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NEWSLETTER

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Message from the Chief Executive—December 2018

December 20, 2018

As 2018 draws to a close, I'd like to personally acknowledge the generosity of the Fellows of the Australian Academy of Science who tirelessly and generously share their time and expertise to advance science in Australia and internationally.

In this month's newsletter, some of **our award recipients share accounts of what their awards have enabled**[1]. Their experiences make clear the impact and reach of the Academy's awards and medals. This year we are delighted to have been able to build on this by awarding the inaugural Aboriginal and Torres Strait Islander Scientist Travelling Research Award. The award recognises research primarily in the natural sciences by outstanding Aboriginal and Torres Strait Islander PhD students and early- and mid-career scientists. The award is part of the Academy's national effort to improve diversity and inclusion in the sciences.

Our awards rely on the generosity of partners, sponsors and individual donors who make it all possible, and we are deeply grateful for the opportunities they provide.

I wish to congratulate all 45 Australian higher education and research institutions who are working to improve gender equity and diversity, and a special **congratulations to the first cohort of 15 Australian institutions to achieve Athena SWAN Bronze Accreditation**[2]. The Academy is proud to partner with the Australian Academy of Technology and Engineering to support organisations in the STEM sector through our Science in Australia Gender Equity (SAGE) program.

If you're looking forward to a relaxing break this summer and enjoy a good read, make sure you look through the **Fellows' Annual Christmas Reading List**[3]. There's something for everyone in the list, and reading the recommendations is fun in itself!

With the festive season soon upon us, the December newsletter will be the last for 2018. We take a short break with the next edition in February 2019.

Thank you for your readership and support and we wish you a safe and happy Christmas and new year.

I look forward to catching up with you in 2019.

Anna-Maria

Academy welcomes Labor's commitment to science

November 28, 2018

The Australian Academy of Science has welcomed the Federal Opposition Leader's commitment to science and his plan for working with Australia's science and research sector if elected in 2019.

Bill Shorten outlined his vision for science in a speech at the Shine Dome in Canberra this evening.

Academy President Professor John Shine said he was pleased to see

1 https://www.science.org.au/node/10499
2 https://www.science.org.au/news-and-events/news-and-media-releases/fifteen-institutions-recognised-gender-equity-and-diversity
3 https://www.science.org.au/news-and-events/news-and-media-releases/recommended-summer-reading-australias-top-scientific-minds

Leader of the Opposition Bill Shorten outlined his vision for science in a speech at the Shine Dome

Bill Shorten commit to a number of the Academy's recommendations put forward in its **science priorities for the federal election**[4].

The Academy welcomes Labor's commitment to establish a Charter that recognises the mutual obligations of scientists and government and to establish meaningful national priorities.

The Academy welcomes the restoration of the Prime Minister's Science and Innovation Council (PMSIC) and is honoured by the proposal that Labor, if elected, would partner with the Australian Academy of Science to establish a National Scientific Expert Panel to work directly with the PMSIC.

"In our election statement we called for a review to look at how effectively research is being supported because only then can we know that maximum benefits are being returned. So we are pleased Labor has committed to holding an inquiry to build a long term framework for the research sector," Professor Shine said.

"We note and applaud that Academy Fellow Professor Ian Chubb AC FAA will Chair the review and other members will include former Academy President, Professor Andrew Holmes AC FAA as well as other leading scientists, such as Professor Emma Johnston AO and Professor Karen Hussey.

The Academy also welcomes the announcement by Labor to:

- lead a national effort to encourage more women and girls to study and work in STEM;
- recognise the important contribution and role of early and mid-career researchers;
- lift Australian spending on R&D to three per cent by 2030;
- legislate that ministerial changes to Australian Research Council funding recommendations be tabled in Australian Parliament; and
- increase collaboration between public and private industry R&D.

The Academy looks forward to further policies from Labor as well as the Government on how they will deliver a coherent and visionary plan for science to drive the nation's future.

Fifteen institutions recognised for gender equity and diversity efforts

December 05, 2018

Fifteen Australian institutions have been recognised for their efforts to improve gender equity and diversity, receiving the inaugural Athena SWAN Bronze Awards from Science in Australia Gender Equity (SAGE).

The awardees are:

- Australian Nuclear Science and Technology Organisation (ANSTO)
- Baker Heart and Diabetes Institute
- Charles Sturt University
- CSIRO
- Curtin University
- Edith Cowan University
- Griffith University
- Monash University
- Swinburne University of Technology
- Queensland University of Technology
- University of New South Wales
- University of Newcastle
- University of Technology Sydney
- University of Wollongong
- Walter and Eliza Hall Institute

Watch the SAGE Awards Curious video: https://youtu.be/JDkBVlONqAs

4 https://www.science.org.au/news-and-events/news-and-media-releases/earning-our-future-science-priorities-federal-election

The celebratory Athena SWAN Bronze Awards event at Parliament House in Canberra was hosted by journalist Del Irani.

Members of the first SAGE cohort to achieve accreditation were presented with their award at a gala dinner at Parliament House in Canberra.

