

SEPTEMBER 2019

NEWSLETTER

NUMBER 131



Message from the President

September 26, 2019

It has been an exciting month in terms of creating opportunities to inspire the general community, especially young people, with science. In partnership with Questacon in Canberra, close to 2000 people lined up to participate in an evening of science, much as they might for a music concert. Questacon was full of pop-up demonstrations, interactive displays and live music, guided by 30 of Australia's brightest young scientists.

These young scientists were alumni of the Lindau Nobel Laureate meetings: annual meetings in Germany that provide opportunities for the next generation of leading scientists from all over the world to be mentored by Nobel Laureates. They were able to draw on their

experience and share it with thousands of people. In addition, Academy Fellow and Nobel Laureate Professor Brian Schmidt was a big drawcard. The fact that he was on stage discussing astrophysics with The Bachelor's popular Dr Matt Agnew added some spice to the night. We are looking forward to planning more events that invite people to experience the excitement and fun of science and gain a deeper appreciation of its importance for the social and economic wellbeing of our society.

The Academy was delighted that the Science and Industry Endowment Fund, which has so far funded more than 80 Australian researchers to attend Lindau meetings and Heidelberg meetings, has committed a further \$1 million to the Academy over the next 10 years to continue this support.

Falling Walls Lab Australia is another fantastic opportunity for young scientists and the final selection round was held in Canberra in September. Each participant had just three minutes to make their pitch on 'which walls will fall next?'—congratulations to the top three who will travel to Berlin to represent Australia at the Falling Walls Lab Finale in November.

It is becoming more evident, for example in the current cohort of

leading young scientists, that the diversity found in Australian society is now better represented in the science sector than in previous times. Although we still have some way to go, with programs like SAGE supporting structural and cultural change in our universities and research institutions, the future of Australian science is looking bright.

You can find out more about these events, and much more, in the September newsletter.

Professor John Shine AC PresAA

Institutions recognised for work to eliminate gender bias

September 23, 2019

Thirteen Australian institutions have been recognised today for their efforts to improve gender equity and diversity, receiving Athena SWAN Institutional Bronze Awards as part of the Science in Australia Gender Equity (SAGE) initiative.

SAGE is a partnership between the Australian Academy of Science and the Australian Academy of Technology and Engineering.

The awardees, listed in alphabetical order, are:

- Australian National University
- Deakin University
- Federation University
- Flinders University

HONORARY EDITOR: PROFESSOR YURI ESTRIN FAA



Thirteen Australian institutions have been recognised for their work to eliminate gender bias.

- La Trobe University
- Macquarie University
- Royal Melbourne Institute of Technology
- South Australian Health and Medical Research Institute
- The George Institute for Global Health
- University of Queensland
- University of South Australia
- University of Sydney
- Western Sydney University

Minister for Industry, Science and Technology Karen Andrews congratulated members of the second cohort to achieve accreditation.

“Our Government is committed to increasing the number of women in STEM, and our universities and institutions must be at the forefront when it comes to setting an example,” Minister Andrews said.

“SAGE’s work is an important part of our **Women in STEM Strategy**¹ and **Women in STEM Decadal Plan**² and that’s why we included a further \$1.8 million toward the SAGE initiative in the 2019-20 Budget.”

Executive Director, SAGE, Dr Wafa El-Adhami, said this is the

second group of the 45-strong SAGE member institutions from the higher education and research (HER) sector to complete the Athena SWAN Institutional Bronze process.

“The Bronze Award recognises an institution’s work to set solid foundations for their journey to transformative change; it sets them on the course to Silver and Gold awards,” Dr El-Adhami said.

“This follows the inaugural accreditation of 15 organisations in December last year³, and I extend my sincere congratulations to all awardees for their commitment to gender equity in the higher education and research sector in Australia.”

Bond University, Burnet Institute, James Cook University and the University of Tasmania were also recognised for their progress to date towards Bronze Award accreditation and their continued commitment to SAGE.

For more information visit the SAGE website⁴.



*New initiatives will support NASA’s mission to return to the moon and travel to Mars.
Photo: NASA*

Australian Academy of Science welcomes Australia–US bilateral science and technology initiatives

September 22, 2019

The Australian Academy of Science welcomes a range of Australia–US bilateral science and technology initiatives announced by Prime Minister Scott Morrison during his meetings in Washington.

The initiatives include significant investment of \$150 million into local Australian businesses, researchers and new technologies to support NASA’s mission to return to the moon and travel to Mars, representing a boost for the Australian Space Agency.

“The Government’s space investment builds on a long history of cooperation between Australia and the US in space missions and will have a lasting impact on the growing space industry and workforce in Australia,” said Professor John Shine, President of the Academy of Science.

1 <https://www.industry.gov.au/data-and-publications/advancing-women-in-stem>

2 <https://www.science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan>

3 <https://www.science.org.au/news-and-events/news-and-media-releases/fifteen-institutions-recognised-gender-equity-and-diversity>

4 <http://www.sciencegenderequity.org.au/>

The Academy also applauds a range of other science related initiatives announced by the Prime Minister that will boost cooperation between Australia and the US including:

- an agreement to hold high-level discussions in Washington, DC in November to develop a critical minerals action plan and increase trade in rare earths between the US and Australia. Rare earth minerals are essential to support our high-tech future
- an agreement to work together on reducing/eliminating marine plastic debris and to support efforts on improved waste management, recycling and innovation, which is both timely and essential
- opportunities for Australian scientists to provide advice on lithium-ion recycling and on hydrogen safety, which build on Australia's strengths
- cooperation between the National Science Foundation and Australian researchers on research projects of mutual and strategic interest.

"The bilateral agreements between Australia and the US provide opportunities for Australian scientists to contribute their expertise to a number of issues of global importance, where science will be critical to finding environmental and technology solutions," Professor Shine said.

"The announcements are a reminder of the importance science plays as a soft power asset in international engagement."

