MAY 2019

NEWSLETTER

NUMBER 127

The 22 scientists elected as Fellows of the Australian Academy of Science at Science at the Shine Dome 2019.

Message from the President

May 29, 2019

Fresh from three days of fantastic celebrations at the Academy's premiere annual event, Science at the Shine Dome, we warmly welcome and congratulate our 22 newly elected Fellows.

What stands out among the new Fellows is the collective impact of their science on an international scale.

This week's event marked two significant milestones for the Academy. It is 65 years since the Australian Academy of Science was founded by 23 distinguished scientists, and 2019 also represents the 60th anniversary of the completion of the heritage-listed Shine Dome, the home of the Academy. Over the last few days we have reflected on and celebrated the Academy's past achievements, and also looked to the future.

Diversity and inclusion are key to our future. The Academy's Fellowship must be diverse in every way: spanning scientific disciplines, in gender, in cultural richness, in geographic distribution and in the many other forms of diversity. As we move to nominating Fellows for consideration in the 2020 round, I ask you to consider all the people you know and familiarise yourself with **the Academy's approach to diversity and inclusion**[1]. Please submit your suggested nominees by 30 June 2019.

In this month's newsletter you will also find the Academy annual report which provides a comprehensive overview of the organisation's major successes in 2018. It is a terrific snapshot of the many activities we undertake at the Academy.

Enjoy the May newsletter.

Professor John Shine AC PresAA

1 https://www.science.org.au/fellowship/election-academy

Australia's top scientists elected as Fellows of the Academy

May 27, 2019

An Australian scientist whose research changed international food laws and set infant nutrient recommendations worldwide is among a group of scientists who are being acknowledged for their outstanding contributions to science.

Nutrition researcher, Professor Maria Makrides, is one of eight women among 22 scientists elected a Fellow of the Australian Academy of Science.

This list also includes neuroscientist Professor Lyn Beazley, who has made a major contribution to the advancement of Australian science and was the first female to hold a Chief Scientist role nationally. She joins genetic statistician Professor David Balding, who co-developed a probability formula that has been used in hundreds of criminal cases worldwide to interpret DNA profile evidence.

The new Fellows' pioneering contributions also include research that has underpinned the safe and cost-effective construction of offshore oil and gas platforms; increased our understanding of why people move differently in pain; and provided new insights into the role of DNA that is unrelated to its genetic function.

Australian Academy of Science President, Professor John Shine, congratulated the new Fellows for making significant and lasting impacts in their scientific disciplines.

"These scientists were elected by their Academy peers following a rigorous evaluation process. What stands out among the new Fellows elected this year is the collective impact of their science on an international scale," Professor Shine said.

"As the Academy celebrates its sixty-fifth anniversary, we are committed to acknowledging excellence in science, but we recognise that to achieve this we must celebrate and embrace diversity and inclusion in all its forms.

"We have adopted a range of best-practice measures to ensure that the outstanding contributions of our female scientists are properly recognised. These measures are working with 36% of Fellows elected in the past five years being women, but there is more to do.

"We call on the leaders of the science and research sector to help us identify diversity candidates who have made an outstanding contribution to science, so that they may be considered for election to the Academy in 2020," Professor Shine said.

The new Fellows for 2019 are:

SOUTH AUSTRALIA

- **Professor Maria Makrides**—South Australian Health and Medical Research Institute (nutrition researcher)

WESTERN AUSTRALIA

- **Professor Lyn Beazley**—Murdoch University (neuroscientist)

AUSTRALIAN CAPITAL TERRITORY

- **Dr Surinder Singh**—CSIRO (plant scientist)
- **Professor David McClelland**—Australian National University (physicist)

QUEENSLAND

- **Professor Christopher Barner-Kowollik**—Queensland University of Technology (polymer chemist)
- **Distinguished Professor Peter Corke**—Queensland University of Technology (roboticist)
- **Professor Debra Bernhardt**—University of Queensland (chemist)
- **Professor Paul Hodges**—University of Queensland (medical researcher)