The South Australian Health and Medical Research Institute, Southern Cross University, University of Canberra, University of Melbourne and University of Western Australia were also recognised for their progress to date towards Bronze Award accreditation and their continued commitment to SAGE.

Cohort One members are the first group of the 45 institutions from the higher education and research (HER) sector to complete the Athena SWAN Bronze process. The remaining institutions are due to complete their accreditation in 2019.

SAGE—a partnership between the Australian Academy of Science and the Australian Academy of Technology and Engineering—was set up to pilot the UK's Athena SWAN Charter and accreditation framework in Australia.

Australia is the third jurisdiction after the United Kingdom and Ireland to implement the Athena SWAN Charter program. Australia has taken a leadership role by piloting the Athena SWAN Charter program, with countries such as Canada and the United States now following Australia's example.

More about SAGE[5]

Recommended summer reading from Australia's top scientific minds

December 12, 2018

There's nothing like fully immersing yourself in a good book—so what do Australia's top scientific minds recommend you read this holiday season?

The Australian Academy of Science's third Annual Christmas Reading List, released today, contains 55 favourite reads submitted by the Academy's Fellows.

Academy Chief Executive, Ms Anna-Maria Arabia, said while some Fellows recommend good reads for exploring science, there are plenty of suggestions for escaping it altogether.

"From politics and history through to spy thrillers and murder mysteries, there's something for everyone on this year's list," Ms Arabia said.

Here's a selection of the recommended reads:

Lab Girl, Hope Jahren
Recommended by Professor Jenny Graves FAA

Brutally honest, passionate and wry account of the author's rather eccentric life and career as a geobiologist. Her insider observations on the secret life of plants parallel her growth as a scientist, her struggles with officialdom, budgets, pregnancy and mental disease. I really empathised, groaned, laughed and cried with her.

The Righteous Mind: Why Good People Are Divided by Politics and Religion, Jonathan Haidt
Recommended by Professor Karl Glazebrook FAA

An extremely interesting take (from 2013) on the 'moral divide' between right and left in politics—and why good people on both sides seem to simply talk past each other. Includes an interesting, controversial claim that people on the left have a more limited moral palette. Not sure I am persuaded by that, but it is thoughtfully argued.

5 https://www.sciencegenderequity.org.au/

The Cellist of Sarajevo, Steven Galloway
Recommended by Emeritus Professor Cheryl Praeger FAA

The book is a profoundly moving account of life in Sarajevo while under siege in the 1990s, from the viewpoint of several residents of the ruined city. The cellist, whom we meet in the first chapter, symbolises the soul of the city as he plays to commemorate those killed.

Scrublands, Chris Hammer
Recommended by Professor Ian Frazer FAA

A murder mystery set in an Australian town, and with more twists than the average murder story. Difficult to put down once you get started. It will keep you guessing right to the end pages.

Old School, Tobias Wolff
Recommended by Professor Wendy Hoy FAA

I need to read this book yet another time to further grasp its subtleties. These are the reflections of a young man on his journey as an aspiring writer competing for acknowledgement in an elite educational environment. The smooth low-key narrative belies the profundity and complexity of content: deliberations on personal morality, class issues at several levels, great human empathy. It is, to quote the review of Entertainment Weekly, 'emotionally devastating'.

Dark Emu, Bruce Pascoe
Recommended by: Professor Jennie Brand-Miller FAA

This book will change forever how you think about Australia and its traditional owners. Pascoe argues forcefully that Indigenous Australians were thriving in an environment that was semi-settled in many parts of the country, with villages of thousands of people and huts up to 15 meters in diameter. The description of a 'fairy-like' burying-ground by the explorer Thomas Mitchell brought me to tears (see page 100).

Other recommendations include:

The Book of Why: The New Science of Cause and Effect, Judea Pearl and Dana Mackenzie
Recommended by Professor Dacheng Tao FAA

How Does Government Listen to Scientists? Dr Claire Craig
Recommended by Anna-Maria Arabia, Chief Executive, Australian Academy of Science

Who We Were, Lucy Neave
Recommended by Professor Peter Doherty FAA

Read the complete Annual Christmas Reading List.[6]

Academy Fellows with their recommended Christmas reads

Emerging Aboriginal and Torres Strait Islander scientists recognised

December 14, 2018

Bradley Moggridge, Tui Nolan, and Amy Searle are the inaugural recipients of the Australian Academy of Science Aboriginal and Torres Strait Islander Scientist Travelling Research Award.

The award recognises research primarily in the natural sciences by outstanding Aboriginal and Torres Strait Islander PhD students and early- and mid-career scientists. It also supports the expansion and growth of each scientist's research networks and international knowledge exchange, through visits to relevant international centres of research.

The award is part of the Academy's national effort to improve diversity and inclusion in the sciences.

The award will allow Mr Moggridge, a PhD candidate at the University of Canberra, to visit New Zealand to learn how Maori culture has incorporated Indigenous knowledge and values into their water management practices.

"I'll be looking at what advantages they have from some of their Treaty settlements. But also, from a legal point of view, from a cultural point of view, what methodologies they've considered to actually make their management of water benefit their tribe," said Mr Moggridge.

