



EXCELLENCE IN SCIENCE

National SAGE symposium shows strong support for gender equity



At the symposium: (left) Dr Susan Pond AM FTSE, University of Sydney, Chief Scientist Dr Alan Finkel AO FTSE and Catriona Jackson, Universities Australia. (centre) A packed audience was highly engaged in the discussion. (right) SAGE Expert Advisory Group Chair, Elizabeth Broderick;

The Australian Academy of Science and the Australian Academy of Technology and Engineering announced in June that former Sex Discrimination Commissioner Elizabeth Broderick AO as Chair of the Expert Advisory Group of the Science in Australia Gender Equity (SAGE) Initiative.

The SAGE Pilot of the UK-based Athena SWAN Charter is a partnership of the Australian Academy of Science and the Australian Academy of Technology and Engineering (ATSE). It promotes equity and inclusion through an evaluation and accreditation framework to identify and address gender inequity in science and research organisations.

The Academies also announced that eight new institutions have entered into the SAGE Pilot of the UK-based Athena SWAN Charter. The additional institutions bring the total number of pilot participants to 40, including 30 universities, six medical research institutes and four publicly funded research agencies.

The participating organisations met for the first time at a national symposium in Sydney in June. The symposium attracted widespread support and featured leading speakers including Academy President Professor Andrew Holmes AM PresAA FRS FTSE, Dr Alan Finkel AO FAA FTSE, Elizabeth Broderick AO, Professor Emma Johnston, Professor Mary O’Kane AC FTSE, Ita Buttrose AO OBE, Professor Jill Milroy AM and Dr Susan Pond AM FTSE, among many others.

More about the SAGE Pilot: <http://www.sciencegenderequity.org.au/>

Theo Murphy High Flyers Think Tank—Living in a risky world

Sixty-seven Australian and New Zealand early- and mid-career researchers convened at the Academy in mid-July for a two-day symposium considering some of the critical issues relating to risk in today’s world.

“ It was a privilege to ... work so intensely over two and a half days with such a diverse multidisciplinary group of intelligent people. ” Think Tank participant

Delegates from a broad range of disciplines were selected from a pool of over 200 applicants, and participated in one of four groups, addressing:

- international security
- risk and resource allocation for the environment
- antimicrobial resistance in a connected world
- uncertainty, ignorance and partial knowledge.

A recommendations report is being drafted by the rapporteurs for each group, and will be released and presented to government later this year.

The 2016 Think Tank was generously supported by the Theo Murphy (Australia) Fund, which is administered by the UK Royal Society.



2016 Think Tank participants considering risk in today's world

Registrations open for Science Pathways 2016: Future Leaders

Registration is now open for the EMCR Forum's national meeting Science Pathways 2016: Future Leaders (<https://www.science.org.au/news-and-events/events/science-pathways-2016-future-leaders>) to be held in Sydney on 26–27 September.

Science Pathways provides professional development for all early- and mid-career researchers (EMCRs), regardless of discipline. It is an opportunity to hear insights from nationally and internationally recognised leaders, who will explain what leadership in their industry means.

Pro Vice-Chancellor (Research) at UNSW, Professor Emma Johnston, and former Australian of the Year Mr Simon McKeon AO are amongst the speakers. EMCRCs can register now (<https://aas.eventsair.com/emcr-forum-science-pathways-2016-future-leaders/registrations/Site/Closed>) or download the conference poster (<https://www.science.org.au/files/userfiles/events/documents/science-pathways-2016-poster.pdf>) to display in their workplace.

The Academy thanks UNSW Early Career Academic Network (<https://research.unsw.edu.au/ecan-about-us>), which is helping organise the event, and also all the major sponsors of Science Pathways 2016 (<https://www.science.org.au/news-and-events/events/science-pathways-2016-future-leaders>).

Registration for this event closes on 9 September.

More about the EMCR Forum: <https://www.science.org.au/supporting-science/early-and-mid-career-researchers/emcr-forum>

EMCR Forum activities

The EMCR Forum (<https://www.science.org.au/supporting-science/early-and-mid-career-researchers/emcr-forum>) is the national voice of Australia's early- and mid-career researchers (EMCRs). Apart from preparing for Science Pathways 2016: Future Leaders (<https://www.science.org.au/news-and-events/events/science-pathways-2016-future-leaders>), Forum executive members have been working over the last few months to ensure EMCRCs are represented in the following consultations:

Medical Research Future Fund consultation for the development of the Australian Medical Research and Innovation Strategy and related Priorities (<https://www.science.org.au/supporting-science/science-policy/submissions-government/submission-consultation-development>)

ARC and National Innovation and Science Agenda consultation on Research Engagement and Impact Assessment (<https://www.science.org.au/supporting-science/science-policy/submissions-government/submission-consultation-research-engagement>)

Department of Education and Training consultation on new program guidelines for Research Block Grants for

universities (<https://www.science.org.au/supporting-science/science-policy/submissions-government/submission-consultation-new-research-block>)

National Health and Medical Research Council consultation on the structural review of its grants programs (<https://www.science.org.au/supporting-science/science-policy/submissions-government/submission-nhmrc-structural-review>).

180 Seconds of Science

Executive members recently ran 180 Seconds of Science (https://www.thinkable.org/vote_competitions/180-seconds-of-science), a video competition that encouraged EMCRs to showcase their research to the general public and win prizes and travel awards to attend Science Pathways 2016. The EMCR Forum partnered with the Royal Society of New Zealand Early Career Forum (<http://www.royalsociety.org.nz/organisation/ecr-forum/>) to bring a trans-Tasman aspect to the competition.

Voting for the people's choice awards and judging occurred during national science week. The winning videos were:

- Science across the ditch (NZ entrants): 1. Helen Taylor, 'Studs or duds? Bird sperm and conservation'. 2. Cate Macinnis-Ng 'The Kauri drought experiment'
- Australian Future Leader: 1. Kallista Sears (Imagine if your T-shirt could power your mobile) 2. Marta Rubio Martinez (Metal Organic Frameworks: enabling clean technologies)
- People's Choice: 1. Teresa Ubide, 'Discovering volcano histories'.

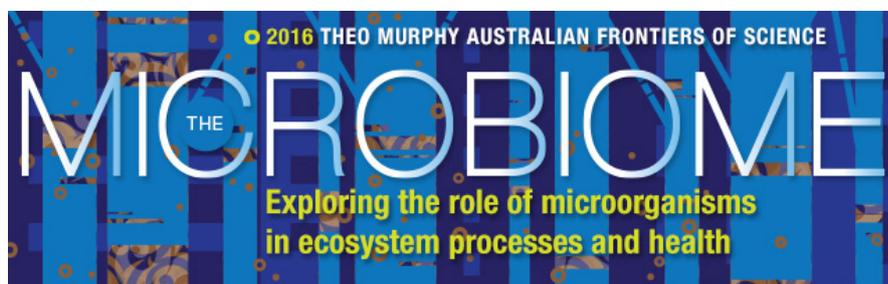
You can view all the entries including the winning videos on the 180 Seconds of Science webpage (https://www.thinkable.org/vote_competitions/180-seconds-of-science).



