDING F8), UNSW AUSTRALIA 26–27 September 2016

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HELP US LIVE-TWEET SCIENCE PATHWAYS! #SciPath16

Introduction

Professor Les Field AM FAA Secretary for Science Policy, Australian Academy of Science

The Early- and Mid-Career Researcher Forum has been supported by the Australian Academy of Science for five years now. The Forum began as a recognition that the Academy needed a means to understand and support the issues relevant to the 'younger, up-and-coming' research community. It has grown into a vibrant entity with a clear voice in the research sector, and with government and decision makers.

It was a pleasure to take part in the strategic planning session with the current executive members earlier this year. Their ambitious plan focuses squarely on engaging with the EMCR community and developing strategies that involve stakeholders in supporting optimal career structures for EMCRs. This conference allows EMCRs to come together to discuss the issues that affect them. But more than this, it offers you the opportunity to work toward becoming the next generation of leaders.

Leadership is not a skill that is taught in undergraduate lectures or picked up in hours at the lab bench during a PhD. And yet, to pursue a successful career in science, at some point, one must become a leader. For most of us, this comes in the form of 'accidental leadership'. We start with offering some guidance to an honours student, then find ourselves directing a team of one or two. This evolves (if we are lucky) into a larger team, which we not only lead but also support many others within it, to lead in their turn.

How and when do researchers find the time and means to learn the skills to lead successfully? It is clear that the EMCR Forum asked this question and when they could not find the answer, like many true leaders, they sought to provide the means to come to the answer: this conference.

Like its many other activities, this conference will contribute to the vision of the EMCR Forum: to secure the future of Australian science. I, for one, look forward to working towards this goal alongside yourselves, Australia's Future Leaders.







The **South Australian Science Excellence Awards**, supported by the Government of South Australia, honour and acknowledge local scientists, innovators, education and industry organisations for their outstanding scientific endeavour. Since its introduction of the awards in 2005, more than 60 winners, many of who are world leaders in their respective fields, have been recognised.

CONGRATULATIONS TO THE 2016 WINNERS



PHD RESEARCH EXCELLENCE

Dr Phiala Shanahan University of Adelaide



EXCELLENCE IN RESEARCH COLLABORATION

Dr Michelle Wirthensohn University of Adelaide



YOUNG TALL POPPY OF THE YEAR

Dr Justin Chalker Flinders University



STEM EDUCATOR OF THE YEAR – SCHOOL TEACHING

Ms Charlene McGrath Aberfoyle Hub R-7 School



STEM EDUCATOR OF THE YEAR – TERTIARY TEACHING

Dr Lyndsey Collins-Praino School of Medicine, University of Adelaide



SOUTH AUSTRALIAN SCIENTIST OF THE YEAR

Professor Alan Cooper Australian Centre for Ancient DNA, University of Adelaide

Nominations for the 2017 Awards will open in early 2017.

www.scienceawards.sa.gov.au

🍠 @StateDevSA

Program

Day 1 Monday 26 September			
10.00 am	Registration and morning tea		
Session I: Opening and Keynote Session chair: Associate Professor Sharath Sriram			
10.45 am	Introduction to Science Pathways 2016 and the EMCR Forum Dr Nikola Bowden Chair, EMCR Forum		
11.00 am	Opening address Simon McKeon Ao Chancellor, Monash University		
11.30 am	The Ben Chuwen Keynote Address Professor Emma Johnston UNSW Australia		
12.00 pm	Lunch		
Session II: Pathways to Research Leadership Session chair: Dr Adrian Carter			
12.45 pm	Panel discussion:Pathways to research leadershipProfessor Tamara DavisUniversity of QueenslandAssociate Professor Matthew HillMonash University and CSIROAssociate Professor Kevin PflegerUniversity of Western AustraliaAssociate Professor Sarah WheelerUniversity of Adelaide		
2.15 pm	Breakout session A		
3.45 pm	Afternoon tea		
Session III: Leadership training Session chair: Associate Professor Drew Evans			
4.00 – 5.30 pm	Transitioning leading researchers into research leaders Workshop Mark Douglas ETHOS Australia Pty Ltd		
6.00 – 7.30 pm	Networking event Chairs: Dr Irene Suarez-Martinez and Associate Professor Drew Evans		
Day 2 Tuesday 27 September			
Session IV: Balancing leadership and management Session chair: Dr Roslyn Hickson			

9.00 am Differences between leadership and management Professor Susan Pond AM FTSE FAAHMS University of Sydney

9.15 am	Creating a group culture and			
	coordinating large teams for impact			
	Professor Douglas MacFarlane FAA FTSE Monash University			
9.30 am	Leading with diversity and			
	tackling unconscious bias			
	Professor Julie Cairney University of Sydney			
9.45 am	Panel discussion			
10.10 am	Morning tea			
Session V: Communicating Vision and Outcomes				
Session chair	r: Dr Carly Rosewarne			
10.30 am	What the media looks for in a science leader			
	Robyn Williams AM FAA Australian Broadcasting			
	Corporation			
10.45 am	Becoming a trusted science leader in media			
	Associate Professor Darren Curnoe UNSW Australia			
11.00 am				
11.00 am	Creating and leading start-ups Rick Baker Blackbird Ventures			
11.15 and				
11.15 am	Establishing leadership in publishing Dr Esther Levy Advanced Materials journals,			
	Wiley Publishing			
11.30 am	Establishing leadership in science advocacy			
	Dr Thomas Barlow Barlow Advisory			
11.45 am	Panel discussion			
12.30 pm	Lunch			
Session VI: S	Setting your leadership agenda			
Session chair	r: Dr Michael Crichton			
1.15 pm	180 Seconds of Science video competition			
	Finalist presentations and award ceremony			
1.45 pm	Breakout Session B			
2.45 pm	Afternoon tea			
3.00 pm	Supporting future leaders			
	Open discussion and reporting back from			
	breakout groups to identify areas of support and/ or advocacy to enable EMCR leadership:			
	short-term, mid-term, and long-term goals			
4.00 pm	Closing remarks			
	Associate Professor Sharath Sriram			
	and Dr Michael Crichton			
	Co-Convenors, Science Pathways 2016: Future			
	Leaders			
4.15 pm	Meeting close			
4.30 pm	Coach departs for airport			

SME Connect: Research grant funding linked to small and medium businesses.

www.csiro.au

Never Stand Still

Engineering

CSIRO's SME Connect team facilitate grants for Australian researchers to engage with small and medium-sized enterprises (SMEs).