Mr Tui Nolan, a PhD student at University of Technology Sydney, will use his award to visit the

6 https://www.science.org.au/files/userfiles/events/news/documents/fellows-christmas-reading-list-2018.pdf

Watch the ATSISTR Award Curious video: https://youtu.be/77APyCq3yJI

Alan Turing Institute in London, one of the world-leading centres in data science. There he will study computational methods that have applications in public health and education.

Mr Tui said he has a passion to share what he learns with the next generation of Indigenous scientists.

"Even more than motivation and pride it's really about responsibility. Encouraging the next generation of Indigenous students to study at university," Mr Nolan said.

Amy Searle, a PhD student at the Baker Heart & Diabetes Institute, is inspired by the impact her work will have for all Australians, especially Indigenous peoples.

"The new therapies that we're developing here might be able to be used in a more rural and remote setting as well. It's reaching Indigenous populations, which is a big driving force for my research," Ms Searle said.

Amy Searle is unable to take up the research and travel component of her proposal but will be attending Science at the Shine Dome in 2019, the annual signature event of the Academy, where she will meet with internationally acclaimed scientists. All awardees are provided support to attend this event to network and attend the various workshops and activities.

This award recognises research primarily in the natural sciences, but also supports interdisciplinary and socio-cultural research that incorporates the social sciences and humanities. **More information about the award.**[7]

Four Fellows appointed to National Science and Technology Advisory Council

December 18, 2018

The Academy welcomes the appointment of six new board members to the National Science and Technology Council including four Academy Fellows: Professor Barbara Howlett, Professor Geordie Williamson, Professor Brian Schmidt and Professor Ian Frazer.

The other new board members are Professor Genevieve Bell and Professor Debra Henly.

Fellows Professor Barbara Howlett and Professor Brian Schmidt (above), with Fellows Professor Geordie Williamson and Professor Ian Frazer, have been appointed to the board of the National Science and Technology Council.

The Council was announced recently by the Federal Government.

Announcing the appointments, the Minister for Industry, Science and Technology Karen Andrews said the members bring an impressive range of expertise to the council.

"The six new members have outstanding records in areas that show how much science and technology matters to our lives—from understanding our universe, to cutting-edge artificial intelligence and productive agriculture, as well as high quality education and healthcare," Minister Andrews said.

Other members of the Council are Prime Minister Scott Morrison (Chair of the Council), Minister Andrews (Deputy Chair), Australia's Chief Scientist Dr Alan Finkel (Executive Officer), and Dr Larry Marshall, the Chief Executive of the CSIRO.

The Academy looks forward to the first meeting of the new National Science and Technology Council in 2019.

Read the Minister's media release[8]

7 https://www.science.org.au/opportunities/travel/travelling-fellowships/aboriginal-torres-strait-islander-scientist-travelling-research-award
8 https://www.minister.industry.gov.au/ministers/karenandrews/media-releases/new-members-appointed-national-science-and-technology-advisory

Watch the Max Day Awards Curious video: https://youtu.be/4E-ymTfQxkw

Australian environmental scientists receive Max Day awards

December 20, 2018

Dr Tim Doherty from Deakin University and PhD student Ms Nicole Foster from the University of Adelaide are the 2019 recipients of the Australian Academy of Science Max Day Environmental Science Fellowship Award.

The award provides up to $20,000 for early-career researchers working on the conservation of Australia's flora and fauna, the ecologically sustainable use of resources and the protection of the environment and ecosystem services.

It is named in honour of Academy Fellow, the late Dr Maxwell Frank Cooper Day AO, who spent a lifetime championing entomology, conservation and forestry, as well as helping other scientists. **He died last year aged 101.**[9]

Dr Doherty will use the award to study the environmental consequences of removing the predators of the large native Australian monitor lizard, Varanus gouldii. Also known as the racehorse or sand goanna, it can cover up to 20 km/hour.

The research will be conducted at Wild Deserts - a fauna reconstruction project at Sturt National Park in north-west New South Wales. Two 20 km2 fenced enclosures have been constructed from which introduced cats and foxes will be eradicated by early 2019.

"We will obtain baseline data on goannas inside the fenced predator-free ecosystem before ecosystem changes accumulate such as increased plant growth, the reintroduction of threatened mammals and changes in invertebrate communities," Dr Tim Doherty said.

"The project will determine how sand goannas change their movement behaviour and habitat use in response to the removal of mammalian predators, and also produce new knowledge on the ecological outcomes of erecting predator-free enclosures in Australia."

Ms Foster will use the award to study innovative approaches to the management of coastal environments

Ms Foster will look at environmental DNA buried in sediment profiles of coastal environments to understand changes in coastal vegetation through time.

"Mangroves, salt marshes and sea grasses capture large amounts of carbon from the atmosphere and this actually helps to prevent global warming. They also provide a large amount of habitat for marine life and birds and stabilise the coastlines against erosion and storm events," Ms Foster said.

"Through this environmental DNA analysis we will be able to see what the natural state of this system is and then tailor conservation goals towards the natural environment."