Three of the 180 Seconds of Science winners: (from left) Helen Taylor, Kallista Sears and Teresa Ubide (images from their videos)

Applications open for Frontiers of Science: the microbiome

Applications are open until 12 September for early- and mid-career researchers (EMCRs) to attend this year's Theo Murphy Australian Frontiers of Science ([https://www.science.org.au/news-and-events/events/microbiome-exploring-role-](https://www.science.org.au/news-and-events/events/microbiome-exploring-role-microorganisms-ecosystem-processes-and-health)



[microorganisms-ecosystem-processes-and-health](https://www.science.org.au/news-and-events/events/microbiome-exploring-role-microorganisms-ecosystem-processes-and-health)) on the topic of the microbiome—exploring the role of microorganisms in ecosystem processes and health. The event, to be held in Adelaide from 29 November to 1 December, is an opportunity for researchers working on human, plant, animal and environmental interactions of microorganisms to meet, exchange ideas and forge collaborative ventures.

The Academy encourages applications from all early and mid-career researchers with an interest in the microbiome, irrespective of their field of research or professional appointment.

National Committees for Science

National Committee for Antarctic Research

The National Committee for Antarctic Research recently supported the Australian Antarctic Division (AAD) to submit a successful bid to host the SCAR Scientific Assembly (<https://www.science.org.au/news-and-events/news-and-media-releases/tasmania-host-key-antarctic-meetings-2020>) in Hobart in 2020. Chaired by Professor Steven Chown AO, Head of the School of Biological Sciences at Monash University, the committee is the Academy's link to the Scientific Committee on Antarctic Research (SCAR) (<http://www.scar.org/>). The committee also works closely with the AAD on matters relating to SCAR and AAD's 20 Year Australian Antarctic Strategic Plan (<http://www.antarctica.gov.au/about-us/publications/20-year-australian-antarctic-strategic-plan>).



National Committee for Brain and Mind

The National Committee for Brain and Mind seeks to shape future directions for health in Australia. It has recently established the Australian Brain Alliance (<https://www.science.org.au/supporting-science/other-initiatives/ausbrain>), which aims to create an innovative and healthy nation by 'cracking the brain's code'. The Alliance is comprised of 21 research organisations and professional associations, working together to advocate to the Australian government for a national brain initiative (<https://www.science.org.au/files/userfiles/support/documents/brain-alliance/australian-brain-initiative-election-pitch.pdf>). The committee is chaired by Emeritus Professor Patricia Michie of the University of Newcastle.

Honours and awards to Fellows

Professor Don Melrose FAA was awarded the Subrahmanyan Chandrasekhar Prize of Plasma Physics (<http://aappsdp.org/AAPPSDPPF/prizeaward.html>).

Professor Gordon Wallace FAA FTSE was awarded the CSIRO Eureka Prize for Leadership in Innovation and Science (<http://australianmuseum.net.au/2016-eureka-prizes-winners>).



Professor Don Melrose (left) and Professor Gordon Wallace

Fellows in the news

Some big developments in the prevention of mosquito borne diseases have been made, with Professor Alan Cowman FAA FRS and his team at the Walter and Eliza Hall Institute showing that the malaria parasite cannot penetrate a human red blood cell when key proteins are removed (<http://www.labonline.com.au/content/life-scientist/news/preventing-malaria-by-removing-proteins-143412056>).



(from left) Professor Naomi Wray, Professor Peter Gill, Professor David Cooper and Professor Colin Masters were among Fellows in the news recently.

There have also been steps taken towards controlling the Zika virus by Professor Scott O'Neill FAA and his team at Monash University, finding that a naturally occurring bacteria—Wolbachia—stops the replication of the virus in the mosquito (<http://www.abc.net.au/am/content/2016/s4493207.htm>).

In other health news, Professor David Cooper FAA has said that even though Australia may have beaten AIDS, we need to keep working towards a golden bullet for HIV (<http://www.smh.com.au/comment/beating-aids-in-australia-is-just-the-first-step-we-need-a-gold-bullet-for-hiv-20160711-gq365t.html>).

Professor Colin Masters FAA FTSE is calling for more participants (<http://www.hospitalhealth.com.au/news/new-study-aims-slow-alzheimers-symptoms/>) for the study he is leading in to Alzheimer's disease.

The Friends of Science in Medicine, led by Professor Marcello Costa FAA, has conducted a study that concludes there is no clinical benefit for acupuncture (<https://ajp.com.au/news/acupuncture-pointless-says-fsm/>).

Professor Naomi Wray FAA was involved in analysing data from more than 30,000 people (<http://www.smh.com.au/national/health/ice-bucket-challenge-helps-scientists-find-new-clues-into-motor-neurone-disease-20160727-gqeve6.html>), which led to the discovery of three new genes, which increase the risk of motor neuron disease.

Australia's first whole-genome testing service has been launched by the Garvin Institute (<http://www.labonline.com.au/content/life-scientist/news/australia-s-first-whole-genome-testing-service-950265101>), which is headed by Professor John Mattick AO FAA.

Fellows have also been acknowledged for their work, with outgoing President of the Museum of Applied Arts and Sciences (MAAS) Trust, Professor John Shine AO FAA being thanked for his work by the Deputy Premier of NSW (http://www.uws.edu.au/newscentre/news_centre/more_news_stories/glover_to_lead_maas_trust) and Professor Brian Anderson AC FAA FRS honoured by the Australian National University, which has named a building after him (<http://www.psnews.com.au/act/514/news/professor-honoured-with-his-own-building>).

Professor Peter Gill FAA provided expert advice on DNA evidence as part of a 10-year investigation in to the murder of Adelaide schoolgirl, Louise Bell (<http://www.perthnow.com.au/news/the-mystery-of-10yearold-schoolgirl-louise-bells-murder-about-to-be-solved/news-story/5b4c7b6de69a4397a119559a92f0fa0b?csp=c6ce3868fbb4603d496fedf1a4a343c3>).

Finally, Professor Brian Schmidt AC FAA FRS Nobel Laureate has provided some insights in to how he managed his team (<http://www.news.com.au/video/id-ZtaGEwNTE6UYMBQXZwyhQX-lqBonFZWk/How-to-win-a-Nobel-Prize?csp=1eb24dce8dd4d55857d9e71c80b87055>) to achieve research worthy of a Nobel Prize.

90th birthday



Dr Keith Boardman

The Academy sends warm congratulations to Dr Keith Boardman AO FAA FRS FTSE, who celebrated his 90th birthday on 16 August.

Obituaries

Professor Jonathan Borwein

Professor Jonathan Borwein FAA died on 2 August 2016, aged 65 years.

A Rhodes Scholar and Oxford Doctor of Philosophy, Jon was Laureate Professor of Mathematics at the University of Newcastle and the Founder and Head of its Priority Research Centre for Computer-Assisted Research Mathematics and its Applications (CARMA) (<https://www.carma.newcastle.edu.au/>).

Jon was elected to the Academy in 2010 for his contributions to distinct mathematical disciplines: optimisation theory and practice; number theory; classical analysis; theory of computation; and functional analysis. Jon was also a world leader in the field of experimental mathematics using intensive computation for pure mathematical discovery. Working with a new method of visualising large strings of numbers through random walks—a path described by a sequence of randomly generated points in the plane—Jon and his colleagues produced papers and digital images using computers to show information at a glance that would take many pages to set out in written numerical form. Among his many achievements, Jon produced the world's largest mathematical picture of π . More information on his work (<http://www.newcastle.edu.au/profile>).