We've helped over 200 researchers from 35 universities and research institutions meet their SME match, and utilise grants, such as Innovation Connections, to help build projects to innovate for the future.

Our new SIEF STEM+ Business Fellowship Program focuses on early-career researchers, providing business-matched grants of up to \$105,000 per annum for 2-3 year projects. This not only helps SMEs access researchers to help them solve their innovation challenges, but also provides practical experience in private industry for early-career researchers to develop and grow.

www.csiro.au/SMEconnect

World changers wanted

UNSW Australia is launching a global recruitment drive for the world's best research minds. Unprecedented investment is being made to recruit world-leading researchers and PhD scholars.

To register your interest, visit 2025.unsw.edu.au/apply

Welcome from the convenors

The Early- and Mid-Career Researcher Forum (EMCR Forum) aims to secure the future of Australian science. We implement our vision through a combination of engagement and advocacy.

We work to engage closely with EMCRs and all stakeholders across government, funding agencies, universities, research and public sector organisations, and industry (in the broadest sense).

We advocate on the behalf of the Australian EMCR community to stakeholders to enable better career structures, supportive environments, improved stability, and an inclusive culture.

The EMCR Forum was founded in 2011, with the Forum under the stewardship of the Australian Academy of Science. Supported by the Academy, the Forum is operated by a team of 10 executive members. Three of these executive members roll off every year, with a call for new representatives made—the call for new executive members for 2017 is open now!

Our national meeting is the *Science Pathways* series, which occurs once every 18 months. *Science Pathways* engages with EMCRs, stimulates discussions on significant topics, and determines directions to focus our advocacy efforts. *Science Pathways* started with putting science on the national agenda, looked at improving engagement with industry, and shared mechanisms to improve and create impact through science communication.

In 2016, *Science Pathways* focuses on leadership. With a stellar cast of leaders in academia, business, industry, media and publishing, communication and advocacy sharing their thoughts and experiences, it is bound to be a transformative experience.

Leadership in science involves having a vision, setting in place a framework to realise this, securing resources to support it, and communicating the vision, outcomes and impact to peers and beyond. We hope all attendees benefit from *Science Pathways 2016* and that it either sets them on the path to be, or cements their positions as, *future leaders*.

We welcome you to share your thoughts with us on this event and ideas for future events, and to engage closely with the EMCR Forum.

Associate Professor Sharath Sriram and Dr Michael Crichton

Co-Convenors Science Pathways 2016: Future Leaders



Sharath Sriram



Michael Crichton

About the EMCR Forum

The Australian Academy of Science recognises the challenges faced by Australia's emerging researchers. In 2011 the EMCR Forum was established. The EMCR Forum engages with EMCRs from around Australia and advises the Academy on key issues impacting younger researchers, to help inform its policy recommendations to government.

The Forum is the national voice of Australia's emerging scientists, representing researchers up to 15 years post-PhD, or equivalent research higher degree (excluding career interuptions), irrespective of their professional appointment.

The EMCR Forum's mission is to serve as the voice of Australia's early- and mid-career researchers, championing improvement in the national research environment through advocacy. We focus on sustainable and transparent career structures, gender equity, stable funding policies, career development opportunities, and raising awareness of issues facing the future of science.

In order to have an effective voice, we need to have a strong EMCR Forum membership.

EMCR members receive a number of exciting benefits:

- invitation to attend the Australian Academy of Science EMCR Forum conference, Science Pathways, which is held every 18 months
- subscription to our quarterly newsletter EMCR Pathways, fortnightly email updates highlighting opportunities for EMCRs
- ability to contribute to or advertise events in the newsletter and email updates
- ability to submit entries to EMCR Forum competitions, such as the 180 Seconds of Science, a video competition hosted on Thinkable.org with almost \$15,000 in prize money
- eligibility to apply for travel awards to attend Science Pathways conference worth over \$1,000 each
- participation in EMCR Forum submissions to consultations by the Australian Government and other organisations in the sector to ensure that we realise the brightest future for EMCRs
- potential support for hosting local EMCR events.

For more information

THE EMCR FORUM

Email: emcr@science.org.au Website: https://www.science.org.au/emcr-forum EMCR Pathways Newsletter: https://www.science.org.au/emcr-pathways Twitter: @EMCRForum

AUSTRALIAN ACADEMY OF SCIENCE

Website: www.science.org.au Twitter: @Science_Academy Facebook: www.facebook.com/AustralianAcademyofScience BECOME A MEMBER OF THE AUSTRALIAN ACADEMY OF SCIENCE EARLY- AND MID- CAREER RESEARCHER FORUM AND HELP TO ENSURE THE FUTURE OF SCIENCE IN AUSTRALIA

To become a member, simply fill out the membership form https://www.science.org.au/ emcr-membership-registration

Best of all, membership is free!



Opening address



Simon McKeon AO Chancellor, Monash University

Simon McKeon is the Chancellor of Monash University and was also the 2011 Australian of the Year.

He retired from Macquarie Group in early 2014 after a 30 years career culminating in his position as Executive Chairman (Melbourne Office). He continues to be retained by Macquarie as a consultant.

Simon is also Chairman of In2Science and the Group of Eight's Industry and Innovation Board and is a member of The Big Issue Advisory Board. He is also an Australia Day Ambassador for the Victorian Government.

He previously served as Chairman of AMP and CSIRO and was Founding President of the Federal Government's Australian Takeover Panel, as well as its Point Nepean Community Trust.

He served as Founding Chairman of MS Research Australia and Business for Millennium Development. He was also Chairman of the Federal Government's Panel which in 2013 completed a Strategic Review of Health and Medical Research.