Three researchers were also 'highly commended' for the Max Day Environmental Science Fellowship Award:

- Ms Anita Perkins from Southern Cross University for her project: Fungi as degraders of kelp detritus: unravelling the role of fungi in coastal carbon cycling and storage;
- Dr Jose Lahoz-Monfort from the University of Melbourne for his project: Acoustic monitoring: new technologies and analytical tools for large-scale monitoring of the threatened Sarus crane; and
- Dr Alexandra Carthey from Macquarie University for her project: - Microbially-mediated olfactory communication in the Anthropocene: a key to the lockbox of problematic captive breeding for conservation?

More information about the Max Day Environmental Science Fellowship Award[10]

Dr Tim Doherty and Ms Nicole Foster are the 2019 recipients of the Max Day Environmental Science Fellowship Award.

9 https://www.science.org.au/news-and-events/news-and-media-releases/one-australias-oldest-scientists-remembered
10 https://www.science.org.au/opportunities/research-funding/max-day-environmental-science-fellowship-award

Dr Vini Gautam, from the Australian National University, is one of 11 EMCRs to collaborate with India through fellowships.

Australian researchers to collaborate with India on science projects

December 20, 2018

The Australian Academy of Science has announced the successful recipients of the Australia–India Strategic Research Fund (AISRF) Early- and Mid-Career Researcher (EMCR) 2019 Fellowships.

The recipients have been selected by the Academy from a competitive field of applicants to conduct research in 2019 at some of India's leading research institutions. They are:

1. Dr Julie Ardley, Murdoch University—Investigation the role of tRAN modification and other molecular determinants of root nodule bacteria tolerance to environmental stresses;
2. Dr Yixiang Gan, University of Sydney—Optimising thermal energy storage with phase change materials: with applications to solar energy storage in Australia and India;
3. Dr Ulf Schmitz, University of Sydney—Establishing an Australian-Indian alliance to find cures for haematological diseases;
4. Dr Sridevi Sureshkumar, Monash University—Molecular mechanisms of epigenetic silencing caused by intronic repeat expansions;
5. Dr Chandan Karmakar, Deakin University—Wearable sensor devices for monitoring chronic disease;
6. Dr Gregory Martin, University of Melbourne—Intensified primary production of protein feed and oils from microalgae;
7. Dr Nisa Salim, Deakin University—Multi-functional carbon fibre composites towards quality assurance, predictive maintenance and in-service damage detection;
8. Dr Sambasivam Periyannan, Australian National University—Building food security in India through rapid incorporation of resistance to devasting cereal rust diseases;
9. Dr Douglas Tait, Southern Cross University—Quantifying the role of groundwater nutrient inputs into the Indian Ocean;
10. Dr Vini Gautam, Australian National University—Nanotechnology meets Neuroscience: novel scaffolds that engineer growth and function of neurons to understand brain disorders; and
11. Dr Vaibhav Shah, UNSW Sydney—Investigating molecular biology of HIV-1 subtype C: implications for the increasing global diversity of HIV-1 subtypes.

The Australia–India EMCR fellowships provide support (up to A$16,500) for Australian scientists to travel to India and work with leading researchers at major Indian science and technology organisations for between one and three months.

The fellowships also facilitate long-term science, technology and innovation collaboration between Australia and India by developing researchers' expertise in international collaboration and fostering long-term relationships between Australian and Indian researchers.

This increases Australian researchers' understanding of Indian culture, particularly science and research practices and systems, while developing leadership skills as future 'science ambassadors' for Australia.

The EMCR fellowships are a component of the AISRF, a platform for bilateral collaboration in science jointly managed and funded by the governments of Australia and India.

This program is supported by the **Department of Industry, Innovation and Science.**[11]

More information about the fellowships[12]

11 https://www.industry.gov.au/funding-and-incentives/science-and-research/collaborating-with-india-on-science-and-research
12 https://www.science.org.au/opportunities/travel/grants-and-exchange/australia-india-strategic-research-fund-emcr-fellowships

A central online system for Commonwealth grant programs?

December 20, 2018

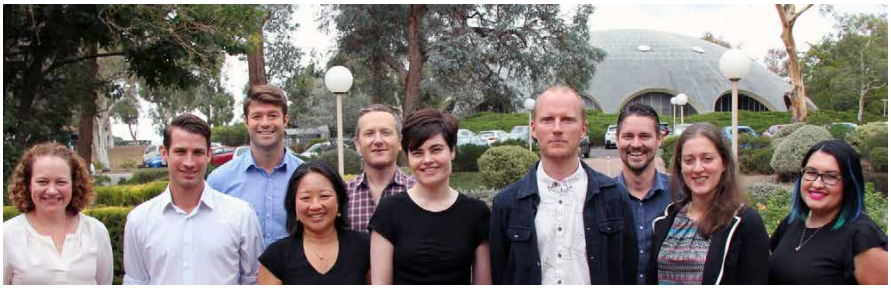
In May this year, then Minister for Employment, Education and Training the Hon Senator Simon Birmingham made a surprise announcement of a **parliamentary inquiry into Australia's research funding system**[13].