Australia cannot afford to compromise the principles underpinning scientific research

September 20, 2019

STATEMENT FROM THE NATIONAL RESEARCH AND INNOVATION ALLIANCE

The National Research and Innovation Alliance resolutely takes the view that benefits to the nation and the advancement of knowledge are best served by a culture where researchers can put forward views and present data for discussion and scrutiny free from interference and without fear of reprisal.

As organisations representing researchers across the nation, we commit to the Principle of Universality (freedom and responsibility) of Science (see background note).

In return for scientific freedoms, researchers must ensure they conduct their work responsibly and ethically, respecting regulations and laws. Researchers recognise they have a duty to contribute to the public good by placing societal benefits ahead of personal gain, acknowledging risk and uncertainty, and being accountable for responsible and honest communication of their work.

Principles that guide the scientific enterprise include posing testable and refutable hypotheses; designing studies that test competing counter-hypotheses, using transparent methods that enable other scientists to verify their accuracy, and recognising the importance of independent replication across studies.

Research knowledge forms the basis of innovations and advances that serve the well-being of society, however, it is acknowledged that they can also do harm. Given this, researchers take seriously their obligation to critically reflect upon how their expertise is used, particularly when asked to support decision-making and policy processes.

Peer review as a foundation for dependable and quality research

An important element that unites scientific inquiry is disclosing findings and subjecting them to scrutiny and critique by peer review. Peer review provides evaluation of work by people who are qualified to judge the matter under consideration and who have current or recent research experience and are therefore exposed in turn to the same form of scrutiny.

Peer review is widely regarded as the scientific seal of approval, denoting quality, validity, and importance. This allows knowledge to be generated, compared, tested and refined over time.

This mechanism helps ensure that the scientific record represents the best available knowledge and it is the responsibility of all researchers to participate in this process.

Researchers will not consider a scientific finding as valid unless it has been approved by the process of peer review. In its absence, researchers consider any findings presented as preliminary and potentially flawed.

Those who disagree with peer-reviewed findings should participate in the scientific process

and subject their findings to the same level of scrutiny and review.

Attempts to bypass peer review allow unqualified individuals and organisations to compare their often *ad hoc* views with findings derived from well-controlled analyses of available data and experimental investigations. This has the potential to subject science to political interference.

Peer review is to the governing of the scientific enterprise what democracy is to the governing of the country. The concept of peer review retains the confidence of the majority of researchers and the Australian research funding agencies, assuring that they support the highest quality research.

The confidence of the research community, and of the taxpayer, that the public investment in the national research base is well managed, can be sustained only if an effective form of peer review holds.

The fundamental principles and processes outlined in this statement have underpinned knowledge generation for centuries and are essential to inform decision making by policy makers as well as by members of the broader community. Any attempt to undermine them erodes decision making in our nation.

National Research and Innovation Alliance members:

- Academy of the Social Sciences in Australia
- Association of Australian Medical Research Institutes



- Australian Academy of Science
- Australian Society for Medical Research
- Australian Technology Network of Universities
- Group of Eight Australia
- Innovative Research Universities
- Professionals Australia
- Research Australia
- Rural Research and Development Corporations
- Science and Technology Australia

Background note

Principle of Universality (freedom and responsibility) of Science:

“The free and responsible practice of science is fundamental to scientific advancement and human and environmental wellbeing. Such practice, in all its aspects, requires freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information, and other resources for research. It requires responsibility at all levels to carry out and communicate scientific work with integrity, respect, fairness, trustworthiness, and transparency, recognising its benefits and possible harms. In advocating the free and

responsible practice of science, the International Science Council promotes equitable opportunities for access to science and its benefits, and opposes discrimination based on such factors as ethnic origin, religion, citizenship, language, political or other opinion, sex, gender identity, sexual orientation, disability, or age.” — Freedom, Responsibility and Universality of Science, International Science Council, Statute 5⁵

Bring science and industry together for a better digital future

September 04, 2019

Australia is not in the driving seat when it comes to the digital transformation currently underway worldwide, with scientists today calling on researchers and industry to work together to ensure Australia benefits from a rapidly expanding sector.

That’s the conclusion of a major new plan, Preparing for Australia’s Digital Future, released today by the Australian Academy of Technology

5 <https://council.science/cms/2017/04/CFRS-brochure-2014.pdf>

and Engineering and the Australian Academy of Science.

Australian success stories in digital technology include Atlassian, Technology One, Vitalcare, VPI Photonics and Aconex – but research investment in digital technology is only a tiny fraction of its potential contribution to Australia’s future prosperity.

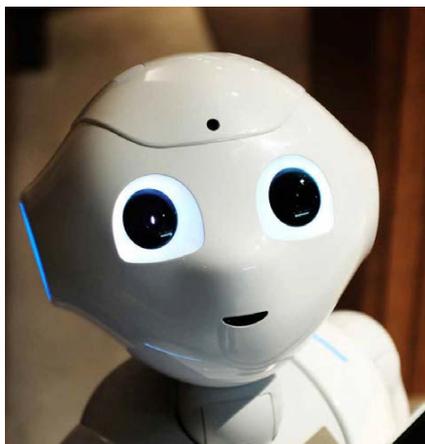
The plan calls for action on promoting closer partnerships between industry and the research sector to ensure Australia is best placed to realise and capitalise on opportunities in digital technology over the coming decade and beyond.

Professor Glenn Wightwick FTSE, a Fellow of the Academy of Technology and Engineering and co-chair of the steering committee that drew up the plan, said: “Digital transformations are continuously and rapidly evolving, driven by aggressive technology progress and accelerating uptake – and Australia is not driving.

“It is essential that, through strategic actions outlined in this plan, we are able to chart our own course.”

Professor Rod Tucker OAM FAA FTSE, a Fellow of the Academy of Science and co-chair, said: “This strategic plan is designed to help Australia do better. Numerous success stories demonstrate our ability to turn excellent science and research into commercial technologies and services that benefit Australia.