VICTORIA

- **Emeritus Professor David Karoly**—CSIRO (atmospheric scientist)
- **Professor David Balding**—University of Melbourne (genetic statistician)
- **Professor John Hamilton**—University of Melbourne (medical researcher)
- **Professor Kerry Landman**—University of Melbourne (mathematical biologist)
- **Professor Mark Cassidy**—University of Melbourne (civil engineer)
- **Professor Warren Alexander**—Walter and Eliza Hall Institute of Medical Research (medical researcher)
- **Professor Joanne Etheridge**—Monash University (physicist)
- **Professor James Whelan**—La Trobe University (plant scientist)

NEW SOUTH WALES

- **Professor Maria Byrne**—University of Sydney (marine biologist)
- **Professor Alex Molev**—University of Sydney (pure mathematician)
- **Professor Catherine Stampfl**—University of Sydney (physicist)
- **Professor Cynthia Whitchurch**—University of Technology Sydney (microbiologist)
- **Professor Ian Wright**—Macquarie University (plant ecologist)
- **Professor Alexander Zelinsky**—University of Newcastle (engineer)

More information on each fellow[2]

Watch the Academy 65th Anniversary Curious video: https://youtu.be/idZ0mG5Qgll

Academy celebrates great Australian science at the Shine Dome

May 31, 2019

Premiere annual event

The Academy's premiere annual event, Science at the Shine Dome, brought together more than 500 attendees for a three-day event featuring 36 speakers. The event hashtag #ShineDome19 trended on Twitter in Australia, garnering 3,480 tweets with a combined reach of nearly 28 million impressions.

This year we had even more reasons to celebrate, as we marked the 65th anniversary of the Academy and the 60th anniversary of the Shine Dome.

The event kicked off on Tuesday 28 May with a one-day symposium 'Power up Australia, the sustainable way'. Australia's Chief Scientist Dr Alan Finkel delivered a keynote address on 'Scaling up to meet the energy challenge' in which he outlined how we can 'imagine a world which is still magnificent'. This was followed by a series of presentations exploring the role of science in a sustainable energy future.

NSW Science Extension students and teachers meet former astronaut Dr Andrew Thomas.

New Fellow, Professor Maria Makrides, signs the Charter Book.

Dr Dick Manchester, 2019 Matthew Flinders Medallist with Academy President Professor John Shine.

Australian delegates to the 2019 Lindau Nobel Laureate Meeting participate in the event

Dr Alan Finkel, Australia's Chief Scientist gives the keynote address at the symposium

2 https://www.science.org.au/fellowship/fellows/new-fellows/fellows-elected-2019-0

Minister for Industry, Science and Technology the Hon Karen Andrews MP with Dr TJ Higgins, outgoing Secretary, Biological Sciences.

Academy President Professor John Shine at the gala dinner.

Past and present Academy presidents and student Sarah Nelson cut the anniversary cake.

Gala dinner speakers Dr Andrew Thomas and Associate Professor Eva Alisic.

New Fellows

On Tuesday evening, 22 newly elected Fellows were formally admitted to the Academy in recognition of their outstanding achievements in science. Each new Fellow inscribed their names in the Charter Book, joining previous signatories and science luminaries.

Watch the New Fellow diversity encouraged Curious video: https://youtu.be/IRvabLflums

More about the 2019 Fellows[3]

Watch the 2019 Fellows videos[4]

The new Fellows then presented their work on Wednesday 29 May, starting with Professor Alexander Zelinsky, Vice-Chancellor and President of the University of Newcastle. Attendees also heard from Professor Maria Byrne about the impact of warming and acidifying oceans on marine invertebrates.

Wednesday also saw **Australia's ten delegates to the 65th Lindau Nobel Laureates Meeting**[5] gather for a breakfast briefing in preparation for their upcoming travels in June. 'It has been wonderful to meet Australia's leading scientists and to see the incredible breadth of research being done in Australia today,' said Fiona Panther, a Lindau delegate and astrophysics researcher at UNSW Canberra.