Jon was also highly successful as a supervisor, expositor, and populariser of mathematics—he authored with E.J. Borowski the best-selling modern dictionary of mathematics. Jon's passing has been described as 'an incalculable loss to the field of mathematics in general, and to experimental mathematics in particular'. A close colleague, Professor David Bailey, has written a blog to commemorate Jon's accomplishments (<http://experimentalmath.info/blog/2016/08/jonathan-borwein-dies-at-65/>).

Professor Alan McIntosh

Professor Alan McIntosh FAA died on 8 August 2016, aged 74 years.

Alan was most recently Professor at the Mathematical Sciences Institute at the Australian National University until his retirement in 2014. Alan was elected to the Academy in 1986 and is best known for his role in solving the Calderon conjecture on singular integrals and the Kato square root problem both of which have had a massive impact in harmonic analysis and partial differential equations. Alan received many prestigious prizes and awards in recognition of his research achievements, including the 2002 Moyal Medal by Macquarie University and the Academy's Hannan Medal in 2015.

A close colleague, Neil Trudinger FAA, notes that Alan will be well remembered for 'his abundant and natural friendliness with students and colleagues of all levels and for the care and inspiration given to his graduate students and postdocs'.



Photo: Mark Graham.

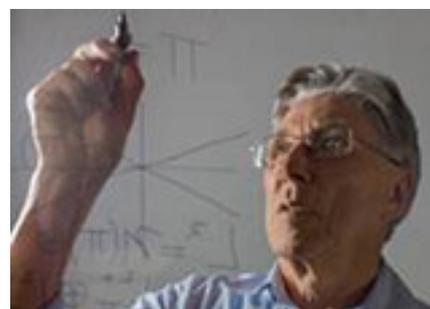


Photo: Michael John Hood.

INTERNATIONAL ENGAGEMENT

Lindau 2016, and call for 2017 applications



The 2016 Lindau delegation (from left) Dr Greg Boyle, Dr Paul Altin, Professor Hans Bachor, Dr Adnan Younis, Mr Joe Callingham, Dr Josie Auckett, Mr Martin Ringbauer, Mr Jackson Clarke, Dr Samuel Yick

Lindau 2016

The 66th meeting of Nobel Laureates from 26 June to 1 July in the German city of Lindau focused on physics. The meeting was attended by 31 Laureates—including Australian Professor Brian Schmidt AC FAA FRS—and more than 400 young researchers from nearly 80 countries.

The young researchers participated in the week-long program, giving them the opportunity to interact with their scientific heroes, exchange ideas, gain exposure to areas in their chosen disciplines and establish new contacts and networks with their peers. Professor Hans Bachor AM FAA led the delegation of eight outstanding young Australian scientists, including:

- Dr Paul Altin—Australian National University
- Dr Josie Auckett—ANSTO
- Dr Gregory Boyle—James Cook University
- Mr Joseph Callingham—University of Sydney
- Mr Jackson Clarke—University of Melbourne
- Mr Martin Ringbauer—University of Queensland
- Dr Samuel Yick—CSIRO
- Dr Adnan Younis—UNSW Australia

Following the meeting, Professor Bachor accompanied Josie, Gregory, Samuel and Joseph on a study tour in Hannover. The tour exposed the researchers to world class physics research and equipment, including the quantum laboratory at the Leibniz Universität Hannover, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), GEO Gravitational Wave Detector, Laser Zentrum Hannover and the Physikalisch-Technische

Bundesanstalt (Germany's national meteorology institute). The study tour was supported by the Australian Government Department of Industry, Innovation and Science.

The inspiring Lindau Nobel Laureate Meetings (<http://www.lindau-nobel.org/>), held annually in Germany since 1951, introduce Nobel Prize winners in chemistry, physiology, medicine and physics to younger generations of scientists. From 2004 the Academy has supported an annual delegation of young Australian researchers,

accompanied by a member of the Academy's Council. Since 2013, the Science and Industry Endowment Fund (SIEF) (<http://www.sief.org.au/>) has provided SIEF-AAS Fellowships for up to 10 Australian-based early career scientists in specialist discipline years, and up to 15 in multidisciplinary years.

“ Through the tours to PTB and LZH I learnt that industry in Germany tends to go to such agencies to look for solutions to problems they have identified, which is in contrast to the Australian situation where it is often the science agencies trying to push solutions they develop onto industry. ”

J Cunningham

“ Realising that the Laureates are not superhuman, but real people who have made great advances through a combination of hard work, passionate research, and luck. The “rock stars” of the physics world (now) don't feel like they would be out of place walking the halls of my university, or teaching classes. It gives hope that anybody with hard work, passion and luck can make significant contributions to science too. ”

Greg Boyle

Lindau 2017—call for applications

Applications are now being accepted for travel to the 67th meeting of the Nobel Laureates (dedicated to chemistry), to be held 25–30 June 2017.

France–Australia Early- and Mid-Career Fellowships awarded for 2016

The Academy has selected nine Australian early- and mid-career researchers to collaborate with scientists in research institutions in France in 2016 under the France–Australia Science Innovation Collaboration (FASIC) Early- and Mid-Career Fellowships. Researchers in any field of the natural sciences, including technology, engineering and medicine were encouraged to apply. This activity is being funded by the Department of Industry, Innovation and Science.

The researchers will travel to research institutions in France for their projects. They will work on a range of topics including understanding the development of dementia and its risk factors, digital interventions for the prevention of suicide, and the detection of a new fundamental particle at the Large Hadron Collider.

More about the fellowships, including the list of 2016 participants: <https://www.science.org.au/opportunities/travel/grants-and-exchange/france-australia-fellowships-fasic-program>

Rod Rickards Fellowships go to three researchers

Rod Rickards Fellowships have been awarded in 2016 to three researchers to allow them to travel to Europe to undertake research in chemistry or biology—Dr Andrey Molotnikov from Monash University, Dr Katrina Witt from Deakin University and Dr Pu Xiao from UNSW Australia.

Dr Molotnikov will work on the computational modelling of the mechanical behaviour of additively manufactured metal/polymer hybrid lattices at Arts et Métiers ParisTech and MINES ParisTech; Dr Witt will visit INSERM to research the relationship between psychosocial working conditions and mental health, including suicidal behaviour, in young French employees;



Professor Rod Rickards' legacy continues, with three researchers awarded fellowships for travel to Europe.

and Dr Xiao will research the development of natural dye-based photo-initiating systems for 3D printing based on LED devices at the National Centre for Scientific Research.

The fellowships were established in 2009 by the family of Professor Rod Rickards FAA in memory of his important contributions to Australian science through his outstanding achievements in the chemistry of compounds of medical, biological, agricultural and veterinary importance.

See the full list of current and past recipients: <https://www.science.org.au/files/userfiles/opportunities/documents/rod-rickards-fellowships-participants-2010-2016.pdf>

Apply now for Australia–India Early- and Mid-Career Fellowships for 2017–2018

The Australian Academy of Science invites applications from Australian early career researchers for the Australia–India Early- and Mid-Career (EMCR) Fellowships. The fellowships will provide support to EMCRs to visit India and work with leading Indian science and technology organisations to facilitate long-term science, technology and innovation collaboration between Australia and India.