“Yet to realise our potential, we need a plan to help Australians



The plan calls for closer partnerships between industry and the research sector. Photo credit: Alex Knight/Unsplash

recognise, act on and derive as much benefit as possible from opportunities in our digital research and innovation sectors.”

Dr Ziggy Switkowski AO FAA FTSE, Chairman of NBN Co and Chancellor of RMIT University, will join Professors Wightwick and Tucker in speaking at the launch of the report on Wednesday morning.

Dr Switkowski said: “Everywhere we look we see evidence of digital transformations that are shaping Australian society and our economy and which will change this country in the decades ahead.

“In this timely report on digital innovation from two of the Learned Academies, we now have an overarching strategic plan that will help Australians act on and derive as much benefit as possible from opportunities in our digital research and innovation sectors.

“I’m confident this plan can position Australia as a successful, forward-thinking digital nation – one with an enhanced ability to translate

our public and private sector ICT research into skills, innovation, public benefit, careers and jobs, and commercial success.”

The plan includes 32 recommendations grouped under five priority areas:

- Encouraging digital leadership in industry
- Fostering research and industry partnership for our digital future
- Safeguarding and strengthening our digital workforce and capability pipeline
- Ensuring whole-of-government action for our digital future
- Delivering research sector reforms

Read the decadal plan⁶

‘Adults-Only Science’ night a roaring success

September 04, 2019

The Australian Academy of Science discovered a winning formula for its latest science outreach event, with record numbers attending its Adults-Only Science night.

Close to 2000 tickets were sold for the event held at Questacon, Australia’s National Science and Technology Centre in September.

The Academy partnered with Questacon for the first time to invite the public to experience pop-up science, interactive displays and live music without children, guided by 30 of Australia’s emerging leaders in chemistry, physics and medicine,

6 <http://www.science.org.au/digital-future>



Some of the Lindau Aussies who presented their science to almost 2000 people at Questacon

fresh from mentorship with Nobel prize-winners in Germany⁷.

The Academy's Secretary for Education and Public Awareness, Professor Hans Bachor, said he'd never seen so many people come together to celebrate science.

"Young ones, old ones, everybody was there. I really loved it," Professor Bachor said.

Exit surveys found that many attendees enjoyed the variety of science on offer during the evening.

For some the drawcard was the opportunity to see Academy Fellow and Nobel Laureate Professor Brian Schmidt in conversation with The Bachelor's Dr Matt Agnew to discuss astrophysics. Dr Agnew recently graduated with his PhD.

Watch Dr Agnew and Professor Schmidt in conversation⁸

The evening by numbers

- 1934 tickets sold
- 30 Lindau alumni engaging with hundreds of guests
- 1 Bachelor
- 1 Nobel Laureate
- Countless selfies at the selfie wall

Three emerging innovators to represent Australia at Falling Walls Lab in Germany

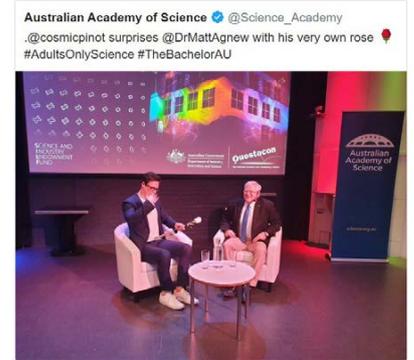
September 04, 2019

Research Fellow Dr Elena Schneider-Futschik from the University of Melbourne is the winner of the fourth Falling Walls Lab Australia event, hosted yesterday by the Australian Academy of Science.

Second place was awarded to Ms Kate Secombe, a PhD candidate at the University of Adelaide, with University of Queensland PhD candidate Mr Rhys Pirie in third place.

Matt Agnew
@DrMattAgnew

What an incredibly humbling experience. Absolutely wonderful to chat with Nobel prize winner @cosmicpinot about science, rockets and some of the exciting questions in astrophysics! twitter.com/Science_Academ...



84 06:27 - 3 Sep 2019

<https://twitter.com/DrMattAgnew/status/1168606390073475072>



Falling Walls Lab Australia first place winner Dr Elena Schneider-Futschik with jury chair Dr Alan Finkel, Australia's Chief Scientist.

Twenty emerging innovators gathered at the Shine Dome in Canberra to present their ideas, research and initiatives on the theme 'Which walls will fall next?'

Each participant had just three minutes to make their pitch in front of a jury of eminent academics and leaders from government, business and finance, chaired by Australia's Chief Scientist Dr Alan Finkel.

Dr Schneider-Futschik spoke about 'breaking the wall' of pharmacology for cystic fibrosis (CF) patients. She has developed a technique for measuring drug concentrations in CF patients' blood plasma and an

⁷ About the Lindau alumni: Every year, the Australian Academy of Science and the Science and Industry Endowment Fund (SIEF) send top early-career scientists to Lindau, Germany, to spend a week with Nobel laureates. For the first time, we brought these remarkable researchers back together for a unique social event at Australia's National Science and Technology Centre.

⁸ <https://www.facebook.com/AustralianAcademyofScience/videos/3000552056684749/>

accompanying model to evaluate and predict patient outcomes.

Ms Secombe is investigating the gut microbiome's role in personalising cancer treatment to prevent debilitating intestinal toxicity.

Mr Pirie has developed a chemical recycling process for the more than 60 million tonnes of glass that ends up in landfill because it is too small to be sorted by traditional recycling methods.

The three winners will travel to Berlin to represent Australia at the Falling Walls Lab Finale. They will present their three-minute pitch alongside 100 other finalists selected from more than 55 Labs across the globe.

Falling Walls, this year on 8 and 9 November, is an annual conference held in Berlin. It fosters discussion on research and innovation and promotes the latest scientific findings among a broad audience from all parts of society. The Lab is an international forum for the next generation of outstanding innovators and creative thinkers.

In addition to a larger cohort of Lab participants from Australia, the Academy's role will be expanded at this year's Falling Walls event in Berlin. Director of Communications and Outreach Paul Richards has been invited to join the jury for the Falling Walls Engage competition.