The **inquiry's terms of reference**[14] excluded health and medical research but encompassed all other Commonwealth research funding bodies, including the Australian Research Council, the rural research and development corporations, and Australia's international funding programs. There was a strong emphasis on options to improve efficiency and reduce administrative burden.

This announcement was generally welcomed by the sector.

The Standing Committee on Employment, Education and Training was chaired by Queensland Liberal MP Andrew Laming and comprised MPs from both parties and the crossbench.

The consultation process received 97 submissions (**see the submissions from the Academy and the EMCR Forum**[15]) and included four public hearings in Brisbane, Melbourne, Sydney and Canberra. Responses centred broadly on the challenges of excess administrative burden and the quantum of research funding available.



The executive group of the Academy Early- and Mid-Career Researcher Forum. One of the recommendations of the report is to re-weight assessment criteria and grant programs to better support early- and mid-career researchers.

The **Committee's report**[16] was tabled in Parliament on 27 November, making the following 15 recommendations:

1. A single, cross-agency research management system, linking to and pre-populating from existing records (for example, ORCID IDs), with uniform guidelines and documentation, and with a two-stage application process (expression of interest followed by full application)
2. A 'risk-based approach' to post-award variations, allowing universities to make minor changes without seeking approval
3. Introduction of smaller grant funding programs to support pilot and proof-of-concept studies
4. Strengthening the existing peer-review system by providing better training to reviewers, and more detailed feedback to unsuccessful applicants
5. A review of research block grants with a view to better supporting indirect costs of research
6. Allowing non-university research organisations (TAFE, public research agencies and independent medical research institutes) to access competitive grant programs
7. Re-weighting assessment criteria and grant programs to better support early- and mid-career researchers
8. Annual reporting on participation of under-represented groups in grant programs
9. Better mechanisms to support interdisciplinary research
10. Consider a public portal to facilitate academia–industry partnerships
11. A future inquiry to examine international strategies, incentives and models to promote academia–industry collaboration
12. Development of a strategic approach to Australia's open scholarship environment

13 https://www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_and_Training/FundingResearch
14 https://www.aph.gov.au/Parliamentary_Business/Committees/House/Employment_Education_and_Training/FundingResearch/Terms_of_Reference
15 https://www.science.org.au/supporting-science/science-policy/submissions-government/submission-house-representatives-inquiry
16 https://parlinfo.aph.gov.au/parlInfo/download/committees/reportrep/024212/toc_pdf/AustralianGovernmentFundingArrangementsfornon-NHMRCResearch.pdf;fileType=application/pdf

13. Changing the reporting frequency for the ERA and Engagement and Impact Assessment (EIA) programs from three to five years, and reviewing the programs to reduce cost and administrative burden on universities

14. A strategic review of Australia's R&D investment to identify key research priorities, better national and international coordination and adequate investment, including consideration of a 'future or translation fund for non-medical research'

15. Consideration of Australian investment in international research funds such as Horizon Europe.

These are broad recommendations, and despite a number of issues being suggested for further review, if adopted they would have significant impacts on Australia's research sector.

Many are aligned with the Academy and the EMCR Forum submissions to the review, and to the Academy's recently-released science policy platform **Earning our Future and our 2019 election statement**[17].

The Government has not yet formally responded to the Committee's report and recommendations.

'Living the experience'—a Colombian PhD student in Australia

December 20, 2018

Colombian PhD student Jairo Perez came to Australia this year as part of the **Australia–Americas PhD Research Internship Program**[18]. He wanted to expand his mathematical and research skills, and says he was thrilled to travel to 'the land down under'.

Jairo's internship was with RMIT University. For Colombian students, this program was supported by the Australian Government Department of Education and Training's Enabling Growth and Innovation Project Fund and the Colombian Administrative Department of Science, Technology and Innovation (COLCIENCIAS), and was delivered by the Academy.

'It was an enriching time as it opened up other opportunities for me to do science not only in Colombia, but also in Australia,' he said.

Jairo is studying the effects of a new technology on human behaviour; particularly, what would happen if pedestrians could report to police those drivers who do not stop for them at pedestrian crossings.

His research relies on behavioural science, system dynamics, theory of control, optimisation techniques, and sociocybernetics.

Professor of Applied Mathematics at RMIT's School of Science, John Hearne, was his supervisor during his internship and provided all the tools and knowledge he needed to work on sensitivity analysis for social simulations. They used system dynamics, a highly abstract method of modelling that estimates the behaviour of complex problems in time.

During his internship at RMIT, Jairo attended the International Conference of the System Dynamics Society in Iceland to present preliminary results of his work.

'The experience of going overseas, being already abroad, to work on my PhD, brought lots of personal and professional gains to my life. It would have not been possible without the help of my supervisors and the Australian Academy of Science,' he says.

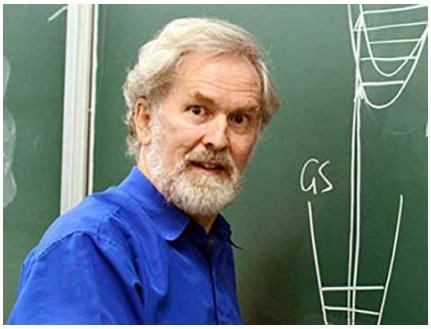
After returning from Iceland, Jairo extended his stay for two months to complement his studies with companies and other universities.