Honoured guests

The celebrations continued into the night with the annual gala dinner at the National Museum of Australia, where the (Academy) blue carpet was rolled out for special guests His Excellency the Honourable Sir Peter Cosgrove AK MC (Retd) and Dr Andrew Thomas AO, retired NASA astronaut.

On the final day, the inaugural **Aboriginal and Torres Strait Islander Scientist Travelling Research Awards**[6] were presented over breakfast. Awards presentations continued with 17 remarkable scientists receiving **honorific awards**[7] in recognition of their outstanding research.

More about the 2019 Honorific award winners[8]

Watch the 2019 Honorific videos[9]

3 https://www.science.org.au/fellowship/fellows/new-fellows/fellows-elected-2019
4 https://www.youtube.com/playlist?list=PL9DfJTxCPaXK7nITN3Sz9T4f-L3oMJh7A
5 https://www.science.org.au/news-and-events/news-and-media-releases/top-young-physicists-attend-lindau-nobel-laureate-meeting
6 https://www.science.org.au/news-and-events/news-and-media-releases/emerging-aboriginal-and-torres-strait-islander-scientists
7 https://www.science.org.au/news-and-events/news-and-media-releases/bright-stars-australian-science-recognised-academy-awards-2019
8 https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/honorific-awardees/2019-awardees
9 https://www.youtube.com/playlist?list=PL9DfJTxCPaXIiid2LPD9NgeJyBjECN--j

The event finished up with workshops for early- and mid-career researchers on topics such as leadership development and grant writing.

Diversity and inclusion were recurring themes throughout the event, as the Academy and the science sector as a whole continues to prioritise equity. 'We cannot be excellent if we are not diverse,' Professor John Shine AC PresAA said in his address, 'I encourage leaders to do what they can to actively address the under-representation of women and minorities in the science pipeline and to nominate women and under-represented groups for awards and fellowship.'

For the first time, **Science at the Shine Dome hosted 10 NSW Science Extension students and their teachers**[10] as part of our STEM education program, with support from 3M. 'We are so fortunate to be at an event of this magnitude,' said April Abela from Glenmore Park High School, 'My eyes have been opened up to the work being done around sustainability and renewables.'

Partners

The Academy is grateful to the following organisations that partnered with us to make Science at the Shine Dome 2019 such a successful event.

PRESENTING PARTNER
GALA DINNER

University of South Australia

PRESENTING PARTNER
STEM EDUCATION

3M

PRESENTING PARTNER
EMCR ENGAGEMENT

UniBank

PRESENTING PARTNER
DIVERSITY AND INCLUSION

THE UNIVERSITY OF SYDNEY

GOLD PARTNERS

THE UNIVERSITY OF MELBOURNE

CSIRO

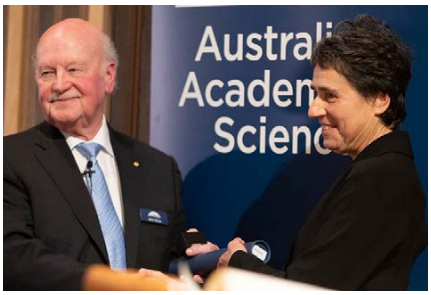
QUT

UNIVERSITY OF CANBERRA

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

Dr Kim-Anh Lê Cao, 2019 Moran Medallist, receiving her award from President Professor John Shine.

New Fellow, Emeritus Professor David Karoly shares his work.



New Fellow, Professor Kerry Landman is welcomed by Professor Shine.

Mr Wally Bell welcomes attendees to Country.

Professor Geordie Williamson, receiving the 2019 Christopher Heyde Medal from Professor John Shine AC.

10 https://www.science.org.au/news-and-events/news-and-media-releases/role-models-count-students-inspired-australias-top-scientists

New Fellow, Professor Joanne Etheridge presenting her work.

New Fellow, Professor Debra Bernhardt.

New Fellow, Professor Christopher Barner-Kowollik signs the Charter Book.

Associate Professor Laura Mackay, 2019 Gottschalk Medallist, Professor Suzanne Cory, former Academy President, and Professor Nicholas Huntington, 2019 Jacques Miller Medallist.