The fellowships are supported by the Australia–India Strategic Research Fund (AISRF), a platform for bilateral collaboration in science jointly managed and funded by the governments of Australia and India. The fellowships are open to Australian researchers from the public, not-for-profit and commercial sectors to support research and initiate or consolidate collaboration with a leading-edge Indian host organisation.

Applications close 9am AEDT Monday 31 October 2016.

Funding for this program has been provided by the Department of Industry, Innovation and Science.

More information on applying for the fellowships: <https://www.science.org.au/opportunities/travel/grants-and-exchange/fellowships-india>

More about the Australia–India Strategic Research Fund (AISRF): <http://www.science.gov.au/international/CollaborativeOpportunities/AISRF/Pages/default.aspx>

Australian researchers invited to apply for Japan fellowships

The Australian Academy of Science invites applications from Australian researchers to undertake Postdoctoral Fellowships in Japan during 2017–18. The fellowships are for a period of 12 to 24 months.

Researchers in any field of natural sciences, including mathematics, technology, engineering and medicine, may apply. Medical doctors without a doctorate are not eligible to apply for the Postdoctoral Fellowship.

Applications close 9am AEDT Monday 31 October 2016. Funding for this program has been provided by the Department of Industry, Innovation and Science.

More information on the fellowships: <https://www.science.org.au/opportunities/travel/grants-and-exchange/japan-society-promotion-science-fellowships>

Newcastle researcher wins Falling Walls Lab Australia

Dr Kim van Netten of the University of Newcastle has been selected to represent Australia at the international event Falling Walls in Berlin encouraging links between research, business and innovation.

The inaugural Falling Walls Lab Australia (<https://www.science.org.au/opportunities/travel/grants-and-exchange/falling-walls-lab-australia>) took place on 24 August 2016 at the Shine Dome, hosted by the Academy in

partnership with the Embassy of the Federal Republic of Germany in Canberra, The Australian National University, the German–Australian Chamber for Industry and Commerce, the Royal Society of New Zealand and the Embassy of Germany in Wellington.

Falling Walls Lab Australia provided a platform for 20 Australian and 5 New Zealand excellent young scientists and social scientists, academics, entrepreneurs and professionals from all disciplines to present their research work, business model, innovative project or idea in front of peers and a distinguished audience from academia and business. Each participant had just 3 minutes on stage.



Falling Walls Lab Australia winner, Dr Kim van Netten, with Dr Alan Finkel and Professor Brian Schmidt.

The panel of nine eminent judges from academia, business, government and finance selected Dr van Netten to travel to Berlin to participate in the Falling Walls Conference on 8 November. Australia's Chief Scientist Dr Alan Finkel AO FAA FTSE and Professor Brian Schmidt AC FAA FRS Nobel Laureate presented certificates to all of the participants and announced the winner of the competition.

The event was attended by Academy President Professor Andrew Holmes AM PresAA FRS FTSE and the German Ambassador, Her Excellency Dr Anna Prinz. Professor Hans Bachor AM FAA was the master of ceremonies.

The Academy acknowledges the partners and sponsors for their generous support that made this event possible.

ICSU update

The International Council for Science (ICSU)(<http://www.icsu.org/>) is a non-government organisation with a global membership of 48 international scientific unions and interdisciplinary science bodies. These organisations convene scientists within and across the disciplines to coordinate research and address issues of global significance. The Academy is Australia's adhering body for ICSU and 31 ICSU organisations and meets responsibilities and obligations that arise from the ICSU memberships with the assistance of the National Committees for Science (<https://www.science.org.au/supporting-science/national-committees-science>).

Latest ICSU Newsletter: <http://www.icsu.org/news-centre/insight>

More about the Academy's formal links with ICSU: <https://www.science.org.au/supporting-science/international-representation/international-council-science>

Recent Australian elections to ICSU union executive bodies

Professor Merrilyn Goos, University of Queensland, was recently elected Vice President of the International Commission on Mathematical Instruction (ICMI).

Proposed ICSU–ISSC merger

ICSU and the International Social Science Council (ISSC) have proposed to merge and will convene an Extraordinary General Assembly to discuss the proposal in Oslo on 24 October. Members of ICSU and of ISSC will be asked to vote whether they agree in principle with the recommendation to merge the two organisations and to appoint a task force that will develop the transition plan in case of agreement by both sides to pursue the merger.

Background documents on the proposed merger are available on ICSU's website (<http://www.icsu.org/general-assembly/extraordinary-general-assembly-oslo-2016/background>).

2016 General Assemblies

- International Commission on Mathematical Instruction, Germany, 24–31 July 2016
- Scientific Committee on Solar–Terrestrial Physics, Turkey, 30 Jul – 7 Aug 2016
- International Union of Immunological Societies, Melbourne, 19–22 Aug 2016

- Scientific Committee on Antarctic Research, Malaysia, 19–31 August 2016
- International Union of Theoretical and Applied Mechanics, Canada, 21–26 Aug 2016
- International Geographical Union, China, 21–25 August 2016
- International Union of Geological Sciences, South Africa, 27 Aug–4 Sept 2016
- Scientific Committee on Oceanic Research, Poland, 5–7 Sep 2016
- Committee on Data for Science and Technology, USA, 11–13 Sept 2016
- International Union of Toxicology, Mexico, 2–6 October 2016

Outstanding scientists meet at Kavli Frontiers of Science Symposium



The Kavli delegation with friends

Nine Australian early- and mid-career researchers (EMCRs) took part in an innovative trilateral symposium with young scientists from the US and Indonesia in August.

The Indonesian–American Kavli Frontiers of Science (<http://www.nasonline.org/programs/kavli-frontiers-of-science/past-symposia/2016-idafos.html?referrer=https://www.google.com.au/>) symposium has been running in Indonesia for six years, however this is the only the second year that Australian researchers have been invited to participate. The uniquely multi-disciplinary event brought together 80 outstanding young scientists to discuss exciting advances and opportunities in a broad range of disciplines, including big data and marine conservation, green chemistry, mass extinction and citizen science, non-communicable disease and ageing, robotics and information systems/innovation, and social decision making/behavioural economics.

Dr Aysha Fleming, a social scientist (sociologist) from CSIRO in Hobart, led the Australian delegation to the event held in Malang, East Java, in August.

Academy Vice-President, Dr TJ Higgins FAA FTSE, also attended the symposium for the second time.

The delegation was made up of:

- Dr TJ Higgins AO FAA FTSE, CSIRO
- Dr Manuel González-Rivero, University of Queensland
- Dr Beben Benyamin, University of Queensland
- Dr Navjot Bhullar, University of New England
- Dr Stan Karanasios, RMIT
- Dr Elizabeth Law, University of Queensland
- Dr Dipanwita Sarkar, QUT
- Dr Aysha Fleming, CSIRO
- Associate Professor Leonie Heilbronn, University of Adelaide

This activity was funded by the Australian Government Department of Education and Training.

More about the Kavli symposium: <https://www.science.org.au/opportunities/travel/grants-and-exchange/us-indonesia-kavli-frontiers-science-symposium>

Response to the Kavli symposium

by delegation leader Dr Aysha Fleming

The symposium is a wonderful and unique experience, bringing a diversity of young scientists together. The whole experience of travelling to Indonesia and meeting the Kavli group was a very special opportunity. Everyone was engaged and enthusiastic and keen to mix and make new contacts. I'm sure we have all made several close partnerships that will be very valuable in the future. It was an honour for Australia to participate and an unforgettable experience for each of us.