Simon is the helmsman of Macquarie Innovation which in March 2009 became the first sailboat in the world to sustain more than 50 knots and in so doing, peaked at a speed of 100 kmh (54 knots). He is also a Founding Patron of the Australian Olympic Sailing Team which won one gold and three silver medals at the 2016 Rio Olympics.

The Chuwen Keynote Presenter



Emma Johnston

Professor of marine ecology and ecotoxicology and Pro Vice-Chancellor (Research), UNSW Australia

Emma investigates human impacts in marine ecosystems and has conducted research from the tropics to the poles. Emma completed her doctorate at the University of Melbourne in 2002. She is the recipient of many research awards including an ARC Fellowship, the inaugural Nancy Millis Medal from the Australian Academy of Science and a Eureka Award. She has published more than 100 peer reviewed papers, she was the inaugural Director of the Sydney Harbour Research Program and is Regional Editor for Conservation Biology. Emma is also a highly awarded science communicator and television presenter, an expert advisor to both industry and government, and Vicepresident of Science and Technology Australia. Her research has generated over 200 refereed journal papers and conference proceedings.

The Chuwen Keynote Address

Benjamin M. Chuwen PhD, 1974–2012 Celebrating his life, commitment, and passion

Dr Ben Chuwen completed his PhD at the Centre for Fish and Fisheries Research at Murdoch University in January 2010 and was a Postdoctoral Research Fellow with Dr Jeremy Lyle at the Institute for Marine and Antarctic Studies (IMAS) at the University of Tasmania. As an ichthyologist, Ben's work focused on the biological aspects of key fisheries species, such as the Black Bream, and how such biotic variables can change with fishing pressure and/or environmental change. Ben also developed quantitative ecosystem models for estuaries, and published his research in international journals and presented at a number of international and national conferences. Ben had completed the Fisheries Research and Development Corporation's Advance in Seafood Leadership Development Program and was the Tasmanian State representative on the board of the Australian Society for Fish Biology. Ben used to pride himself on being able to effectively communicate with a wide range of stakeholders and community members to enable the results of his work to be disseminated as widely as possible. A Ben was a founding member of the Australian Early- and Mid-Career



Researcher Forum in 2011 and joined because he wanted to make a difference. As a passionate scientific researcher with a friendly, easy-going nature, Ben was an advocate for all young scientists, regardless of their professional discipline. With a strong commitment to a healthy work-life balance, Ben wrote in his Forum biography, 'I enjoy a balanced work/family life, which I achieve through being as productive as possible during my working time and allowing myself quality time after hours with my family. Ben avidly acknowledged the love and support of his family, and how this helped him juggle the demanding roles as both a young father and an emerging researcher. \nearrow On Sunday March 4, 2012 Ben woke with a 'lightning bolt' headache that rapidly became life-threatening. Following multiple surgeries and several weeks in intensive care, Ben passed away peacefully on Friday April 20, 2012. Our thoughts remain with his family, especially his wife Nicole and their two young daughters, Lila and Gracie. Ben's colleagues at IMAS described him as 'a dynamic and enthusiastic young scientist' and they all strongly supported Ben's family through this difficult time. \ge In celebration of Ben's life, commitment and passion for all things science, the Forum has held the Chuwen Keynote Address at its national meeting Science Pathways since 2012.

Speakers and panel members

In order of appearance

Tamara Davis



Professor Tamara Davis is a cosmologist, who uses astrophysics to test fundamental physics, focusing on the nature of dark energy and dark matter. Tamara completed her PhD at the University of New South Wales in 2004. Since then she performed cosmological analyses for two international supernova

cosmology collaborations, worked on the design of a space telescope, helped lead the cosmology analysis for the Australianled WiggleZ Dark Energy Survey, and is now helping manage the international Dark Energy Survey (DES), and its Australian arm OzDES. She served as an elected executive member of the Australian National Institute for Theoretical Astrophysics for six years, has chaired the Australian Time Allocation Committee, and currently sits on the executive of the Centre of Excellence in AllSky Astrophysics (CAASTRO). Her achievements were recognised by the Astronomical Society of Australia's Louise Webster Medal, a L'Oréal Women in Science Fellowship, the Australian Institute of Physics Women in Physics Lectureship, and the Australian Academy of Science's 2015 Nancy Millis Medal for exceptional female leadership in science.

Matthew Hill



Associate Professor Matthew Hill is an ARC Future Fellow and the Winner of a 2014 Australian Prime Minister's Prize for Science. Matthew leads an interdisciplinary team of researchers who are actively involved with industry partners to bring exciting discoveries in the laboratory to market. He joined the

Department of Chemical Engineering at Monash University in May 2016. This is a joint appointment alongside his current role as Principal Research Scientist at CSIRO.

Kevin Pfleger



Associate Professor Kevin Pfleger is Head of Molecular Endocrinology and Pharmacology at the Harry Perkins Institute of Medical Research ('Perkins') and the Centre for Medical Research, The University of Western Australia (UWA). A former NHMRC Peter Doherty Fellow and ARC Future Fellow, he is currently an

NHMRC RD Wright Biomedical Fellow (Level 2), as well as being Chief Scientific Advisor of Dimerix Limited, an ASX-listed spin-out company from Perkins/UWA. Kevin was awarded his MA and PhD from Cambridge and Edinburgh Universities respectively. His awards include WA Young Scientist of the Year 2009, NHMRC 10 of the Best Research Projects 2010, Eureka Prize for Emerging Leader in Science 2011, The Endocrine Society Early Investigators Award 2012, WA Young Tall Poppy Science Award 2012, Endocrine Society of Australia's Mid-Career Research Award 2014, NHMRC Research Excellence Award 2014, UWA VC's Mid-Career Research Award 2015 and British Pharmacological Society Novartis Prize 2016.