April Abela, NSW Science Extension student, and Ashley Mulcahy, teacher, Glenmore Park High School, speak at the event.

His Excellency General the Honourable Sir Peter Cosgrove AK MC (Retd) speaks at the dinner.

Watch the New Fellow encouraging diversity Curious video: https://youtu.be/K-xjxgKWseg

Support diversity and inclusion in Australian science

May 31, 2019

The Academy is committed to supporting excellence in science. To achieve this, it must celebrate and embrace diversity and inclusion in all its forms.

The organisation is seeking support and assistance in its goal to ensure that excellent Australian researchers are recognised for their contributions. Who could you nominate or encourage to apply for opportunities such as Academy Fellowship and awards?

Academy Fellowship

The Academy is deeply committed to improving the diversity of the Academy Fellowship. Of its 544 Fellows, 80, or 15%, are female. In recent years, it has developed and implemented a range of initiatives to ensure that the outstanding contributions of women in STEM are being recognised. This is having an effect, but there is more to do to achieve true diversity across the Academy.

Twenty Champions of Diversity have been appointed within the Academy as ambassadors across all scientific disciplines. The Champions identify diversity candidates, encourage others to propose candidates for nomination, and support diversity candidates through the Fellowship nomination process.

The Academy's President has invited over 400 leaders in the STEM and tertiary sectors across Australia to suggest diversity candidates. All Fellows are encouraged to nominate diversity candidates.

Find out more about Fellowship[11] or contact us if you have any questions about Fellowship nominations at **fellowship@science.org.au**

Due dates for Fellowship

By 30 June—diversity candidates recommended via **fellowship@science.org.au**

During June and July—Fellows identified to nominate the diversity candidates who have been assessed as suitable for election

By 31 July—new nominations registered by Fellows

By 31 August—full nominations submitted by Fellows

Academy awards

The Academy has a wide range of awards that recognise and support achievements across disciplines and career stages, including for early- and mid-career researchers.

It also funds research and assist researchers by supporting travelling fellowships and conferences.

All women in science are strongly encouraged to consider applying for the Academy's awards, including career honorific awards.

Find out more about awards[12] or contact us if you have any questions at **awards@science.org.au**

Due dates for awards

By 1 June—research awards, research conferences and travelling fellowships

By 1 May—honorific awards (2019 applications closed)

Find out more about diversity and inclusion at the Academy.[13]

Australia's leading scientists look to the future with the Morrison Government

May 21, 2019

The Australian Academy of Science welcomes the newly elected Morrison Government and will work with it to ensure the economy and workforce can benefit from advances in science and technology of the highest quality and intensity.

Academy President, Professor John Shine AC, said the Academy is a Fellowship of the nation's most distinguished scientists who stand ready to provide independent, timely and relevant science advice to government and to the parliament.

The Academy welcomes the Morrison Government's ongoing commitment to have a Science Minister in Cabinet and to their 2017 National Science Statement.

"Science can help inform almost every policy challenge—from solving major national and global challenges to spawning new industries, keeping existing ones competitive, and creating jobs," Professor Shine said.

"Some of these opportunities are laid out in the Academy's 10-year plans for **agricultural sciences**[14], **geography**[15], **women in STEM**[16] and **geosciences**[17], all published within the past 12 months.

"Science offers solutions on adapting to climate change and identifying ways all Australians and the economy can benefit from reducing emissions and meeting Australia's global emissions targets."

The **Academy welcomed**[18] the government's **Advancing Women in STEM strategy**[19] published in April which committed $1.8 million to deliver the next phase of Science in Australia Gender Equity (SAGE), the only national transformative gender equity program of its kind. The Academy looks forward

11 https://www.science.org.au/fellowship/election-academy
12 https://www.science.org.au/opportunities
13 https://www.science.org.au/about-us/diversity-and-inclusion
14 https://www.science.org.au/news-and-events/news-and-media-releases/downward-looking-telescope-will-unlock-australias-mineral-wealth
15 https://www.science.org.au/news-and-events/news-and-media-releases/geography-shaping-australias-future
16 https://www.science.org.au/news-and-events/news-and-media-releases/under-representation-women-stem-holding-back-national
17 https://www.science.org.au/news-and-events/news-and-media-releases/downward-looking-telescope-will-unlock-australias-mineral-wealth
18 https://www.science.org.au/news-and-events/news-and-media-releases/academy-welcomes-government-strategy-advance-women-stem
19 https://www.minister.industry.gov.au/ministers/karenandrews/media-releases/strategy-advance-women-stem

to working with the Morrison Government to progress this important agenda.