Sometimes science can be a difficult profession, as we work hard on our own research, struggle to find grants and produce outputs that will create immediate impact. Events such as these provide a rare and valuable opportunity to step back and see how we are all part of something greater and despite our differences we have so much in common and so much to offer. We are now all a part of the Kavli community, and together we can produce work that challenges traditional boundaries and pushes forwards the frontiers of science.

US students make connections with Australia in EAPSI program



The 2016 EAPSI cohort from the US

US science and engineering graduate students visited Australian scientific and cultural institutions while on their summer break to conduct research and build relationships with their Australian counterparts.

The East Asia and Pacific Summer Institutes program (EAPSI) is organised by the Academy in collaboration with the US National Science Foundation (NSF). It is co-funded by the NSF and the Australian Government Department of Education and Training, and supported by the Australian Embassy in Washington DC.

This year, the Academy welcomed 26 students in June for the eight-week program.

Students were introduced to Australian culture and science in Canberra, with visits to the National Gallery of Australia and Parliament House, and learned about Australian geography and topography, wildlife, bush tucker and Australia's Indigenous history at Tidbinbilla Nature Reserve. Professor Jenny Graves AO FAA delivered a presentation describing her research on the genetics of Australian marsupials, and JP Lawrence, a recent EAPSI graduate, talked about his experiences during the program and the further research he has conducted since returning to Australia on an Endeavour Fellowship.

The students then travelled to cities around Australia to undertake research projects at host institutions, including several universities and the Australian Nuclear Science and Technology Organisation (ANSTO). Research areas ranged from the development of algorithms for big data mining that preserve privacy, to the investigation of an unknown sensory structure in leaf-dwelling praying mantises.

Applications open for EAPSI 2017

Applications are now open to US students to join the 2017 program—more information is available on the NSF website (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284). Applications close 10 November 2016.

“ *The experience far surpassed any hopes that I had. I was so happy to leave the program and hear my host say he wishes I could have stayed longer. As do I! What a wonderful opportunity.* ” Hannah Yokum, EAPSI 2016 participant

“ *I would describe my participation in the EAPSI program as ‘vastly exceeding all expectations’. The experience allowed me to work on an individual project set at my own pace and taught me several research techniques that I will incorporate into my dissertation. [EAPSI] was one of the most valuable experiences of my career thus far.* ” George Bruschi, EAPSI 2016 participant

Academy hosts Indonesia–Australia Science Collaboration Forum



Forum participants with Dr Alan Finkel (third from left) and Professor Andrew Holmes (third from right)

The Academy hosted an Indonesia–Australia Science Collaboration Forum in June, providing an opportunity for Australian government departments, funding agencies, learned academies in Australia, universities, and agencies such as CSIRO and ACIAR, together with Indonesian counterparts, to discuss ways to continue to strengthen the science, technology and innovation relationship between the two countries. They also discussed a proposed bilateral research symposium to be hosted by the Indonesian and Australian academies of science in Canberra this coming November, in the areas of health, agriculture, coral reef management and climate change.

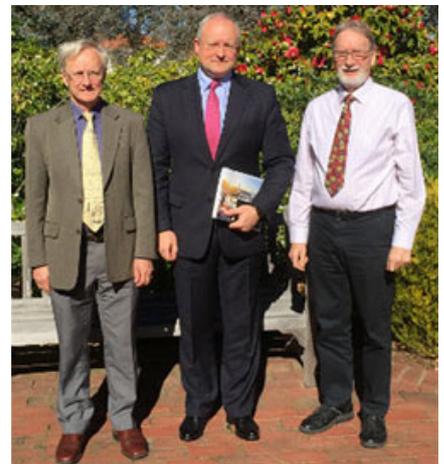
The forum was chaired by Academy President, Professor Andrew Holmes AM PresAA FRS FTSE. It was attended by members of a high-level delegation from Indonesia that included Dr Muhammad Dimiyati, Deputy Minister for Research, Technology and Higher Education; Professor Sangkot Marzuki, President of the Indonesian Academy of Sciences; and representatives from the recently launched Indonesian Science Fund (ISF) and the Knowledge Sector Initiative (KSI). The Indonesian delegation was visiting Australia under the auspices of the Department of Foreign Affairs and Trade.

Australia's Chief Scientist and Academy Fellow, Dr Alan Finkel AO FAA FTSE, spoke at the forum.

Estonia emerging as leading e-society

Estonia's Ambassador to Australia described the emergence of his country as one of the most advanced e-societies in the world during a visit to the Academy in July.

HE Mr Andres Unga met with the Academy's Vice Presidents, Professor Jim Williams AM FAA FTSE and Dr TJ Higgins AO FAA FTSE, to discuss possible research collaborations between Australia and Estonia as well as links between the Academy and the Estonian Academy of Sciences. Mr Unga said e-services such as e-elections, e-taxes and e-health have become routine in Estonia.



HE Mr Andres Unga (centre) with the Academy's Vice Presidents, Professor Jim Williams (left) and Dr TJ Higgins

Visit to the Academy by the Secretary of the Chilean Academy of Sciences



Professor Francisco Hervé from the Chilean Academy of Sciences with the Academy's Director—International Programs, Nancy Pritchard

Secretary of the Chilean Academy of Sciences, Professor Francisco Hervé, visited the Academy in July while in Canberra to undertake research with his collaborators at the Australian National University.

Professor Hervé is the recipient of the 2016 Scientific Committee on Antarctic Research President's Medal for Outstanding Achievement (<http://www.scar.org/medal/awardees>). While at the Academy he met with Dr Will Howard, a member of the Academy's National Committee for Antarctic Research, to discuss matters of interest related to Antarctic Research. He also met with Nancy Pritchard, the Academy's Director—International Programs, to discuss international collaborations.

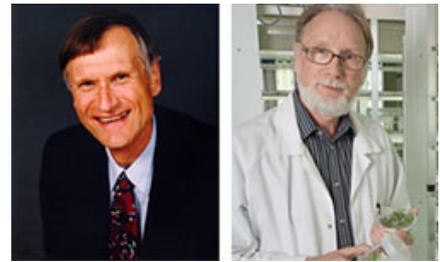
Fellows represent Academy on international Sustainable Development Goals committees

Two Fellows of the Australian Academy of Science have been invited to represent the Academy on separate InterAcademy Partnership (IAP) project committees.

Professor Michael Barber FAA FTSE will serve on the committee overseeing the project 'Improving scientific input to global policy making: strategies for attaining the Sustainable Development Goals.' This project, co-chaired by Dr Eva Alisic from Monash University, will be framed around the global science community's contribution to the delivery of the United Nations Sustainable Development Goals.

Academy Vice President, Dr TJ Higgins AO FAA FTSE, will serve on the committee overseeing the project 'Harnessing science, engineering, and medicine to address Africa's challenges.' This project has been established to analyse Africa's efforts to deliver the Sustainable Development Goals.

Both projects will last for three years and are funded by the Carnegie Corporation of New York.



Professor Michael Barber and Dr TJ Higgins will represent the Academy on Sustainable Development Goals committees

Academy encourages alumni to join Japan Society for the Promotion of Science association

All former and current recipients of fellowships and awards from the Japan Society for the Promotion of Science (JSPS) are invited to join the newly formed Japan Society for the Promotion of Science Alumni Association in Australia.