Sarah Wheeler



Associate Professor Sarah Wheeler is the Associate Director of Research in the Centre for Global Food and Resources, University of Adelaide. She is a natural resource economist whose research interests include climate change adaptation, water scarcity, organic farming, water markets, economics of

entomology, farmer behaviour, and crime and gambling issues, and has published over 100 peer-reviewed papers. She currently holds an ARC Future Fellowship where she is studying the link between transformational adaption, maladaptation and water scarcity in the Murray-Darling Basin. Sarah has worked as a natural resource economist within Australia and overseas at places including SA Centre for Economic Studies (University of Adelaide), Primary Industries South Australia, United Nations (Bangkok) and Environment Agency (UK), before returning to graduate with her PhD in 2007. She is also an Associate Editor of the Australian Journal of Agricultural and Resource Economics and Water Resources and Economics, is on five journal editorial boards and is the chair of the Murray-Darling Basin FE2W network.

Mark Douglas



Mark is an organisational psychologist and established Ethos Australia in 1991. He has over 20 years' experience in consultation, including working with the leaders of CRCs, ARC Special Research Centres, ARC Research Networks and the senior management teams of universities, as well as working with

numerous research institutes and research centres. Mark is a skilled facilitator and communicator. Mark has worked in senior management roles within consulting organisations, government and university research environments. Mark's qualifications include BA (Psych) and Grad Dip Teaching. He is also an Accredited Mediator with LEADR (Lawyers Engaged in Alternative Dispute Resolution) and a Team Management Systems Master Trainer. Prior to his work at Ethos Australia, Mark worked in business consulting for the South Australian Government and before that he worked at the Loughborough University of Technology, UK as a research psychologist. In this capacity, Mark worked with the Tavistock Institute on sociotechnical systems in organisational change.

Susan Pond



Dr Susan Pond AM FTSE FAAHMS is a senior leader in business and academia, recognised for major national and international contributions in biotechnology, renewable energy and sustainability. Her particular area of expertise is the development of the advanced biofuels industry as part of

the transport energy system, especially for sectors with critical needs such as aviation, shipping and defence. Susan is Adjunct Professor in Engineering and Information Technologies at the University of Sydney, Director of Biotron Limited, Vectus Biosystems Limited and Engineering Sydney, Chairman of the Australian Institute of Bioengineering and Nanotechnology and Member of the Science in Australia Gender Equity (SAGE) Expert Advisory Group. In 2013, the Australian Financial Review and Westpac named her a Top 100 Women of Influence.

Douglas R. MacFarlane



Professor Doug MacFarlane leads the Monash Ionic Liquids Group at Monash University. He is currently the holder of an ARC Laureate Fellowship. He is also the Program Leader of the Energy Program in the Australian Centre of Excellence for Electromaterials Science. His group, numbering around 25 research

staff and students, focuses on a range of aspects of ionic liquids and their application in the energy sciences and sustainable chemistry. He has published more than 600 papers and patents including a number of papers in Science, Nature and Nature Materials. Doug was a BSc(Hons) graduate of Victoria University of Wellington, New Zealand and then undertook his graduate work at Purdue University, Indiana, graduating in 1983. After postdoctoral fellowships in France and New Zealand he took up an academic position at Monash. He has been a Professor of Chemistry at Monash since 1995 and was Head of School 2003–06. He was elected to the Australian Academy of Science in 2007 and to the Australian Academy of Technological Sciences and Engineering in 2009.

Julie Cairney



Professor Julie Cairney is a Professor of Engineering at the University of Sydney and serves as Director of the university core facility, Sydney Microscopy and Microanalysis. She is also the Executive Director and CEO of the Australian Microscopy and Microanalysis Research Facility. She leads a research group

that focuses on the relationship between microstructure and properties of materials, with particular emphasis on the application and development of new microscopy techniques. She is the author of over 150 publications, cited 2000+ times, including a book on the subject of atom probe microscopy. Julie serves on the ARC College of Experts (Engineering, Mathematics and Informatics panel) and the New Zealand Marsden Fund (Engineering and Interdisciplinary Science). She is one of the youngest full professors at the University of Sydney, and one of only a handful of female professors of engineering in NSW. After completing a PhD at UNSW under the guidance of Professor Paul Munroe, she was awarded two prestigious named fellowships to work with Professor Ian Jones at the University of Birmingham, Professor Manfred Rühle at the Max Planck Institute in Stuttgart, and Professor Mark Hoffman at UNSW. Julie moved to the University of Sydney in 2006, where she has set up a world-class materials characterisation research group, and occupied the roles of Associate Dean Talented Students Program Showcase in the Faculty of Science, Deputy / Acting Director of Sydney Microscopy and Microanalysis and Head of Research for the School of Aerospace, Mechanical and Mechatronic Engineering.

Robyn Williams



Science journalist and broadcaster Robyn Williams presents RN's The Science Show and Ockham's Razor. Although he graduated with a Bachelor of Science (honours) in England, Robyn admits to spending as much time acting as studying. Early in his career he made guest appearances in The Goodies,

Monty Python's Flying Circus and Doctor Who, and stood in for Tom Jones for four months in his TV series. He has conducted countless interviews with scientists on ABC TV on programs such as Quantum and Catalyst, narrated the Nature of Australia series and appeared in World Safari with David Attenborough. Outside the ABC, Robyn has served in various capacities, including president of the Australian Museum Trust, chairman of the Commission for the Future, and president of the Australian Science Communicators. In 1987, he was proclaimed a National Living Treasure. In 1993, Robyn was the first journalist elected as a Fellow of the Australian Academy of Science. He was appointed AM in the 1988 Australian Bicentenary honours list and in the same year received honorary doctorates in science from the University of Sydney and Macquarie and Deakin Universities. The ANU awarded him a doctorate of law, and he is a visiting professor at UNSW Australia and an adjunct professor at the University of Queensland. A Reuters fellowship at Oxford University allowed him time to write his autobiography, 'And Now for Something Completely Different'. He was a visiting fellow at Balliol College Oxford in 1995–96. Robyn has written more than 10 books, the latest being a novel, 2007: a true story waiting to happen. In 2015 The Science Show celebrated 40 years on air.