The Academy will also be holding an exhibition stall and presentation during Berlin Science Week at the Museum of Natural History on 6 and 7 November.

Falling Walls Lab Australia is organised by the Australian Academy of Science in association with the Embassy of the Federal Republic of Germany in Australia.

More information on the international Falling Walls event⁹

Lawyers and scientists come together to discuss climate change

September 10, 2019

The Australian Academy of Science and the Australian Academy of Law jointly sponsored a symposium on climate change and the law at the Federal Court Sydney on 22 August.

It was based on a hypothetical set of facts. The moderator was Justin Gleeson SC, who questioned a panel of three Fellows from each Academy.

Below are some extracts of the panellists' responses to questions posed during the discussion:

University of Sydney Law Professor Rosemary Lyster:

"So it really is a question of why governments continue to approve new coal mines because governments signed up in 1992 under international law to the United Nations framework convention on CC where they agreed to do everything possible to bring down greenhouse gas emissions and to adapt to the impacts of climate change.

"What decision makers need to do, when they are considering whether or not to grant permission to new coal mines is to take into account

international law, the scientific evidence and they need to interpret the statutes under which they are either going to grant or not grant consent.

"Most statutes have a legal requirement that decision makers take into account, in one way or another, the principles of ecologically sustainable development."

Australian National University Emeritus Professor Will Steffen:

"If Australia was serious about the Paris target no new fossil fuel developments, be it coal, gas, unconventional gas or oil are permissible. We already have far more carbon facilities in operation today than we need to blow the Paris budget."

Macquarie University Pro Vice-Chancellor (Research) Professor Lesley Hughes:

"To argue that you can ship off coal somewhere else to be burnt and therefore absolve oneself of responsibility is morally unacceptable."

The Panel consisted of:

- Professor Lesley Hughes, Pro Vice-Chancellor (Research), Macquarie University
- Professor David Karoly FAA, Leader of the NESP Earth Systems and Climate Change Hub, based in CSIRO
- Professor Rosemary Lyster, Professor of Climate and Environmental Law, University of Sydney Law School

9 <https://www.falling-walls.com/>



Panel moderator and speakers with the Presidents of the Australian Academy of Science and the Australian Academy of Law.

- Professor Jacqueline Peel, Professor of Law, University of Melbourne Law School
- Professor Will Steffen, Emeritus Professor, Australian National University
- Professor Erika Techera, Professor of Environmental Law, University of Western Australia Law School

Watch a **10-minute summary**¹⁰ of the discussion or **watch the full symposium**¹¹.

Eureka Prizes celebrate innovators and leaders in Australian science

September 06, 2019

Academy Fellow Professor Branka Vucetic of the University of Sydney has been awarded the prestigious CSIRO Eureka Prize for Leadership in Innovation and Science for her major contributions to the science of coding theory and wireless communications that underpin much of the wifi technologies we use today. Professor Vucetic was elected to the Academy in 2017.

Also acknowledged at the awards was the Academy's 2019 Gottschalk



Professor Branka Vucetic has won the CSIRO Eureka Prize for Leadership in Innovation and Science

Medal winner, Associate Professor Laura Mackay of the University of Melbourne. She was awarded the Macquarie University Eureka Prize for Outstanding Early Career Researcher, and is regarded as a leader in the field of immunological 'memory'. The Academy awarded Associate Professor Mackay the 2019 Gottschalk Medal in recognition of her contribution to the discovery of tissue-resident memory T cells.

Four Academy Fellows were **shortlisted for the prizes**¹²: Professor Terry Hughes, Professor Stephen McMahon, Professor Branka Vucetic and Professor Michelle Coote.

The Australian Museum Eureka Prizes shine a light on Australia's world-leading science and scientists, acknowledging leaders and innovators in STEM from primary school students to science journalists, to research teams at our top scientific institutions in 17 separate awards.

The finalists and winners for the awards demonstrated the diversity of the STEM sector and the top-level science that is coming



Seventeen Eureka Prizes were awarded this year

out of Australia. The Academy applauds the introduction of the Australian Government Department of Industry Eureka Prize for STEM Inclusion this year. The inaugural winner of this award was the National Indigenous Science Education Program (Macquarie University, Charles Sturt University and the Yaegl Country Aboriginal Elders).

See the full list of Eureka Prize winners¹³

\$1 million in new funding connecting young scientists to Nobel Laureates

September 02, 2019

With Nobel Prize winners feted as global celebrities in the science world, it is no surprise that Dr Deepak Jain felt nervous when he approached Professor Donna Strickland at this year's Lindau Nobel Laureate meeting.

The annual meeting in Germany provides an opportunity for the next generation of leading scientists from all over the world to be mentored by Nobel Laureates.

10 <https://youtu.be/wDYHW-AyeNQ>

11 <https://youtu.be/BlIwHeGOSJQ>

12 <http://www.science.org.au/news-and-events/news-and-media-releases/fellows-shortlisted-eureka-prize-finalists>

13 <https://australianmuseum.net.au/get-involved/eureka-prizes/2019-eureka-prize-winners/>

Dr Jain was one of thirteen¹⁴

Australian-based physicists awarded Lindau Fellowships¹⁵ this year by the Australian Academy of Science, thanks to funding from the Science and Industry Endowment Fund (SIEF)¹⁶. The 'Lindau Aussies' are well known at these meetings, in part due to the handing out of mini koalas to Nobel Laureates¹⁷ each year.

Dr Jain had been dreaming of visiting Strickland's lab in Canada for some time. This dream only became stronger when Jain realised Strickland was attending the 2019 meeting, after she became only the third woman to win the Nobel Prize in Physics in 2018.

"At the meeting I plucked up the courage to speak with Professor Strickland and asked if I could visit her lab for a few months, to work under her mentorship," said Dr Jain, who is a Research Fellow at the University of Sydney.