JSPS, in association with the Academy, has been an outstandingly generous source of support for bilateral training and collaborative research activities between Australia and Japan, with hundreds of Australian scientists benefiting from this relationship since 1977.

JSPS has invited the Academy to create a JSPS Alumni Association in Australia (JSPSAAA). The purpose of the association is to engage Australian scientists with past, current or possible future collaborative links with Japan to enhance the strong bilateral science and research relationship between the two countries. The association will:

- maintain and expand the international network of JSPS Alumni Associations
- promote awareness of the opportunities and benefits of scientific collaboration with Japan
- promote Australia as a priority partner for Japan in scientific research and development
- identify and address issues of common concern between the Japanese and Australian scientific communities
- promote exchange of information between Australian scientists with links to Japan
- provide guidance for prospective and new JSPS Fellows.

Joining the association provides an opportunity to demonstrate the ongoing value of the JSPS Fellowship scheme; help drive policy and practice in scientific endeavours relevant to both countries; and share information relating to funding and research opportunities involving Japan and Australia. Membership of the JSPS Alumni Association in Australia is free.

Join the JSPS Alumni Association in Australia: <https://aas.eventsair.com/jspsaau/australia/Site/Register>



The response so far to the call to join the JSPS Alumni Association of Australia has been strong. Photo: inu-photo, flickr

SCIENTIFIC LITERACY

Q&A on Q&A

During energetic discussion in an August episode of ABC TV's popular Q&A program, UK Physicist Professor Brian Cox drew from the Academy's booklet *The science of climate change: questions and answers* (<https://www.science.org.au/learning/general-audience/science-booklets-0/science-climate-change>) and held the publication aloft as a source of reliable climate change information.



Brian Cox referred to the Academy's climate change Q&A booklet as a reliable source of information.

For the 24 hours following the program, the Academy's website experienced around five times the average number of daily visits, helped by media coverage of the program including The Daily Telegraph, the Australian and the ABC. The publication is available online as web pages and a downloadable PDF, and printed copies can be requested from the Academy (<https://www.science.org.au/about-us/contact-us-0>).

The climate change publication aims to address confusion created by contradictory information in the public domain. It sets out to explain the current situation in climate science, including where there is consensus in the scientific community and where uncertainties exist.

The content was prepared by a working group of nine members co-chaired by Dr Ian Allison FAA and the late Professor Mike Raupach FAA FTSE. The document was reviewed by an oversight committee of eight members chaired by Professor John Zillman AO FAA FTSE.

National Science Week

The Academy was very active during National Science Week from 13 to 21 August.

On the Job



Patricia Gadd—Environmental Radioactivity Measurement Centre, ANSTO (People's Choice)

Australian science is made possible by thousands of support and technical staff working around the country to keep our research moving. Seven of these inspiring people were selected to feature in a series of videos in our On the Job! project (<https://www.science.org.au/news-and-events/events/on-the-job>); chosen by public vote, the winner was Ms Patricia Gadd.

Ms Gadd is based at the Australian Nuclear Science and Technology Organisation (ANSTO) in Sydney and works in environmental science. She established Australia's first micro X-ray Fluorescence (XRF) scanning facility and runs it to aid the study of sediment cores, the shells of razor clams and giant clams, and other samples to measure pollution and other trace elements. She is passionate about her contribution to environmental science and has been a collaborative part of more than 25 publications.

As the winner, Patricia will travel to meet an inspirational scientist of her choice.

Congratulations to all the finalists, who each won a \$500 contribution to professional development activities.

Two of the finalists were interviewed on Radio National (<http://www.abc.net.au/radionational/programs/rnafternoons/science-careers/7760132>).

The Academy produced On the Job! in partnership with the Australian Science Channel. The project was supported by the Australian Government's Inspiring Australia initiative.

Making health food taste great



Dr Ingrid Appelqvist gave a gripping talk at the Shine Dome in Canberra, when she spoke about the challenges of food-related issues such as malnutrition and obesity.

Dr Appelqvist explained how new research may hold the key for us to design food that tastes better and is better for us. She is particularly interested in food designed for people at specific times of their life, for instance food that is easy to chew, is high in nutrients, and gentle on the stomach, which would greatly benefit older generations who find eating well a challenge.

In Her Own Words



In Her Own Words celebrates the achievements and contributions of six female Australian scientists, who all had a significant impact not only in their field, but in the role of females in science, technology, engineering and mathematics.

During Science Week the Academy used social media to tell these inspiring women's stories to a broader audience. This was done using their own words—taken from notebooks, interviews and publications, and from those who worked closely with them or were inspired to work in the sciences thanks to them.

Once you start reading, you won't be able to stop. You can follow their stories by liking their pages on Facebook:

- Isobel Bennett – Marine Biologist: <https://www.facebook.com/Isobel-Bennett-In-Her-Own-Words-1073527769408890/>
- Dorothy Hill – Geologist and Palaeontologist: <https://www.facebook.com/Dorothy-Hill-In-Her-Own-Words-147260945678261/>
- Jean Laby – Physicist: <https://www.facebook.com/Jean-Laby-In-Her-Own-Words-1740530592891085/>
- Dora Lush – Bacteriologist: <https://www.facebook.com/Dora-Lush-In-Her-Own-Words-1131157066946393/>
- Nancy Millis – Microbiologist: <https://www.facebook.com/Nancy-Millis-In-Her-Own-Words-628283663989598/>
- Hanna Neumann – Mathematician: <https://www.facebook.com/IHOWNeumann/>

Science in ACTION

The team from the Academy's science explainer website, Nova (<http://www.nova.org.au/space-time/black-holes>), spent two days at one of Canberra's major science week events, Science in ACTION. The team talked to many of the thousands of teachers, students, parents and children who came to find out more about science and science careers, encouraging them to check out the website and Nova social media, and share them with their friends.



Nova's Mischa Andrews at Science in ACTION

Science by Doing: more than 100,000 registrations

The Academy's high school science program, Science by Doing (<https://www.sciencebydoing.edu.au/>), now has over 100,000 registrations and more than half of all Australia's high school science teachers are registered.

The entire suite of 16 term units for Years 7 to 10 are complete, and a new prototype unit is being created. After testing, this prototype will form the basis of revising all units. Other revisions to improve the way teachers and students access Science by Doing resources include a new e-Notebook for students to type responses and add photos; updated student guides; improved web design for student digital; and the development of web-based teacher guides for quicker access to content.

The image displays three screenshots of Science by Doing resources. The leftmost screenshot shows an e-Notebook page for 'Enough Water Fit for Drinking' with 'Activity 2.7 How does water interact when it encounters paper?' and a 'Step 1' instruction. The middle screenshot shows a student activity page for 'Enough Water Fit for Drinking Part 1: What's the problem?' with three water drop icons and a video player. The rightmost screenshot shows a teacher guide page for 'Year 7' with a 'Teacher Guide' section and 'Unit Resources'.