Darren Curnoe



Associate Professor Darren Curnoe is an award winning anthropologist and evolutionary biologist and director of the Palaeontology, Geobiology and Earth Archives Research Centre at the University of NSW. He is also a former journalist and acclaimed science communicator and educator. Darren writes a fortnightly

column for The Conversation and has written many articles for other outlets like ABC Science, Australasian Science and Cosmos magazine. He also wrote and presented the UNSWTV YouTube series, 'How did we get here?', which has been watched by millions of viewers around the world and is a digibook on ABC Splash. He is presently writing and co-producing a podcast series about human evolution, 'The Anthropologist from Outer Space'.

Rick Baker



Rick Baker is a co-founder of Blackbird Ventures, a venture capital firm focused on investing in the best global tech startups being formed in Australia. Prior to Blackbird, Rick ran MLC's venture capital portfolio with investments of over half a billion dollars. Prior to MLC, Rick co-founded two successful software

companies: IDC Global and Right Party Connect.

Esther Levy



Dr Esther Levy is Editor-in- Chief of Advanced Materials Technologies and Consulting Editor for Wiley's leading materials science journals Advanced Materials, Advanced Functional Materials, and Small. She is also an Editor of the premium open-access general science journal Advanced Science. After

completing her PhD in physical organic chemistry at Cambridge University (UK) in 1997, Esther joined the Advanced Materials editorial team (Wiley-VCH, Germany) where she was appointed Editor-in-Chief in 2002. In January 2007, Esther moved to Sydney to take up the position of Senior Commissioning Editor for Wiley's physical sciences book and journal publishing program in the Asia–Pacific region. She has been in her current role since 2011.

Thomas Barlow



Thomas Barlow advises leaders in high-tech companies, universities, and governments about research strategy. Formerly a biomedical research fellow at Oxford University and MIT, a columnist with the Financial Times in London, and a science advisor within the Australian Government, he brings intellectual rigour

and a breadth of experience to clients in Australia, the USA, and Asia. He is a prolific public speaker and the author of an iconoclastic book about Australian innovation, 'The Australian Miracle'. He is also the publisher of The Barlow Report, a comprehensive analysis of research performance in Australian and East Asian universities.

180 seconds of science

This competition encouraged EMCRs to showcase their innovative research to the general public and win prizes and travel awards to attend Science Pathways 2016. The challenge was to show us, show Australia, show the whole world, what you can do in a 180 second video.

The EMCR Forum partnered with the Royal Society of New Zealand Early Career Forum to bring a trans-Tasman aspect to the competition. With the help of our award partners we were able to provide EMCRs with a platform to communicate their science and win great prizes.

Congratulations to the winners of 180 Seconds of Science in 2016. The winning videos will be shown at Science Pathways 2016: Future Leaders and the winners will be presented with their prizes. All the entries can be viewed at https://www.thinkable.org/vote_competitions/180-seconds-of-science

Winners

AUSTRALIAN FUTURE LEADER FIRST PLACE Kallista Sears Imagine if you T-shirt could power your mobile phone https://www.thinkable.org/submission_entries/PJvmqykV SECOND PLACE Marta Rubio Martinez Metal Organic Frameworks: enabling clean technologies https://www.thinkable.org/submission_entries/0kzrr9ka

SCIENCE ACROSS THE DITCH FIRST PLACE Helen Taylor Studs of duds? Bird sperm and conservation https://www.thinkable.org/submission_entries/QxaMM3xg

AUSTRALIAN PEOPLE'S CHOICE FIRST PLACE Teresa Ubide Discovering Volcano Histories https://www.thinkable.org/submission_entries/VZVII0Je

Sponsors













MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT HĪKINA WHAKATUTUKI

Travel award recipients

Listed alphabetically by surname

Dr Michael Bode



Michael is an ARC DECRA fellow in the Quantitative and Applied Ecology Group (QAECO) at the University of Melbourne. He uses mathematical models to inform decisions in conservation biology, particularly where data are scarce and dynamics are uncertain.

Dr Chia-Chi Chien



Chia-Chi is a Foundation Fellow and ARC DECRA Fellow at Future Industries Institute, University of South Australia. Chia-Chi's research focuses on developing 3D vascularised lab-on-chip model with nano/micro fluidic and biomedical systems to more accurately study biocompatibility and therapeutic

efficiency of functionalised nanoparticles. These advanced platforms, coupled with greater range of optical methods, provide greater overview of physico-chemical biomolecular and physiological information and novel insights into the biology of tumour microenvironment, as well as enabling development of novel functionalised nanoparticles.

Dr Barry Doyle



Barry is a biomedical engineer focused on the cardiovascular system. He uses computational and experimental modelling to better understand cardiovascular physiology and treat disease.

Dr Marta Garrido



Marta leads the Computational Cognitive Neuroscience Laboratory at the University of Queensland and is Chief Investigator in the ARC Centre of Excellence for Integrative Brain Function. Using computational modelling and brain imaging techniques, Marta's team strives to understand how the brain learns about

regularities in the world, which enable us to make predictions about future events. This research contributes to the understanding of typical cognition in healthy human individuals as well as in mental illness, such as in schizophrenia and anxiety.

Dr David Gildfind



David's research is primarily concerned with the development of hypersonic impulse facilities. His main efforts have been directed towards optimising free-piston driver operation, expansion tube flow condition development, and test flow characterisation. He is a lecturer within UQ's School of Mechanical and

Mining Engineering, and currently teaches aircraft structures and hypersonics.

Dr Silke Jacques



Silke focuses on molecular dissection of plant resistance to insects. She is developing reverse genetics tools to identify key genes involved in the resistance response to aphids using Medicago truncatula, a common feed crop in Australia. She monitors aphid behaviour and characterises key genes

and pathways as being potentially important for aphid resistance.

Dr Sundar Kalaipandian



Sundar is working on the identification of regulators of fructan synthesis in wheat at CSIRO. Fructan moves from stem to grains during later stage of drought which increases yield about 20% in wheat. Sundar's research aims to increase the yield of crops during adverse weather conditions. He is studying the role of

fructans in wheat roots under drought stress in a controlled environment.

Dr Amir Karton



Amir is an Assistant Professor at the University of Western Australia. He leads the computational chemistry group at the School of Chemistry and Biochemistry. Amir is an ARC Discovery Early Career Research Award (DECRA) Fellow. His research is focused on the development of quantum chemical theory and the

application of these procedures to problems of chemical structure, mechanism and design.