"To my surprise she said yes and now I am planning for the trip, but still need funding to get me there. To work with a Nobel Laureate would be a dream come true. I am really thankful to the Academy and SIEF for giving me this fantastic opportunity, which will add tremendous value to my research career and which I hope comes to fruition."

SIEF has funded 80 young researchers to attend the annual Lindau Nobel Laureate meeting since 2013. Today the future of the program has been secured



Watch #LindauAussies2019 on Youtube: <https://youtu.be/yfSOvSe9e6M>

with the announcement of \$1 million from SIEF to continue funding the Lindau Nobel Laureate meeting Fellowships and Heidelberg Fellowships for an additional 10 years.

The announcement comes as 32 alumni of the Lindau Nobel Laureate meetings from the past six years gather for a reunion in Canberra today.

Science leaders welcome funding

Australian Academy of Science President, Professor John Shine, welcomed the funding.

"The impact that this funding will have on the next generation of young scientists is best highlighted by the feedback of those alumni that have attended past Lindau Nobel Laureate Meetings," said Professor Shine.

CSIRO Chief Executive and SIEF Trustee, Dr Larry Marshall, said SIEF and CSIRO shared a mission to invest in the STEM leaders of tomorrow.

"When we invest in developing talented young scientists at the stage in their career where they are most creative, it is an investment in Australia's future, and plants a seed, stirring them to win Nobel Prizes of their own," said Dr Marshall.

"So it's a genuine pleasure to extend SIEF's support for the Lindau Nobel Laureate Fellowships and Heidelberg Fellowships with another \$1 million over ten years, empowering early career researchers to do the science that will change the world."

PhD candidate Melanie Hampel is researching nuclear astrophysics at Monash University. She also attended this year's Lindau Nobel Laureate Meeting and sat in on a lecture with Professor Strickland.

"In the open exchange that followed Professor Strickland's lecture, she answered the questions of many curious young researchers by sharing more anecdotes and stories, from both her professional

14 <https://www.science.org.au/opportunities/travel/nobel-laureates-meetings/lindau-nobel-laureate-meetings/2019-sief-aas-fellows>

15 <https://www.science.org.au/news-and-events/news-and-media-releases/top-young-physicists-attend-lindau-nobel-laureate-meeting>

16 <https://sief.org.au/>

17 <https://twitter.com/StellarMelanie/status/1145617511137849344>

career and her personal life," Ms Hampel said.

"To me it was very encouraging and inspiring to be in the presence of such a successful researcher¹⁸, who is also a mother of two, and who left traditional academia to prioritise her private life before returning to an inspiring career in physics."

"Meeting so many interesting and talented people has definitely sparked a lot of enthusiasm and inspiration in me, which I have brought back to Australia for my own research."

Nominations for 2020 now open

Nominations are now open¹⁹ for young researchers to attend the 2020 Lindau Nobel Laureate Meeting. Applications close 27 September 2019.

Professor Jacques Miller wins 'America's Nobels'

September 26, 2019

Academy Fellow Professor Jacques Miller is the joint recipient of the 2019 Albert Lasker Basic Medical Research Award, with Professor Max D. Cooper. This prestigious award is often referred to as 'America's Nobels'.

Professor Miller of the Walter and Eliza Hall Institute of Medical Research and Professor Cooper of Emory University School of Medicine in the USA are responsible for our current understanding of the adaptive immune system through the identification of B and T cells.



Professor Jacques Miller is the joint winner of the 2019 Albert Lasker Basic Medical Research Award. Photo courtesy of the Walter and Eliza Hall Institute of Medical Research

Professor Miller's work on the role of the thymus gland in the pathogenesis of leukemia in mice led to his major discovery. In 1961 he showed that neonatal thymectomy in mice had profound effects on the development of the immune response in later life. He then developed this discovery with great skill throughout his career, providing insight into thymus tissue and its role in immune response.

Professor Cooper built on Professor Miller's findings with research of chickens to show that cell-mediated immune responses did not always derive from the thymus, but the bursa of Fabricius. In 1965 and 1966, he published his findings that identified two distinct classes of lymphocytes, B and T cells.

Their work has enabled numerous important advancements in medical science over the last 50 years. Their findings have given rise to a vast range of therapies and products that treat illnesses

including cancer, autoimmune disorders and immunodeficiency conditions.

Academy's award in honour of Jacques Miller

To honour the immense contributions Professor Miller has made to science, the Academy awards the **Jacques Miller Medal for Experimental Biomedicine²⁰** biannually. The award is open to experimental biomedicine researchers eight to fifteen years post PhD, and nominations for the award will open in early 2020 for the 2021 award.

Dr Jia Wu awarded Heidelberg Laureate Forum Fellowship 2019

September 20, 2019

Dr Jia Wu, an early-career computer scientist from Macquarie University has been selected by the Australian Academy of Science to represent Australia at the highly prestigious

18 <https://twitter.com/janetzhong82/status/1145721351526866946>

19 <http://www.science.org.au/opportunities/travel/nobel-laureates-meetings/lindau-nobel-laureate-meetings>

20 <https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/mid-career-awards/jacques-miller-medal>

7th Heidelberg Laureate Forum in Germany from 22–27 September.

The Forum brings together 200 young researchers in mathematics and computer science for a week of scientific exchange with the recipients of the disciplines' most prestigious prizes: the Abel Prize, ACM A.M. Turing Award, ACM Prize in Computing, Fields Medal and the Nevanlinna Prize.

Dr Wu's work on artificial intelligence and mining data with complex structures has earned international recognition in the field. In his research, he aims to solve long-term problems such as protecting the cybersecurity of Australian business, industry, and society.

In his short career, Dr Wu has proved to be a talented and energetic researcher. He has won a number of awards for his work including the Best Paper Award in Data Science Track (SIAM International Conference on Data Mining 2018) and Best Student Paper Award (IEEE International Joint Conference on Neural Networks 2017). He also serves as the Associate Editor for the top-tier data mining journal ACM Transactions on Knowledge Discovery from Data.