Science by Doing improvements include (clockwise from left) e-Notebooks, new web designs and online teacher guides.

reSolve: Mathematics by Inquiry holds Outreach Officers' orientation program

reSolve Outreach Officers from each state and territory converged on the Academy in June to meet with other reSolve personnel and to be formally introduced to the reSolve project. Officers provided feedback on a first draft of the Professional Learning Module, and visited Lyneham High School and Turner Primary School to watch how lessons were presented.



reSolve Outreach Officers (from left): Mark Darrell (SA), John Shanahan (NT), Rachel Whitney-Smith (WA), Maria Quigley (NSW), Matt Skoss (AAMT), Toni Popowski (Tas), Peter Cooper (Qld), Paul Turner (ACT), Maryanne Rischmueller (SA), Nadia Walker (Vic)

Outreach Officers will liaise with schools and teachers involved in trialling lesson sequences developed by the reSolve writing team, and offer them feedback. Outreach Officers will also liaise with contacts from the government, Catholic and independent sectors as part of this work. 'Talent spotting' for future reSolve 'champions' is also part of their role, in readiness for future phases of the project.

People interested in keeping up to date with reSolve can subscribe to the newsletter (<https://www.science.org.au/news-and-events/newsletters/resolve-newsletter/resolve-newsletter-sign>). Enquiries can be directed to Matt Skoss, Manager Maths by Inquiry (Engagement) on 0418 624 631 or msskoss@aamt.edu.au.

Primary Connections produces new Rising Salt unit and student journals

A new primary school curriculum unit about the many challenges faced by Australian farmers was launched in June by Former Governor General Major General Michael Jeffery AC at Wanniasa Hills Primary School in Canberra.

'Rising Salt', created by the Academy's primary school program Primary Connections (<https://primaryconnections.org.au/>), will help Year 6 students understand issues such as rising salinity, farm management and the impact of changing weather patterns on farmers' ability to produce food.

Students are encouraged to discover recent innovations in farming practices through practical, hands-on activities that involve examining plant growth and health. The unit includes a technology focus, as students are asked to plan and design an irrigation system or water trough to decrease water loss.

The new unit was largely funded and supported by the Primary Industries Education Foundation of Australia.

Primary Connections has also published student science journals that allow students to record all their work for each unit, lesson by lesson. The journals support the teaching of corresponding curriculum units as well as students' literacy skills, with trials showing increased student motivation to record their thinking and take greater pride in their work.



Former Governor General Michael Jeffery (centre), Executive Director of Primary Connections David Kellock (right) and CEO of the Primary Industries Education Foundation Australia Ben Stockwin with students at Wanniasa Hills Primary School in Canberra.

Event news: what's coming up

Alfred Nobel and the history of the Nobel Prize

This year's Rudi Lemberg Travelling Fellowship Lecture, by Professor Lawrence J. Berliner, University of Denver and Emeritus Professor of The Ohio State University, is providing a fascinating insight into Alfred Nobel and how he, his father and brothers developed their famous explosive that made the Nobel company and Alfred extremely wealthy and famous. Professor Berliner, who teaches a course on the Nobel Prize to undergraduate students, gives both personal and sensitive insight to its mystique and fame. His lecture brings in an Australian perspective in the contributions that Australian scholars have made to earn several Nobel prizes.

The Rudi Lemberg Travelling Fellowship (<https://www.science.org.au/opportunities/travel/travelling-fellowships/rudi-lemberg-travelling-fellowship>) commemorates the contributions of Professor M.R. Lemberg FAA FRS to science in Australia. The Fellowship enables either Australian or overseas scientists of standing to visit Australian scientific centres and to deliver lectures.

Venues include Melbourne, Canberra and Sydney. More information about the lectures: <https://www.science.org.au/news-and-events/events>

DEATH and SEX followed by MURDER

The next event in Academy's public speaker series on 'The Science of Life + Death' will be MURDER in Brisbane on 16 September.

The first event, DEATH in Hobart, explored the definition of death, how we work to stop death in emergencies, dealing with mass death events, and the fascinating science of body decomposition. The second event, SEX in

Melbourne, looked at the genetics behind gender and sexual preferences, new technology for contraceptives, and how humans' relationship with sexually transmitted diseases has changed over time.

The remaining events in the five-part series will be LIFE in Perth on 10 November and IMMORTALITY in Adelaide on 15 February 2017.

More information on the Science of Life + Death: <https://www.science.org.au/news-and-events/events/public-speaker-series/science-life-death>



From rubbish to raw materials: turning tyres into steel

Did you know that nine million old car tyres are piled in Australia's biggest tyre dump in Victoria—just one of many such tyre piles around the world? But when Scientia Professor Veena Sahajwalla looks at these massive waste repositories, she doesn't see landfill: she sees elements. Raw materials that can be transformed into structural steel to build green buildings.

Professor Veena Sahajwalla is Founding Director of the Centre for Sustainable Materials Research & Technology (SMaRT), Associate Dean (Strategic Industry Relations) in the Faculty of Science at the University of New South Wales, and an Australian Research Council Laureate Fellow.



Scientia Professor Veena Sahajwalla

Her team treats as raw materials the stuff the rest of us throw away, inviting us to reimagine the concept of 'rubbish' through green manufacturing. Already, their technology has transformed two million passenger vehicle tyres into structural steel, and after recently being commercialised internationally the technology is ready to boom. And it's not just tyres that can be repurposed in this way.

On 18 October at the Shine Dome in Canberra, Professor Sahajwalla will reveal how science is giving old plastic bottles, cars, bikes and computers can new life and purpose, boosting Australia's manufacturing sector, supporting local councils and reaping incredible benefits for the environment.

More information about this event: <https://www.science.org.au/news-and-events/events/public-speaker-series/bots-bacteria-booze-science-everyday/rubbish-raw>

More events

- Animal Vegetal Mineral—Boden Research Conference, 19 – 23 September, Yallingup, Western Australia (<https://www.science.org.au/news-and-events/events/animal-vegetal-mineral-boden>)
- Plants in space, 21 September, Canberra (<https://www.science.org.au/news-and-events/plants-space>)
- 2016 Lloyd Rees Lecture—X-Ray lasers: The new wave in diffraction, 6 October, Clayton, Victoria (<https://www.science.org.au/news-and-events/events/2016-lloyd-rees-lecture-x-ray-lasers-new-wave-diffraction>)
- See all coming events (<https://www.science.org.au/news-and-events/events>)

INFLUENTIAL VOICE

Future science: reports on energy and accelerators to be launched

The Academy is launching two new reports on the future of science in Australia on 15 September:

- Energy for Australia in the 21st century: the central role of electricity
- Discovery machines: accelerators for science, technology, health and innovation

Chief Defence Scientist Dr Alex Zelinsky will speak at the launch, and the Chairs of the reports' Expert Working Groups will provide an outline of the findings of each report and the vision for Australian energy and particle accelerator science into the future. The reports will be available on the Academy's website after the launch.

The event will take place at the Academy's Shine Dome in Canberra from 3:00 to 4:30 pm. It is free and open to the public, and registration is encouraged.

Register to attend the Future science launch at the Academy: <https://aas.eventsair.com/future-of-science-in-australia/registration/Site/Register>

Those interested in the issue of future energy and electricity but unable to attend the launch in Canberra might consider attending a separate event in Melbourne on 27–28 September being organised by the EU Centre at the University of Melbourne.

More information on the Melbourne event: <http://www.eucentre.unimelb.edu.au/events/international-symposium-australias-electricity-system-transition-to-2030/>



The Academy is launching reports on energy and accelerators in September

Academy welcomes new Ministers

Following the outcome of the 2016 Federal Election, the Academy has welcomed the new Coalition frontbench, congratulating the new Minister for Industry, Innovation and Science the Hon Greg Hunt MP who has moved from the Environment Portfolio, and acknowledging the valuable contribution of his predecessor and newly appointed Minister for Defence Industry the Hon Christopher Pyne MP.