He says the opportunity inspired him to create fresh perspectives of research and try initiatives to evolve and grow not only as a scientist but also as a person.

Jairo Perez

17 https://www.science.org.au/supporting-science/science-policy-and-analysis/position-statements/earning-our-future-platform
18 https://www.science.org.au/academy-newsletter/july-2018-118/academy-starting-point-australia-americas-internship-program

Left: Dr Tim Doherty radio tracking in his study of reptiles in central New South Wales Right: Tim holds a bearded dragon



Professor Jeffrey Reimers FAA

Award recipients share their experiences

December 20, 2018

Margaret Middleton Fund Award for endangered Australian native vertebrate animals

2017 recipient—Dr Tim Doherty, Deakin University

'In this project I studied reptile community abundance and dragon spatial ecology in fragmented farming landscapes containing remnant mallee woodlands in central New South Wales.

Throughout this project I was assisted by 20 volunteers who I trained in field techniques. I also trained an honours student who collected some of the bearded dragon tracking data. I provided regular updates from the field via Twitter, including posting photos of our study area and species. I engaged with local farmers about the study aims and findings. This award enabled me to undertake the radio-tracking component of this research, which otherwise would not have been possible.'

David Craig Medal and Lecture

2016 recipient—Professor Jeffrey Reimers FAA

'Winning the Craig prize provided a wonderful opportunity for me in three respects.

First, I was the last student of Ian Ross FAA, who was also the first student of David Craig. As one of the few remaining active Australian academics to have been strongly influenced by Craig, the medal provided a great opportunity for me to remind Australia about his achievements. I visited 26 institutions, many of which told me that they had never had a Craig medallist lecture there before.

Second, I was able to connect my research with many Australian researchers in physics and chemistry. Good feedback received from many institutions helped me refine my ideas, and extensive discussion following lectures at Latrobe and Griffith universities led to new research projects, one of which was published in Nature Reviews Chemistry, the other in the Proceedings of the US National Academy of Sciences, attracting significant media attention. A clear message from this is that good science in Australia is not just confined to famous people at top-named institutions, but instead happens all over the country.

Thirdly, the Craig medal allowed me to give thanks to all science teachers across Australia for their hard work and inspiration that has led to Australia's strengths in science and technology.'

The Max Day Environmental Science Fellowship Award

2017 recipient—Dr Marta Yebra, ANU

'Thanks to the Max Day Environmental Science Fellowship Award, we have been able to advance our scientific understanding and techniques to relate satellite observations to fuel moisture content. Specifically, the award has allowed me to develop and use our newly developed forest spectroscope. This is a sophisticated instrument that makes detailed measurements of light in wavelengths beyond that visible to the human eye, while at the same time collecting thermal images and laser scans of the canopy. The resulting data have very high spatial and spectral resolution, making it possible to distinguish individual leaves in the canopy.

The award made it possible to simultaneously collect leaf samples for biochemical analysis, which we can then relate back to the spectral measurements. The insights from that will be used directly to create more accurate models to estimate the moisture content of Australian eucalypt forests from satellite observations.

These will further improve the satellite-based fuel moisture

content maps currently already available from our Australian Flammability Monitoring System website. Fire and land managers use this information as inputs in the new National Fire Danger Rating System and for other critical fire management decisions.

Also, thanks to award, I presented my research advances at the 38th annual symposium of the IEEE Geoscience and Remote Sensing Society in Europe in July.'

Boden Research Conference

In May this year, recipients of the Boden Research Conference award, Dr Dana Bergstrom of the Australian Antarctic Division and Dr Justine Shaw of the Centre for Biodiversity and Conservation Sciences, University of Queensland, held a conference on Ecological Surprises and Rapid Collapse of Ecosystems in a Changing World at the Shine Dome in Canberra.

Learnings from the conference included how common rapid ecosystem change is, that a diverse range of ecosystems across Australia (and beyond) are collapsing, and that additive elements are causing major collapse.

There were 85 delegates with 50 oral presentations, 20 given by early- and mid-career researchers. There were more female than male presenters. These targets were achieved by the conveners actively seeking out early- and mid-career female scientists to present their work. The conference offered free child care.

Regular giving

According to fundraising expert Jeff Brooks, about one-third of individual income to professional fundraising charities in Australia comes from regular giving. The Pareto Fundraising Benchmarking 2016 report, which studied the data from 48 different charities, supports this estimate—confirming how an ongoing commitment from donors is crucial for a charity's longevity and stability. The Academy would like to thank our regular donors for their continued support of our work and invite others who might like to donate through regular monthly donations to **visit our website**[19] or contact our Manager Development and Stewardship, Isobel Griffin on 02 6201 9400 to discuss your options for monthly giving.

Thank you to all our valued partners and sponsors, without whose support we could not achieve many of the things we do.