Dr Wu sees the Forum in Germany as "a good opportunity to establish international collaboration with world-class researchers and institutions and will allow young researchers to share and stay abreast of international knowledge and expertise, increasing the



Dr Jia Wu of Macquarie University was selected by the Academy to attend the prestigious Heidelberg Laureate Forum in Germany this month

competitive advantage of early career research networks."

The Academy's Heidelberg Laureate Forum Fellowship²¹ is open to young researchers at all phases of their careers: undergrad, PhD or postdoc.

Chris Anderson to head up Academy's policy team September 04, 2019

The Australian Academy of Science welcomes Chris Anderson who will commence in the role of Director—Science Policy effective Monday 30 September 2019.

Academy Chief Executive Anna-Maria Arabia said Chris has outstanding knowledge of the STEM sector, with strong expertise in strategic planning, policy analysis and research.

"Chris has built excellent relationships, over many years, with STEM sector stakeholders



Incoming Director of Science Policy, Chris Anderson

and government agencies," Ms Arabia said.

"Chris has held senior policy positions in the science and education sectors. In these roles, Chris was the lead advisor on science and research issues, and he developed many high-level policy briefings, reports and submissions."

Mr Anderson said he was honoured to join the Australian Academy of Science and work with its Fellows, our nation's top researchers.

"The Academy is the go-to place for independent, high quality scientific advice in Australia," Mr Anderson said.

"I look forward to working with the Fellows and staff at the Academy to continue to place science at the centre of public policy."

Mr Anderson holds a Bachelor of Arts (Hons) from Monash University and a Master of Public Policy from the University of Melbourne.

21 <https://www.science.org.au/opportunities/travel/grants-and-exchange/heidelberg-laureate-meetings>

He replaces Chris Hatherly who has taken up a role as Executive Director at the Academy of the Social Sciences in Australia.

Michelle Tapper receives Churchill Fellowship to study science communication

September 23, 2019

Michelle Tapper of the Academy's Communications and Outreach team has received a Churchill Fellowship to support her to travel across the US, UK and Europe to study science video production with high profile organisations around the world.

A **Churchill Fellowship**²² provides an opportunity for talented Australian citizens to travel overseas to investigate inspiring practices that will benefit Australian communities. These Fellowships are delivered by the Churchill Trust in the memory of Sir Winston Churchill, providing an opportunity for Australians to conduct research in their chosen field that is not readily available in Australia.

Michelle's Fellowship will allow her to visit and make connections with a range of science, media and not-for-profit organisations including NASA, National Geographic, the BBC, the Alan Alda Center for Communicating Science and the World Health Organization, among others. With 22 years of journalism experience and as Supervising Producer for the Academy's Communications and Outreach team, her particular area of interest



Michelle Tapper will travel across the US, UK and Europe with her Churchill Fellowship to study science video production

is science video production and digital media. The Academy has focused strongly on this in recent years, creating content designed for a broad audience on social media.

"Our video project at the Australian Academy of Science has garnered more than 1.7 million followers in less than two years, which shows that people have a desire to learn about science when it's presented in an engaging way," Michelle said.

When she returns, Michelle will share her learnings with the Academy and her networks across the science and media sectors, further ensuring that Australia will excel at communicating engaging science messages through digital media.

"It's a huge honour to be awarded a Churchill Fellowship and I'm grateful for the opportunity to improve my knowledge and develop international connections in science video production," Michelle said.

"Everyone should have access to science information which should inspire, inform and improve lives."

International news

September 26, 2019

Calls for applications for the **Australia–India Strategic Research Fund Early- and Mid-Career Researcher Fellowships** and the **Japan Society for the Promotion of Science Postdoctoral Fellowships** are now open. Find out more about these opportunities²³

2019 Australia–Americas internship program wraps up in Canberra

After spending eight weeks in Australia undertaking a research project with Australian hosts institutions, this year's PhD students from the 2019 Australia–Americas PhD Research Internship Program returned to Canberra on 19 September for a debrief session. Twenty-three students from Argentina, Brazil, Colombia and Mexico shared their experiences in working at institutions and laboratories across Australia, the challenges they faced, and the progress and achievements of their research projects. All students were complimentary of the program and many expressed an interest to return to Australia for postdoctoral research.

The students also heard from Academy Fellow Professor Jenny Graves, winner of the 2018 Prime Minister's Prize for Science, who spoke about her recent trip to South America and Mexico which was supported by the Australian Government's Council on Australia Latin America Relations (COALAR). The COALAR grant was managed

²² <https://www.churchilltrust.com.au/>

²³ <https://www.science.org.au/academy-newsletter/september-2019-131/opportunities-scientists>



Students and guests at the end-of-program event

by the Academy which, together with the Education and Science Counsellors at the Australian embassies in Mexico and Brazil, coordinated Professor Graves's lecture tour. Dr Philip Kilby from Data61, an Australian host to a Colombian PhD participant, and the Chief Executive of the Academy, Anna-Maria Arabia, also attended the event to farewell the students, along with representatives of the Department of Education and Academy staff.

The Australia–Americas PhD Research Internship program has been funded by the Australian Government Department of Education since 2017.

Australian scientist recognised for work in international promotion of biological sciences

Professor John Buckeridge received one of two special awards at the centennial celebrations of the



Professor John Buckeridge receiving his Centenary Award for his international promotion of biological science

International Union of Biological Sciences (IUBS) General Assembly in August. The IUBS Centenary Award was presented to Professor Buckeridge for his international promotion of biological science.

Professor Buckeridge is an Emeritus Professor at RMIT University in the Earth and Oceanic Systems Group, and a Research Fellow at Museums Victoria, Australia. He was president of IUBS from 2007–09, President Emeritus of the International Society of Zoological Sciences, past member of the Executive Board of the International Council for Science and a member of the Hungarian Academy of Sciences.