The government strategy responds to the issues outlined in the Women in STEM 10-year plan released on 1 April 2019 by the Australian Academy of Science and the Australian Academy of Technology and Engineering.

"We look forward to meeting with the government to discuss science, research and technology priorities," Professor Shine said.

Scientists to work across the Morrison Ministry to ensure science informs policy development

May 27, 2019

The Australian Academy of Science welcomes the reappointment of the Hon Karen Andrews to Cabinet as the Minister for Industry, Science and Technology.

Academy President, Professor John Shine, said Minister Andrews' strong and ongoing commitment and advocacy for science, technology, engineering and mathematics (STEM) is clear.

"A STEM-skilled MP in this portfolio provides the new Morrison government with a minister who has a deep understanding of the issues facing the sector," Professor Shine said.

"We look forward to working with Minister Andrews to implement the STEM measures announced in the Federal Budget in April, including $3.4 million in new funding to support women in STEM."

The Hon Karen Andrews (centre left) at the launch at Parliament House of the Women in STEM Decadal Plan in early April.

The Budget announcement included new funding for the **Science in Australia Gender Equity (SAGE) initiative**[20], which is led by the Australian Academy of Science and the Australian Academy of Technology and Engineering.

"Science underpins so many portfolios—health, water, agriculture, cities, environment, energy, cyber safety, emissions reduction and defence industry," Professor Shine said.

"We will work across the ministry to encourage an evidence-informed approach to policy development in these areas and more."

The Academy also looks forward to working with Education Minister Dan Tehan on STEM education in schools and Foreign Affairs Minister, Senator Marise Payne on the completion and release of the **Soft Power Review**[21].

The Academy congratulates Warren Entsch on his appointment as special envoy for the Great Barrier Reef—a world heritage listed Australian treasure that needs close attention.

Celebrating the iconic Shine Dome's 60th birthday

May 07, 2019

Sixty years ago, on 6 May 1959, the Shine Dome was officially opened as the home of the Australian Academy of Science. It continues to serve that original purpose and is a great source of pride for the Academy. The Shine Dome is both a meeting place for Australia's leading scientists and an iconic building that many people in Australia—and across the globe—recognise.

Reflecting some of the more adventurous architectural ideas of the mid-20th century, the Shine Dome, originally known as Becker House, remains one of the most unusual buildings in Australia. The dome—roof, walls and structure combined—dives down beneath the still water of its moat to give the sense that it is floating.

The Shine Dome's historical and architectural significance led to it being the first Canberra building to be added to the **National Heritage List**[22].

As part of the Canberra and Region Heritage Festival on 5 May, the Academy hosted public tours

20 https://www.science.org.au/supporting-science/gender-equity
21 https://dfat.gov.au/people-to-people/soft-power-review/Pages/soft-power-review.aspx
22 http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail&place_id=019835

Academy staff celebrating the Shine Dome's birthday.

through the Shine Dome, providing an insight into this extraordinary building and the Academy's history. The tours, along with a showing of the film Hidden Figures in the Shine Dome theatre, were sold-out events.

While Academy staff took the opportunity on Monday 6 May to mark the Shine Dome's 60th birthday with a small gathering, our official celebrations of the 60th anniversary of the Shine Dome as well as the 65th anniversary of the formation of the Academy will take place at **Science at the Shine Dome**[23] at the end of May.

Canberra media also marked the anniversary, including **Strange but true facts about Canberra's Martian Embassy**[24] and **Canberra's Shine Dome to celebrate 60th anniversary**[25].