Primary Connections teacher workshops

December 20, 2018

The Primary Connections professional learning team wrapped up its final workshops of 2018 by providing three hands-on, inquiry-based science courses for 92 teachers in new South Wales, Western Australia and Victoria.

To support best practice in professional learning, a discount was offered for additional participants from each school that was taken up by 32 teachers representing 24 schools. This provided an opportunity for teachers to attend in pairs and groups, encouraging collaboration and a whole-school approach to science teaching.

Dr Marta Yebra characterising the spectral response of grasses during a fire experiment in Braidwood. Photo Credit: Carolina Luiz

Participants at 'Primary Connections in a STEM Context', Melbourne.

19 https://www.science.org.au/donate

Participants were inspired by the enthusiasm of Primary Connections' state-based presenters, Nicola Dziadkiewicz and Jennifer Lawrence in NSW, Linda Townend and Helen Addison in WA, and Angela Gigliotti and Sue Mason in Victoria.

As one participant said, 'This is the second PC workshop I have attended this year and I can't recommend them highly enough. Today the energy and enthusiasm, let alone the sheer amount of knowledge from our presenters, made the day zip past and sent me home bursting with enthusiasm and ideas. Thank you for an excellent session.'

The Primary Connections team is delighted to have had the opportunity to deliver these high-quality professional learning workshops to support hands-on science teaching and learning in government, independent and catholic schools in Australia. More to come in 2019!

Fellows awarded NHMRC funding to improve health and combat disease

December 20, 2018

The Minister for Health, the Hon Greg Hunt MP, **recently announced**[20] that 16 Academy Fellows have been awarded funding from the National Health and Medical Research Council. A total of 682 grants will be funded.

The Academy Fellows awarded funds are:

Professor Bostjan Kobe, Professor Melissa Little, Professor David Bowtell and Professor Susan Clark are among 16 Academy Fellows to receive funding from the NHMRC.

Professor David Bowtell,
University of Melbourne
Molecular and spatial characterisation of drug resistance in human ovarian cancer (Project Grant)

Professor Susan Clark,
Garvan Institute of Medical Research
Unravelling the cancer epigenome: mechanisms to translation (Research Fellowship)

Professor David Craik,
University of Queensland
Developing Factor XIIa inhibitors as new leads for preventing thrombosis (Project Grant)

Professor Jozef Gecz,
University of Adelaide
1. Genetics and biology of neurodevelopmental disability (Research Fellowship)
2. TREX nuclear mRNA export and healthy development (Project Grant)

Professor John Gooding,
University of NSW
Building better ex vivo 3D cancer models with 3D printing (Project Grant)

Professor Bob Graham,
University of NSW
Elucidating the genetics and biology of spontaneous coronary artery dissection (SCAD): a life-threatening heart disease of women (Project Grant)

Professor Bill Heath,
University of Melbourne
Immunity to intracellular infections (Research Fellowship)

Professor Bostjan Kobe,
University of Queensland
Molecular basis and inhibition of TIR-domain function in Toll-like receptor and neuronal cell-death pathways (Project Grant)

Professor Sharad Kumar,
University of South Australia
1. Deciphering the mechanisms of caspase-2-mediated suppression of aneuploidy and tumourigenesis (Project Grant)
2. Ubiquitination-regulated sodium homeostasis in kidney disease (Project Grant)

Professor Geoffrey Lindeman,
Walter and Eliza Hall Institute of Medical Research
Centre for Translational Breast Cancer Research (TransBCR): delivering laboratory discoveries to the clinic (Centre of Research Excellence)

Professor Melissa Little, Murdoch
Children's Research Institute
Towards renal replacement tissue from pluripotent stem cells (Project Grant)

20 https://nhmrc.gov.au/about-us/news-centre/more-500-million-research-boost-improve-lives

Professor Geoffrey McFadden,
University of Melbourne
Can we build a genetic trap for drug resistant malaria parasites? (Project Grant)

Professor Patrick McGorry,
University of Melbourne
Transdiagnostic models of classification, intervention and neurobiological research (Research Fellowship)

Professor Stephen Nutt,
Walter and Eliza Hall Institute of Medical Research
1. Understanding the regulation of humoral immunity (Research Fellowship)
2. Understanding plasma cell diversity (Project Grant)

Professor Robert Parton,
University of Queensland
Structural and functional analysis of plasma membrane microdomains in health and disease (Research Fellowship)

Professor Linda Richards,
University of Queensland
Role of spontaneous activity in the formation of functional cortical circuits in vivo (Project Grant)

Academy hosts International Science Council networking events in Australia

December 20, 2018

The Academy hosted the second of two International Science Council (ISC) networking events for 2018 in Melbourne in November.

The event brought together stakeholders and senior Australian representatives with diverse disciplinary backgrounds, including the Australian member of the ISC's inaugural Governing Board.

The event was preceded by a meeting of the Academy's Advisory Committee for International Matters. The committee discussed a range of issues including future directions of the ISC and the Academy's international strategy.

Following these events this year, the Academy is pleased to announce another series of ISC networking events across Australia in 2019. Details will follow in the new year.