The Academy also welcomed new Assistant Minister for Industry, Innovation and Science the Hon Craig Laundy MP and acknowledged the work of former Assistant Minister the Hon Karen Andrews MP—now Assistant Minister for Vocational Education and Skills—for her dedication in working with the science sector over the past year.

The Academy will proactively engage with the new Minister and Assistant Minister, as well as members of the Government, the Opposition and the cross-benches during this term of government.

National Research and Innovation Alliance hosts new science Minister

The National Research and Innovation Alliance comprises 16 national organisations representing constituencies of researchers and research organisations that work together to advise and influence government and other stakeholders on issues relevant to the advancement of research and innovation in Australia. The Alliance is co-convened by the Academy and Science & Technology Australia, and was pleased to host new Minister for Industry, Innovation and Science the Hon Greg Hunt MP and Shadow Minister for Innovation, Industry, Science and Research Senator the Hon Kim Carr at its meeting on 8 August.



CEO of Science & Technology Australia, Ms Kylie Walker, with the Minister for Industry, Innovation and Science Mr Greg Hunt and the Academy's Secretary Science Policy Professor Les Field.

Minister Hunt took the opportunity to deliver his first major address as Minister, announcing Dr Steve Rintoul FAA as interim director of the CSIRO Climate Science Centre in Hobart, a decadal climate science monitoring and forecasting capability to be established within the centre, the launch of the Global Innovation Linkages program, and plans to revise the CSIRO Statement of Expectations.

The Minister outlined his priorities in the portfolio as delivering on the National Innovation and Science Agenda; finalising the national science statement (the performance audit of Australia's science, innovation and research system); developing the 2030 plan for science and innovation; and finalising and implementing the national research infrastructure roadmap. He also wants Australia's total investment in R&D to exceed the OECD average during this term in government (requiring an increase from the current 2.1% of GDP to around 2.4%), and that he expects to be able to announce two further phases of the National Innovation and Science Agenda during this term of government.

Career paths for PhD students

In response to recent public commentary regarding the lack of secure science jobs for PhD graduates, Academy President Andrew Holmes AM PresAA FRS FTSE and Secretary Science Policy Les Field AM FAA published an article in *The Conversation*: There's work (and life) outside of universities for PhD graduates (<http://theconversation.com/theres-work-and-life-outside-of-universities-for-phd-graduates-63401>).



The modern PhD is an excellent preparation for jobs in a broad range of industries.

They make the point that STEM PhD graduates on average have lower unemployment rates and higher salaries than almost every other category of university graduates, and that while only 2% of PhD graduates could

realistically expect to reach professorial levels and enjoy the privilege of an uninterrupted academic career, the modern PhD is an excellent preparation for jobs in a broad range of industries.

They also acknowledge that the challenges involved in an academic career—particularly for early and mid-career researchers, and those with family or caring responsibilities—makes it an extremely difficult path for many. There is an urgent need to invest in programs that provide a more secure pipeline of scientists and researchers for Australia, while also better preparing PhD students for careers outside of academia.

OPERATIONAL EXCELLENCE

Academy announces new Chief Executive

The Academy has announced the appointment of its new Chief Executive, Anna-Maria Arabia.

Following a distinguished career working in science advocacy, science policy and with not-for-profits, Ms Arabia will take up the role from 24 October. The leadership she will bring to the organisation will have a positive impact on Australian science and research.

Ms Arabia has worked at Science & Technology Australia as CEO; Questacon as General Manager; and most recently as Director of Policy/Principal Adviser to the Federal Leader of the Opposition. She succeeds Dr Sue Meek who stepped down in July after eight years of service.



Anna-Maria Arabia

Read the official announcement: <https://www.science.org.au/news-and-events/news-and-media-releases/australian-academy-science-announces-new-chief-executive>

Philanthropy

Friends and supporters meet the recipients of their medals and awards



(from left) Professor Sir Gustav Nossal and Lady Lyn Nossal with Professor David Wilson; Dr Sarah Gani and Ms Miriam Gani with Associate Professor Geoffrey Faulkner; and Mrs Liz-Simpson Booker and Dr Martin Lawrence with Dr Paolo Falcaro and Associate Professor Kylie Catchpole

During Science at the Shine Dome in May, recipients met friends and supporters of Academy medals and awards. Through the generosity of friends and supporters, the Academy is able to continue to recognise and support the future of science.

Professor Sir Gustav Nossal AC CBE FAA FRS FTSE and Lady Lyn Nossal met Professor David Wilson, recipient of the 2016 Gustav Nossal Medal for Global Health (<https://www.science.org.au/opportunities-scientists/recognition/honoric-awards/mid-career-awards/gustav-nossal-medal>).

Dr Sarah Gani and Ms Miriam Gani met Associate Professor Geoffrey Faulkner, recipient of the 2016 Ruth Stephens Gani Medal (<https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/early-career-awards/ruth-stephens-gani-medal>). Up until this year the Gani family was represented by the late Professor Joe Gani, who passed away in April. It was, therefore, a great tribute to their parents that saw Dr Gani and Ms Gani representing the Gani family this year.

Mrs Liz-Simpson Booker and Dr Martin Lawrence met Associate Professor Kylie Catchpole, recipient of the 2015 Inaugural John Booker Medal (<https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/early-career-awards/john-booker-medal>), and Dr Paolo Falcaro, recipient of the 2016 John Booker Medal.

Mrs Booker and her partner Dr Lawrence have visited the Academy on a number of occasions over the years and are valued friends of the Academy.

Also attending the function were Dr Thelma Elizabeth (Beth) Heyde to meet the recipient of the Christopher Heyde Medal (<https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/early-career-awards/christopher-heyde-medal>) Dr Luke Bennetts, and Mrs Denise Hales and Professor Ian (and Pam) McDougall to meet the recipient of the Anton Hales Medal (<https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/early-career-awards/anton-hales-medal>) Professor John Paterson.

Thank you

Thank you to all donors for being part of the future of the Academy. The level of support for the inaugural Annual Giving Program has been fantastic, and such support makes a big difference to the Academy's work.

The Academy aims to show donors and others how donations make a difference, and how supporters can stay connected to the Academy in the years to come.

The Academy welcomes donations at any time. Donate through our website (<https://www.science.org.au/donate>), or call Manager for Development and Stewardship, Isobel Griffin, who will be happy to discuss any queries.

Thank you again for understanding the value of what the Academy does, and for playing a part in keeping Australian science alive and well.

Philanthropic giving

Since its creation by Royal Charter in 1954, gifts and legacies from Fellows and friends have helped the Australian Academy of Science undertake many projects and activities that would otherwise not have happened.

Many of our core activities such as scientific meetings, advice to support policy development, publications, education, public awareness and outreach, international activities, awards and fellowships would not be possible without your support.

Support given through general donations is directly responsible for strengthening the Academy's achievements. Each gift made through our annual or special appeals helps to make the Academy a vital, viable and visible presence in Australia and internationally.

See the Academy's Donor Honour Roll: <https://www.science.org.au/about-us/support-us/philanthropic-giving>