Professor Buckeridge represented the Australian Academy of Science as the Australian delegate at the IUBS General Assembly this year. The General Assemblies are held triennially and bring together the delegates from each of the international members of IUBS to discuss international challenges and programs in the biological sciences. IUBS links with the Academy's National Committee for Ecology, Evolution and Conservation, providing opportunities for Australia to participate in international engagement and discussion on biological sciences.

Professor Zhibin Zhan from the Chinese Academy of Sciences'



Australia was one of the nine founding members of the IUGG, acknowledged in this plaque presented to Australia at the Centennial Celebration

Institute of Zoology also received a Centenary Award for his research on biological consequences of climate change.

Fellow represents Academy at IUGG Centennial Celebration

Australia was one of the nine founding members of the IUGG, acknowledged in this plaque presented to Australia at the Centennial Celebration

Academy Fellow Professor Kurt Lambeck represented the Academy and was a speaker at the International Union of Geodesy and Geophysics (IUGG) Centennial Celebration in July at UNESCO's head office, Paris.

IUGG was founded in Brussels in 1919 to coordinate international research in the geosciences, with Australia one of the nine founding members. IUGG's activities have been dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change. IUGG encourages the application of this knowledge to societal needs, such as mitigation of natural hazards and disaster risk reduction, water security and mineral resources, climate change and environmental preservation.

Professor Lambeck spoke on 'The Earth from Space', reviewing the contributions to Earth physics that resulted from the developments in space science and technology.

Opportunities for scientists

September 26, 2019

Academy opportunities

Japan Society for the Promotion of Science Postdoctoral Fellowships

Applications are open for the Japan Society for the Promotion of Science Postdoctoral Fellowships.

The JSPS Postdoctoral Fellowship Program provides fellowships for Australian postdoctoral researchers to conduct, under the guidance of their Japanese hosts, cooperative research with leading research groups in universities and other Japanese institutions for 12-24 months. The program aims to help such researchers advance their own research while contributing to the advancement of research in Japan and the counterpart countries.

Applications close 25 November 2019

External opportunities

Mahathir Science Award

Recognises the best scientific breakthrough in solving the problems of agriculture, architecture and engineering, medicine or natural resources in the tropics—US\$100,000

Nominations close on 31 October 2019

More information on the Mahathir Science Award²⁴

Heineken Prizes

Reward outstanding achievement in biochemistry and biophysics, cognitive science, environmental sciences, history and medicine—US\$200,000

Nominations close on 15 October 2019

More information on the Heineken Prizes²⁵

Fellows update

September 26, 2019

Honours and awards to Fellows

Professor Branka Vucetic FAA

FTSE—CSIRO Eureka Prize for Leadership in Innovation and Science (**more about this prize**)²⁶

Professor Jacques Miller AC

FAA FRS—joint recipient of the 2019 Albert Lasker Basic Medical Research Award, with Professor Max D. Cooper (**more about this prize**)²⁷

Professor John Hamilton FAA—

Lifetime Achievement Award, International Association of Inflammation Societies

Professor Nalini Joshi AO FAA—

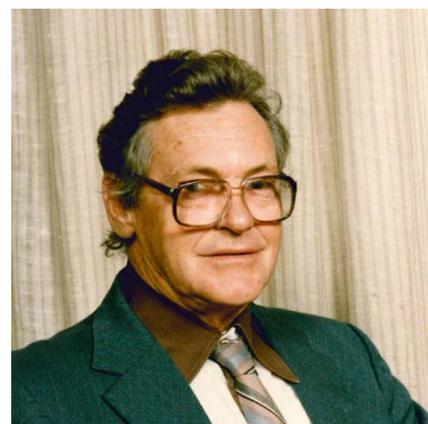
Bragg Fellow, Royal Institution of Australia

Professor Helene Marsh FAA

FTSE—Bragg Fellow, Royal Institution of Australia

Professor Alex Zelinsky AO FAA—

Bragg Fellow, Royal Institution of Australia



Professor Brian Johnstone

Obituaries

Professor Brian Johnstone FAA

25 February 1924 to 31 August 2019

Professor Brian Johnstone was an auditory neurobiologist, renowned internationally for his discoveries relating to fundamental inner ear biophysics. Elected to the Academy in 1988, some of his many achievements included the first direct measurements of basilar membrane motion in the living cochlea using the Mössbauer effect. His measurements laid the basis for our present day understanding of normal hearing and of the nature of sensorineural deafness.

Professor Johnstone completed his BSc and PhD at the University of Melbourne. He took up positions at the University of Chicago and then the California Institute of Technology before moving to the University of Western Australia in 1962. At UWA he founded the Auditory Laboratory in the Department of Physiology, which at the time was the only location in Australia where auditory physiology research was being conducted.

24 <http://www.msa-foundation.org/>

25 https://ausacademyofscience-my.sharepoint.com/personal/robyn_diamond_science_org_au/Documents/Desktop/The%20international%20Heineken%20Prizes

26 <https://www.science.org.au/news-and-events/news-and-media-releases/eureka-prizes-celebrate-innovators-and-leaders-australian>

27 <https://www.science.org.au/academy-newsletter/september-2019-131/professor-jacques-miller-wins-americas-nobels>

Professor Johnstone was an active Fellow of the Academy, including serving on the National Committee for Biophysics and the National Committee for Physiological Sciences.

Professor Sarah Elizabeth

'Sally' Smith FAA

10 May 1941 to 12 September 2019

Professor Sally Smith was Emeritus Professor in the School of Agriculture, Food and Wine, and Adjunct Professor at the Waite Research Institute, the University of Adelaide. She was also Honorary Professor at the China Agricultural University and the Chinese Academy of Sciences.

Professor Smith was a world authority on the mycorrhizal symbiosis between plants and fungi and was elected to the Academy in 2001. She co-authored the most definitive text on the subject and developed many important multidisciplinary collaborations. She made outstanding contributions to our understanding of the structure of the plant–fungal interface, of nutrient transfer across it, and of the molecular processes involved



Professor Sally Smith

in forming and controlling the interface.