As the national adhering organisation to the International Science Council and international scientific unions, the Academy represents Australian science at these high-level international fora and, through its 22 National Committees for Science, works to facilitate engagement and participation by all scientific communities across Australia.

Participants of the ISC networking event in November, held in conjunction with the Academy's Science of Sport public event at AAMI Stadium

Mid-year Budget update—mixed signals for science sector

December 17, 2018

The Academy welcomes the appointment of six new board members to the National Science and Technology Council today including four Academy Fellows: Professors Barbara Howlett FAA, Geordie Williamson FAA, Brian Schmidt FAA and Ian Frazer FAA.

The Academy looks forward to the first meeting of the National Science and Technology Council in the new year.

The Government's mid-year Budget update has mixed signals for science sector.

President of the Australian Academy of Science, Professor John Shine, said while it is encouraging to see a funding injection for regional universities, it is unfortunate that this has been achieved by reducing the University Research Block Grants scheme.

"The Academy notes that research and development funding are in decline and at the lowest levels in 40 years. Economic growth and prosperity will not be achieved by cutting research, a driver of the knowledge economy," Professor Shine said.

The Academy also expressed its disappointment at the absence of funding to support the national rollout of Science in Australia Gender Equity (SAGE), a proven national initiative to support gender equity in higher education and research. SAGE is a partnership between the Australian Academy of Science and the Australian Academy of Technology and Engineering.

Professor Shine said the gender equity measure is the only initiative of its kind that has had a proven impact on a systemic and national scale in Australia.

"Australia has taken a leadership role by piloting the Athena SWAN Charter program, with countries such as Canada and the United States now following our example. The Australian Government's continued support of this pilot would position Australia well and allow the successful pilot to expand into a full national program," Professor Shine said.

The Academy looks forward to both these important measures being addressed in April's Federal Budget. **See the Academy's other science priorities for the 2019 federal election**[21].

Opportunities for scientists—December 2018

December 20, 2018

Volvo Environment Prize

Applications close 10 January 2019

Awarded to people who have made outstanding scientific achievements within the area of environment and sustainability—US$215,000

More information on the Volvo Environment Prize[22]

A.M. Turing Award

Applications close 15 January 2019

Technical award given for major contributions of a technical nature to the computing community—US$1 million

More information on the A.M. Turing Award[23]

Royal Society medals and awards

Applications close 28 January 2019

The premier medals are the Royal Society's most prestigious medals and recognise exceptional and outstanding science. Awards are open to citizens of a Commonwealth country or of the Irish Republic or those who have been ordinarily resident and working in a Commonwealth country or in the Irish Republic for a minimum of three years immediately prior to being proposed. Three of our Premier Awards are open internationally and the Milner Award is open to European citizens and residents of 12 months or more.

More information on the Royal Society Awards[24]

Lefoulon-Delalande Grand Prize

Applications close 29 January 2019

Awarded to scientists who have made important contributions to cardiovascular physiology, biology, or medicine—€500 000

More information on the Lefoulon-Delalande Grand Prize[25]

Welch Award in Chemistry

Applications close 31 January 2019

Awards important chemical research contributions which have had a significant, positive influence on mankind—US$500,000

More information on the Welch Award in Chemistry[26]

See more external awards and prizes[27]

Fellows update—December 2018

December 20, 2018

Honours and awards to Fellows

Professor Geordie Williamson
FAA FRS—2018 Australian Mathematical Society Medal

Donate blood: a gift that's truly special (and doesn't cost anything)

Academy staff are starting a new tradition.

21 https://www.science.org.au/news-and-events/news-and-media-releases/earning-our-future-science-priorities-federal-election
22 http://www.environment-prize.com/the-prize/nominate/
23 https://amturing.acm.org/call_for_nominations.cfm
24 https://royalsociety.org/grants-schemes-awards/awards/premier-awards/
25 http://lefoulon-delalande.institut-de-france.fr/appel-candidature-grand-prix-scientifique-2018
26 http://www.welch1.org/awards/welch-award-in-chemistry
27 https://www.science.org.au/node/361

This year, we're joining the Australian Red Cross Blood Service's Biggest Secret Santa and giving a gift that's truly special: a blood donation. Australia needs around 100,000 donations in December, but with many regular donors away or busy, more people need to give the gift of blood. Blood donations are particularly important for cancer patients, people with serious immune conditions, and women giving birth.

Academy staff have made 40 donations so far this year, 14 whole blood and 24 plasma donations, which have collectively saved 120 lives.

Anyone can donate blood or plasma in the name of the Academy, just let the friendly staff at the Red Cross Blood Service know when you check in for your next appointment.

Interested in learning a little more about plasma and where it goes when you donate it? **Check out our article on Plasma: The liquid gold in your veins**[28].

Academy staff members Lisa Crocker and Elena Hull donating plasma in the lead-up to Christmas.

Hayley Teasdale, from the University of Canberra and recent participant in Falling Walls Lab Berlin, receiving a plasma product for immune deficiency.

28 https://www.science.org.au/curious/people-medicine/plasma-liquid-gold-your-veins