Dr Smriti Krishna



Smriti is a postdoctoral research fellow at the Queensland Research Centre for Peripheral Vascular Disease with the Australian Institute of Tropical Health and Medicine, James Cook University. She is part of preclinical team within QRC-PVD with a special focus on development and use of preclinical models of blocked

arteries (peripheral arterial diseases; PAD) and weakened arteries (abdominal aortic aneurysms; AAA). She is researching the molecular and cellular mechanisms involved in development and progression of PAD and AAA, with the aim of identifying new treatments to manage these diseases.

Dr Berkay Ozcelik



Berkay's research aims to minimise medical device-associated infections by combating bacterial colonisation and biofilm formation on device surfaces. His team has developed a novel multifunctional platform coating that allows the combination of defense mechanisms in a simple one-step

procedure, resulting in excellent reduction in the biofilm formation of pathogenic bacteria on various coated surfaces.

Dr Anita Quigley



Anita's projects involve the development of biodegradable nerve conduits, the delivery of stem cells to skeletal muscle in 3D constructs and the derivation of human iPSC for 3D modelling of disease states. She is also active in the use of conducting and nanostructured polymers for the manipulation of cellular response.

Her work involves multi-disciplinary collaboration with surgeons, textile fabrication technologists, chemists and material scientists.

Dr Kallista Sears



Kallista is part of a CSIRO team working towards flexible, light-weight and cheap solar cells that are printed onto plastic substrates. Her research focuses on printable, flexible and transparent electrodes made from nanomaterials such as silver nanowires; and advanced device characterisation to better understand the

device physics and ways to further improve the performance of the solar cells.

Dr Alexandr Simonov



Alexandr is a physical chemist specialising in the design and characterisation of advanced materials, (photo)(electro)(bio) catalysis, energy conversion, and analytical chemistry. He is currently working as a senior research fellow and leading the 'Solar Fuels' group of Professor Leone Spiccia at the School

of Chemistry at Monash University.

Dr Shannon Simpson



Shannon's research on chronic lung disease for survivors of preterm birth aims to understand the impact of preterm birth over the life course, explore the mechanisms underpinning lung disease as a result of preterm birth and to implement interventions that will improve lung health after preterm birth,

with a particular focus on childhood.

Dr Cassy Spiller



Cassy is a Postdoctoral Research Fellow at the University of Queensland. Her research focuses on understanding how normal germ cell differentiation goes awry to give rise to testicular germ cell tumours—the most common cancer in young men.

She collaborates with world-leading testicular cancer research groups in the Netherlands and Denmark to translate her findings into diagnostic and therapeutic outcomes for this disease.

Dr Helen Taylor



Helen is a post-doctoral research fellow in the Department of Anatomy at the University of Otago. Her research focuses on the effects of drastic reductions in population size on the genetics and extinction risk of threatened species. Using field research, genetics and computer modelling, she investigates

how inbreeding (mating between relatives) and inbreeding depression (a reduction in fitness in the offspring of related individuals) affects male fertility and reproductive success in New Zealand birds.

Dr Gina Trapp



Gina is an NHMRC Early Career Research Fellow at the Telethon Kids Institute. She was awarded the Fellowship in 2013 to examine whether the type, proximity and density of food outlets around homes and schools influences the types of foods children eat and their body weight. This research will provide vital Australian

evidence to support policy interventions aimed at increasing neighbourhood access to healthy foods.

Dr Teresa Ubide



Teresa is a Volcanologist, passionate about unravelling the processes that initiate volcanic eruptions on Earth and other planetary bodies. She studies volcanic rocks by combining original field and microscope observations with state-of-the-art analytical techniques. She is a lecturer in Igneous Petrology

and Volcanology at the University of Queensland.

Travel award sponsors















Tom is an NHMRC Early Career Research

His research interests lie in developing

programs for reducing chronic disease

risk. His prior research has been based

around conducting large scale diet and

and evaluating lifestyle intervention

Fellow at the University of South Australia.

Dr Tom Wycherley

Carer grants

This year with the generous sponsorship of the University of Canberra, the EMCR Forum was able to enable the attendance of EMCRs with carer responsibilities. We hope to continue this scheme in future years so please look out for it next time you attend Science Pathways.

Carer grant recipients

Dr Kirston Barton, Westmead Institute Dr Sally Gainsbury, Southern Cross University Dr Jacki Schirmer, University of Canberra Dr Cassy Spiller, University of Queensland Dr Angela Yang, RMIT University Dr David Gildfind, University of Canberra Ms Florence Awino, University of Canberra Dr Nishar Hameed, Deakin University



Items of interest



The Australian Academy of Science runs a number of events that EMCRs might be interested in, which are described below. For more information see https://www. science.org.au/supporting-science/ early-and-mid-career-researchers/ emcr-networks-events

Think Tanks

The Academy's Theo Murphy High Flyers Think Tanks bring together early- and mid-career researchers from a broad range of disciplines to think about novel applications of science and technology to issues of national significance, identify issues and gaps in current knowledge, and propose solutions. The 2017 Theo Murphy Think Tank topic will be in July, on 'Nutrition: we are what we eat'.

Frontiers of Science

The aim of the Theo Murphy Frontiers of Science symposia is to bring together the very best young Australian scientists in multidisciplinary areas of science to discuss emerging technologies and identify potential opportunities for future research collaboration. The 2017 topic will be in September, on 'Extreme Research in Antarctica'.

Science at the Shine Dome

'Science at the Shine Dome' is an annual three-day event held by the Australian Academy of Science each May. It incorporates the Academy's annual general meeting, induction of new Fellows, presentation of awards and a scientific symposium. There is also a special program for EMCRs which includes professional development workshops and an opportunity to network with Fellows of the Academy. The event encompasses the entire spectrum of Australian science. The included one day scientific symposium topic for 2017 is 'Life on the loose: species invasion and control'. See https://www.science.org.au/newsand-events/events/science-shinedome for more details.