Interested in the Shine Dome as a unique venue for a special event? The Academy welcomes conferences, meetings, art events, weddings, family celebrations and more. **Find out more about the Shine Dome as an event venue**[26].

Watch the Academy 65th Anniversary Curious video: https://youtu.be/idZ0mG5QgII

Academy Fellow elected to United States National Academy of Sciences

May 03, 2019

Professor Jenny Graves and Professor Krzysztof Matyjaszewski have been elected to the US National Academy of Sciences.

Australian Academy of Science Fellow Professor Jenny Graves AO is one of 125 scientists recently elected to the United States National Academy of Sciences (NAS), and the only Australian scientist to be elected this year.

Professor Graves, from La Trobe University, was elected as a Foreign Associate in recognition of her distinguished research in genetics. She is renowned for her pioneering investigation into the genetics of sex, and her work mapping the genomes of the kangaroo and platypus.

"I'm delighted to have been elected into the National Academy of Sciences and to join a group of such world-leading scientists," Professor Graves said.

Professor Graves was elected to the Australian Academy of Science for her seminal work on the mammalian genome. In 2017, she was awarded the Prime Minister's Prize for Science.

Australian Academy of Science Corresponding Member Professor Krzysztof Matyjaszewski, a chemistry researcher at Carnegie Mellon University, was also announced among the new Members of the NAS.

Watch the World without men Curious video: https://youtu.be/TK51QjHzj_Y

Professor Jenny Graves and Professor Krzysztof Matyjaszewski have been elected to the US National Academy of Sciences.

23 https://www.science.org.au/news-and-events/events/science-shine-dome-2019
24 https://www.canberratimes.com.au/story/6095568/strange-but-true-facts-about-canberras-martian-embassy/
25 https://www.canberratimes.com.au/story/6099971/shine-on-you-crazy-dome-science-academy-hq-turns-60/
26 https://www.shinedome.org.au/

Professor Matyjaszewski is known for inventing a method of polymerisation that has spawned a prolific area of chemistry research and practical applications.

Election to the NAS is considered one of the greatest honours a scientist can receive. There are only a handful of Australian scientists among the NAS membership.

Similar to the Australian Academy of Science, the NAS is a private, non-profit organisation. Scientists are elected by their peers for outstanding contributions to research. A maximum of 100 new members, who must be US citizens, are elected each year. Foreign Associates are non-US citizens and only 25 are admitted per year.

The Academy congratulates both Professor Graves and Professor Matyjaszewski for their achievements.

Australian scientist in the running for APEC Science Prize

May 27, 2019

Dr Nicholas Murray is Australia's nominee for the APEC Science Prize for Innovation, Research and Education (ASPIRE).

A researcher whose work assesses the conservation challenges and management risks associated with sea level rise has been chosen as Australia's nominee for the US$25,000 APEC Science Prize for Innovation, Research and Education (ASPIRE).

Dr Nicholas Murray from UNSW Sydney was selected by an expert panel convened by the Australian Academy of Science. He will compete with 20 other scientists from APEC economies for the award.

Dr Murray's work, combining cloud computing and machine learning to analyse vast archives of satellite data, has helped to conserve ecosystems across the Asia-Pacific.

His research on the global distribution of tidal flats – one of the primary costal ecosystems that fringe the Pacific rim - has led to world-heritage listing nominations, the identification of endangered costal ecosystems and the improved protection of species that move through the Asia-Pacific during their annual migrations.

Dr Murray, along with runner-up Dr Peter Macreadie from Deakin University, and the third placed winner, Dr Jenny Fisher from the University of Wollongong, will receive $2,000 each.

Dr Macreadie was recognised for his work on carbon sequestration in coastal vegetated ecosystems ("blue carbon") and Dr Fisher for her work on predicting how atmospheric pollutants respond to environment change.

ASPIRE[27] is an annual award which recognises scientists under the age of 40 from the 21 APEC economies who have demonstrated excellence in scientific research, as well as cooperation with scientists from other APEC nations. Chile is hosting the award this year and chose "Natural Laboratories" as the nominating theme. The winner is expected to be announced in August.