Professor Smith completed her BA and PhD at Cambridge and her DSc at the University of Adelaide. She held a number of positions at the University of Adelaide from 1967 to 2019, including a personal Chair in Soil Science and Director of the Centre for Plant Root Symbioses. She obtained several ARC and other grants and had strong international links, mainly with Denmark and China. She also served for several years on the board of the World Vegetable Centre and then on a USAid program.

Professor Smith was an active Fellow of the Academy including serving as a member of Council. She had been awarded the Royal Society of New South Wales' Clarke Memorial Medal, the JK Taylor OBE Gold Medal in Soil Science, the JA Prescott Medal from the Australian Society of Soil Science and, recently, an inaugural 'Eminent Researcher' award from the International Mycorrhiza Society.

Coming Events

Changing lives with science— Envisioning the future of farming

Dr Cheryl McCarthy²⁸ (University of Southern Queensland) and
Dr Laura Boykin²⁹ (University of Western Australia)

Join us this month to hear from Dr Cheryl McCarthy and Dr Laura Boykin about their research revolutionising farming and agriculture in Australia and globally.

Cheryl develops machine vision and sensing systems for agriculture. Her current projects include precision sensing of weeds for the sugar, cotton and grains industries. She has also worked on machine vision (automated imaging) projects for the beef, fodder and macadamia industries.

Laura is a computational biologist who uses genomics and supercomputing to help farmers in sub-Saharan Africa control whiteflies — pests that have caused devastation of local cassava crops. Using genetic data to understand the whitefly's evolution, Laura's research has revealed important genetic differences in various whitefly species.

Refreshments served from 5.30pm, with the talk 6.00pm–7.00pm.

With thanks to our Exclusive Presenting Partner, University of Canberra.

This is the fifth event in a six-part series. Throughout this series we will hear remarkable untold science stories. Join us for tales of innovation, research, breakthroughs, and how science is solving the big challenges of our time. **Visit the academy's event page**³⁰ for more information and tickets to other talks.

Date: Tuesday 15 October 2019

Time: 5.30pm–7.00pm

Location: The Shine Dome

Price: \$15 per person

28 <http://staffprofile.usq.edu.au/profile/Cheryl-McCarthy>

29 <https://research-repository.uwa.edu.au/en/persons/laura-boykin>

30 <https://www.science.org.au/news-and-events/events>



Re:produce workshop

Early bird registrations are now open³¹

Lack of reproducibility of scientific claims has been a recurrent topic in many branches of science and the source of public debate in recent years. Many solutions have been proposed to address specific problems but navigating them and finding effective tools and methods to implement can be a daunting task for researchers and their institutions.

The Re:produce workshop aims to address the challenges of making reproducible science by offering researchers tools that can help make their research more open and verifiable.

Re:produce will be held on 10-11 December 2019 at Customs House, Brisbane. The workshop offers two days of hands-on training in key areas of the reproducibility of science. This is an opportunity for EMCRs to openly discuss the challenges related to the reproducibility of their research and find ways to navigate the tools available to make their research more open and verifiable.

Who is this for?

Early- and mid-career researchers (EMCRs) and PhD students from a range of disciplines interested in

making their research more open, transparent and verifiable.

As a delegate at the Re:produce workshop, you will have the chance to refresh the concepts and tools of the reproducibility of science, engage in meaningful discussions, apply practical solutions to enhance the quality and credibility of your research, and establish valuable connections with researchers from different disciplines.

Limited spaces available. Early bird registrations are currently open and will close on Sunday 27 October 2019.

Mobility grants

Through the Theo Murphy Initiative (Australia), the Australian Academy of Science is offering a number of mobility grants to support a diversity of EMCRs and PhD students to attend the Re:produce workshop.

The mobility grants are designed to offset the expenses associated with attending for those participants who may not be able to attend without support and/or people from traditionally underrepresented demographics.

The mobility grants can be used to cover costs associated with attendance to the event, such as caring responsibilities, travel, accommodation and other

support required to facilitate your attendance.

To apply to be considered for a mobility grant respond to the relevant questions when completing your registration.

Applications for mobility grants are open and will close on Sunday 27 October 2019.

The Theo Murphy Initiative (Australia)

The Theo Murphy Initiative (Australia) supports activities which provide tangible benefits to Australia's early- and mid-career researcher (EMCR) community, with the overall goal of furthering scientific discovery. Activities are managed by the Australian Academy of Science and funds are made available by the generous support of the Royal Society through the Theo Murphy (Australia) Fund.

Changing lives with science—Innovating the everyday: our built environment and transport

Dr Danielle Moreau³² (UNSW Sydney), and a representative of **Seeing Machines³³**

Features of our everyday lives such as driving, flying and noise, are constantly being researched and reconfigured. Join us to hear from two speakers designing, innovating and changing our everyday.

31 <https://aas.eventsair.com/reproduce-workshop/>

32 <https://www.engineering.unsw.edu.au/mechanical-engineering/staff/dr-danielle-joy-moreau>

33 <https://www.seeingmachines.com/about/>

Dr Danielle Moreau is a member of UNSW's Flow Noise Group. She investigates how the flow of fluids creates sound, and how this noise can be controlled. Danielle's research aims to quieten modern technologies such as submarines, wind turbines and aircraft.

Danielle will be joined by a representative of **Seeing Machines**, a Canberra-based company leading the world in driver-machine interaction. They harness ergonomics to create artificial intelligence technology that observes drivers' attention and intervenes seamlessly when necessary.

Refreshments served from 5.30pm, with the talk 6.00pm-7.00pm.

With thanks to our Exclusive Presenting Partner, University of Canberra.

This is the final event in a six-part series. Throughout this series we will hear remarkable untold science stories. Join us for tales of innovation, research, breakthroughs, and how science is solving the big challenges of our time. **Visit the academy's event page**³⁴ for more information and tickets to other talks.

Date: Tuesday 10 December 2019

Time: 5.30pm–7.00pm

Location: The Shine Dome

Price: \$15 per person

34 <https://www.science.org.au/news-and-events/events>