Starting the conversation between academia and industry

There is a strong divide in Australia between the university and industry sectors. There has been much discussion on how to bridge this divide, with increasing funding opportunities and recognition for academics who interact with the industry sector. The EMCR Forum has written a discussion paper on *Starting the conversation between academia and industry*. In this paper, we introduce each sector (industry, academia, non-private), identify key differences to take into account during discussions, and identify important resources.

https://www.science.org.au/emcrresources

We would like your feedback on this document, to make it as useful a resource as possible for EMCRs.

We are also looking for case studies of successful interactions between EMCRs in academia and industry.

Please contact us via email (emcr@science.org.au) or twitter (@EMCRForum).

Australian Early- and Mid-Career Researcher Forum 2016 Executive

Dr Nikola Bowden (Chair)



Nikola is a Senior Research Fellow at the Hunter Medical Research Institute (HMRI) in Newcastle, NSW. After being awarded a PhD in schizophrenia genomics in 2006 she received an NHMRC training (postdoctoral) Fellowship in 2009 and changed her research focus to DNA repair and cancer. In 2010, she was an invited

Visiting Fellow at the National Cancer Institute, National Institutes of Health, in the US. She was awarded the University of Newcastle Young Alumni of the Year in 2011 for excellence in leadership and innovation.

Nikola leads a team of researchers investigating DNA repair triggered by sunlight and chemotherapy in melanoma. She is also investigating the same process in ovarian cancers that are resistant to chemotherapy. Her overall goal is to rapidly develop new combination therapies and diagnostic tests for both melanoma and ovarian cancer.

Nikola is a proud mum of three and an advocate for women in science and scientific communication. She regularly speaks at major community events and with cancer patient support/ advocacy groups.

Dr Adrian Carter (Deputy Chair)



Adrian is a Senior Research Fellow at the Monash Clinical and Imaging Neuroscience, School of Psychological Sciences, Monash University. His research examines the impact that neuroscience has on understanding and treatment of addiction and other compulsive behaviours. This includes the impact of

neuroscience on: our notions of agency, identity and moral responsibility; the use of coercion and the capacity for voluntary control of addictive or compulsive behaviours; and the use of emerging technologies, such as deep brain stimulation and brain imaging, to treat addiction.

After completing his PhD at the Queensland Brain Institute (2009), Adrian was awarded an NHMRC Postdoctoral Fellowship (2010-14). He is currently funded by an ARC Discovery Early Career Award (2014-17). He received the Australasian Professional Society of Alcohol and Other Drugs Early Career Award for Excellence in Research and Science (2012), the Australian National Drug and Alcohol Award for Excellence in Research (2010) and The University of Queensland Dean's Award for Outstanding Research Higher Degree Theses (2010). Adrian has published two books, including 'Addiction Neuroethics: The Promises and Perils of Addiction Neuroscience'. He has over 80 publications, including reports for the World Health Organization (WHO), the European Monitoring Centre for Drugs and Drug Addiction, and the Australian Ministerial Council on Drugs Strategy. He has been an advisor to the WHO and United Nations Office on Drugs and Crime (UNODC) on the use of coercion in drug treatment and the ethical treatment of opioid dependence.

Dr Michael Crichton (Deputy Chair)



From Edinburgh, Scotland, Michael is a postdoctoral research fellow at the Australian Institute for Bioengineering and Nanotechnology (AIBN) at the University of Queensland. His research is focused on understanding biomaterial tissue mechanics for application to novel micro-devices for drug and vaccine

delivery. Specifically, he employs mechanical engineering testing techniques to understand how to better design devices for functional interaction with epithelial tissue.

Michael earned his MEng (Hons) in Aeronautical Engineering from the University of Glasgow in 2007, followed by a PhD in Biomedical Engineering at the AIBN in 2012. He then joined a start-up company working to translate a medical device from laboratory testing to human clinical trials, which was built upon the devices that he was working on during his PhD. His focus within the company was on engineering a device for scale up to human, performing a range of pre-clinical trials. At the beginning of 2014 Michael returned to an academic research role at the University of Queensland where he continues to work on novel biomedical device research, with a keen focus on translatable technologies. His goal is to be able to expand understanding of biological interactions for microdevices and subsequently apply these with advanced manufacturing techniques for rapid translation of low cost healthcare.

Dr Hamish Clarke



Hamish is a Research Fellow at the University of Wollongong and Western Sydney University, looking at regional variation in prescribed burning effects on risk. In 2015 he completed his PhD at UNSW Australia looking at the impacts of climate change on bushfire risk. As a former scientist in the NSW Government,

Hamish retains a strong interest in the link between science,

policy and outcomes. He is committed to public interest science and collaborative, multidisciplinary approaches that engage end users from project conception to completion and beyond. Hamish also runs Science at the Local, bringing together scientists and community members in the Blue Mountains west of Sydney.

Associate Professor Drew Evans



Drew is an Associate Professor and research leader of Energy and Advanced Manufacturing in the Future Industries Institute, University of South Australia. After completing his PhD from the Australian National University in 2006, he worked in private industry in Adelaide until late 2010, before joining the

University of South Australia.

Drew has published over 40 articles in journals such as Nature Materials and Advanced Materials, and secured \$8.2 million in research funding for projects in partnership with industry. As a result of this he is co-inventor on numerous patents, which have led to several commercial products in the market place, including the world's first plastic automotive mirror (more than 1.5 million on new vehicles in the USA). Drew was awarded the 2013 SA Young Tall Poppy of the Year award, and is a member of the South Australian Science Council.

Dr Roslyn Hickson



Roslyn is an applied mathematician at IBM Research—Australia. She completed her PhD through UNSW Canberra in 2010, where her research into the critical times of heat and mass transfer through multiple layers was jointly awarded the Ria de Groot prize for the best female postgraduate student. Roslyn then took

up a position as a Research Fellow with the National Centre for Epidemiology and Population Health at the Australian National University, working on informing policy and practice through the mathematical modelling of infectious diseases.