Last year's ASIRE Prize was won by **Associate Professor Madhu Bhaskaran from RMIT University**[28]. She became only the second Australian to win the prize since the award's inception in 2011.

'Role models count'—students inspired by Australia's top scientists

May 30, 2019

The science students and their teachers with Dr Andy Thomas and Academy Chief Executive, Ms Anna-Maria Arabia

The science students and their teachers with retired Astronaut Dr Andy Thomas and Academy Chief Executive Ms Anna-Maria Arabia.

Ten of New South Wales' brightest science students converged on Canberra in May to meet leading Australian scientists.

The new STEM education initiative by the Australian Academy of Science saw the group of Year 12 HSC Science Extension students and their teachers attend the

27 https://www.apec.org/aspire/aspire2019

28 https://www.science.org.au/news-and-events/news-and-media-releases/australian-scientist-wins-apec-aspire-prize

Academy's annual showcase of science, **Science at the Shine Dome**[29], for the first time.

Science Extension is a NSW Higher School Certificate course designed for Year 12 students with an interest in scientific research. It is the only science course of its type in Australia. Students undertake scientific research, in collaboration with a practising scientist to develop research and critical analysis skills and to apply evidence-based decision making.

The Academy's Secretary for Education and Public Awareness, Professor Hans Bachor, said picking only ten students from 67 applications was no easy task.

"It is clear from meeting with this group of students that they are absolutely passionate about science, and after spending three days with some of Australia's top scientists they have left with plenty of inspiration," Professor Bachor said.

"What young people see of STEM professionals shapes their beliefs and career aspirations. The Academy's **Women in STEM 10-year plan**[30] published last month highlights the importance of role models."

The students got the chance to have a Q&A session with Dr Andy Thomas, the first Australian citizen to fly as a NASA astronaut in space.

The ten students and their teachers attended **Science at the Shine Dome**[31] thanks to the generous support of the Academy's STEM education partner 3M. It's Australia Managing Director, Makoto Itoh congratulated the Academy on creating a fantastic program to inspire Australia's future scientists.

"By providing equal opportunity to all NSW Science Extension students and including their science teachers, we're creating a winning formula for success and the advancement of science in Australia," Mr Itoh said.

"In future careers, these students could make their own scientific discoveries and apply them to solve some of life's biggest problems. They could change the world—and that alone is worth its weight in gold."

The ten students are:

Regional NSW

- **Elijah Kinnane**, Bateman's Bay High—researching alternative recycling methods for PET plastics
- **Ella Stephens**, Great Lakes College, Forster—researching genetic technology and the role of PRioN proteins in the development of disease
- **Jade Dedomenico**, Bomaderry High—researching the efficiency and sustainability of algae biodiesel as an alternative to petroleum diesel
- **Liam Flew**, Gosford High—researching the product standards of carbon monoxide detectors
- **Rochelle Hensley**, Aurora Virtual College (Narrabri)—researching how the orientation of solar panels can impact on their efficiency.

Sydney Metropolitan

- **Syed Taimoor Mansoor**, East Hills Boys High—researching the effects of childhood maltreatment on interpersonal relationships during adolescence
- **Katherine Willetts**, Meriden School, Strathfield—researching published data on synaptic activity in the mouse brain
- **Sarah Nelson**, Northern Beaches Secondary College—researching the effect of citrus on the red worm's ability to reproduce in household worm farms
- **Caitlin Wartho**, Pymble Ladies College—researching the effects of urban environments on local water systems
- **April Abela**, Glenmore Park High School—researching the available evidence on the consumption of processed meat and the link to colorectal, prostate or pancreatic cancer.

The Academy acknowledges the generous support of 3M.

29 https://www.science.org.au/news-and-events/events/science-shine-dome
30 https://www.science.org.au/files/userfiles/support/reports-and-plans/2019/gender-diversity-stem/women-in-STEM-decadal-plan-final.pdf
31 https://www.science.org.au/news-and-events/events/science-shine-dome

Watch the Falling Walls Event Curious video: https://youtu.be/lmP-aX3oT5E

Applications open for Falling Walls Lab 2019

May 29, 2019

The Academy invites applications from postdocs and students, entrepreneurs, engineers and innovators to present at Falling Walls Lab Australia 2019 in September.