In December 2011 Roslyn was awarded a four-year University of Newcastle Postdoctoral Research Fellowship to continue her work in infectious disease modelling, before joining IBM Research—Australia in May 2014. She has been instrumental in creating opportunities for early career mathematicians, having successfully advocated for the inclusion of a research student representative on the national executive of ANZIAM, and the co-location of the AMSI Early Career Research Workshops with the ANZIAM conference.

Dr Elizabeth New



Liz undertook her undergraduate and masters studies at the University of Sydney, and completed her PhD in 2009 at Durham University, UK. From 2010 to 2011 she was a Royal Commission for the Exhibition of 1851 Postdoctoral Fellow at the University of California (Berkeley). In 2012, Liz returned to the University of

Sydney as a Lecturer in Inorganic Chemistry, holding a Discovery Early Career Researcher Award from the ARC (2012–14). Her research is focused on the development of small molecule fluorescent and magnetic resonance probes for the study of biological systems.

Liz received the Royal Society of Chemistry Dalton Young Researchers Award (2011), the Asian Biological Inorganic Chemistry Early Career Researcher Award (2014), The Vice-Chancellor Award for Outstanding Teaching (Early Career) (2015) and a NSW Young Tall Poppy Award (2015). She was the Royal Australian Chemical Institute NSW Nyholm Youth Lecturer in 2014–15, giving outreach talks in high schools throughout the state.

Dr Carly Rosewarne



Carly is a Research Scientist at CSIRO in Adelaide. She is a geneticist who uses molecular biology and bioinformatics to study the 'unseen majority', commonly known as microbes. Her current research is focused on characterising the role of microbes in promoting human gut health. Another area of interest is the study of

methane-producing microbes, which allowed her to spend time in the US in 2015 as a Fulbright Professional Scholar in Climate Change and Clean Energy.

Carly is a passionate advocate for gender diversity in science and is seeking to encourage more female EMCRs to acts as mentors, with the aim of enabling younger women coming through the system to reach their full potential.

Associate Professor Sharath Sriram



Sharath is the joint leader of the Functional Materials and Microsystems Research Group at RMIT University, where he gained his PhD in 2009. He is also the Deputy Director of the university's Micro Nano Research Facility, a 1,200 sq.m. stateof-the-art micro/nanofabrication capability. Sharath's expertise includes the

synthesis of functional thin films (at thickness scales 1/1000th to 1/100th of a human hair) and micro/nanostructures and devices. He has published 100 peer-reviewed publications.

Sharath is the recipient of the 2010 Gold Medal for Excellence in Research from the Australian Institute of Nuclear Science and Engineering, a 2011–14 ARC Australian Post-Doctoral Fellowship, the 2012 NMI Prize for Measurement Excellence from the National Measurement Institute, a 2012 Victoria Fellowship, the 2014 RMIT Vice-Chancellor's Early Career Researcher Award, and the 2016 3M Eureka Prize for Emerging Leader in Science.

Dr Irene Suarez-Martinez



Irene is a Senior Research Fellow at the Physics Department in Curtin University. Originally from Spain, Irene completed her PhD from University of Sussex (UK) in 2007. After a post-doc at the Institute of Materials of Nantes (France), she moved to Curtin University for her second post-doc in 2009. She obtained an ARC Australian Postdoctoral Fellowship (2010–14). Her first daughter and her current ARC Future Fellowship award arrived almost at the same time in 2014.

Irene's research career has been mainly dedicated to the atomistic modelling of carbon materials. In collaboration with experimental chemists, physicists and engineers, she has investigated graphite, diamond, amorphous carbons and a range of carbon nanomaterials. She has won multiple prizes for her scientific outreach projects and particularly enjoys creating scientific artistic images.





Call for expressions of interest New members of the executive for 2017

The call for new members to join the executive of the Australian Early- and Mid-Career Research Forum (EMCR Forum) in 2017 is now open. Applications are sought from EMCRs who combine research excellence with a demonstrated passion for advocacy.

The executive committee is looking to recruit new members who can bring enthusiasm and new ideas to the executive. New members will be expected to be able to commit a minimum of 5% time to the Forum. Examples of EMCR Forum committee activities include:

- annual face-to-face meeting and quarterly teleconferences
- organisation of the biennial Science Pathways meeting
 for EMCRs
- preparation of detailed submissions for consultations and public inquiries

- gathering demographic data on EMCRs and identifying discipline-specific issues
- examining the career structure and related issues for EMCRs within universities, government agencies (e.g. CSIRO, DSTO), industry and research institutes
- evaluating the attrition rate for research careers and evaluating alternate career paths available to EMCRs
- identifying specific issues that hinder the progression of many women to the highest levels in research.

In 2017, three spaces will be available on the executive and all EMCRs are eligible to apply (<15 years since PhD award), but preference will be given to those who represent states and subject backgrounds that are not currently represented on the executive committee.

Please complete the expression of interest form (at goo.gl/iVtF9s) by 10 October 2016.

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Maps

Kensington Campus Map

The talks and breakout sessions are in the Law Building, circled in blue (F8). The networking session will be held in the Tyree Room, in level 1 of the Scientia Building, which is circled in orange (G19).

A coach will be provided for the following times:

- **7.45 pm Monday 26 September**: From UNSW Australia to the conference hotels.
- 8.00 am Tuesday 27 September: From the conference hotels to UNSW Australia.
- **4.30 pm Tuesday 27 September**: From UNSW Australia to Sydney Domestic Airport.

The coach departure points are:

- UNSW Australia Gate 14, Barker St Kensington, which is circled in red.
- Travelodge Sydney, Commonwealth St, Sydney. (Please note Vibe Hotel Sydney is 2 minutes walk from here.)





Main venue

The main venue is the Lecture Theatre on the ground and first floor of the Law Building.





Breakout rooms

Breakout rooms are on the second and third floor of the Law Building. Your breakout group for each breakout session can be found on your name badge.

Breakout group	Room
1	201
2	202
3	203
4	275
5	276
Breakout group	Room
6	301
7	302
8	303

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Notes

For more information

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Email: emcr@science.org.au Website: https://www.science.org.au/emcr-forum EMCR Pathways Newsletter: https://www.science.org.au/emcr-pathways Twitter: @EMCRForum

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