Falling Walls Lab Australia is an exciting forum for the next generation of outstanding innovators and creative thinkers. It promotes exceptional ideas and connects promising young scientists and entrepreneurs from all fields.

Fifteen applicants will be selected to participate in Falling Walls Lab Australia, each giving a three-minute presentation on their research, business model or initiative based on the concept 'Which walls will fall next?'. The event will be held on 3 September 2019 at the Academy's iconic Shine Dome in Canberra[32].

A jury of distinguished academics and business people will select the winner of Falling Walls Lab Australia and the winner will be automatically admitted to the Falling Walls Lab Finale in Berlin held on 8 November 2019.

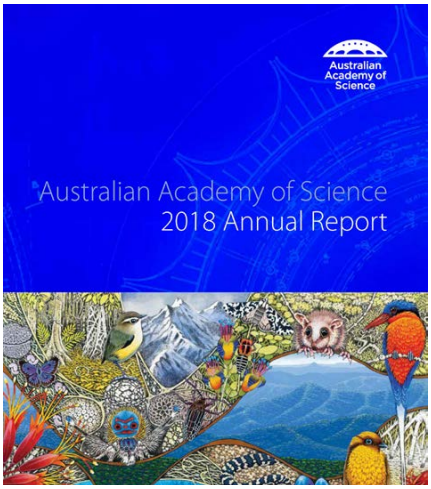
The winner of Falling Walls Lab Australia will have their travel expenses to Berlin and their accommodation costs in Berlin on 8–9 November paid for. The Falling Walls Foundation will cover the winner's attendance at the Falling Walls Conference.

Apply now to be part of this exciting opportunity[33]. Applications close 11 July.

Influence and impact of Academy stronger than ever

May 30, 2019

The Academy's recently published annual report provides a comprehensive overview of the organisation's major successes in 2018.



Guided by its strategic plan and made possible by the participation of hundreds of Fellows, the organisation had a strong focus on diversity and inclusion in everything it did. Major achievements included the launch of the Aboriginal and Torres Strait Islander Scientist Travelling Research Award, recognition of 15 institutions with SAGE Bronze Awards for gender equity and diversity, setting of science priorities for the federal election, reaching 1.2 million followers on Facebook, and publishing major plans to guide the future of taxonomy, geoscience and geography.

Global activities included the S20 meeting in Argentina, supporting the newly formed International Science Council, calling for action on climate change, bringing 40 PhD students from the Americas to Australia, and supporting young scientists to participate in international events.

The Academy delivered many successful events, including a symposium on science and natural disasters as part of its annual

32 Travel and accommodation costs related to the Canberra event are the responsibility of the participants.

33 https://www.science.org.au/opportunities/travel/grants-and-exchange/falling-walls-lab-australia

The Academy's action on diversity and inclusion was evident across its activities. At the SAGE Awards were (from left) Margaret Hartley, Chief Executive Officer Applied, Alison Johns, Chief Executive Advance Higher Education UK, Wafa El-Adhami, Executive Director SAGE, and Anna-Maria Arabia, Chief Executive Australian Academy of Science.

celebration of Australian science, Science at the Shine Dome. It launched a campaign to support brain science in Australia, hosted a conference on the impacts of feral horses on the Australian Alps, and further developed Future Earth Australia.

Its science and mathematics school programs continued to grow, and it produced more than 200 videos and 115 articles for communicating science to a broad audience on social media.

Twenty-one eminent scientists were elected as new Fellows, and two Corresponding Members were welcomed. Many Fellows received top Australian and international honours and awards to celebrate their distinguished achievements.

Find out more about the Fellows' and Academy's achievements in the **2018 Annual Report**[34].

New Theo Murphy Initiative opportunities for EMCRs

May 30, 2019

Five new activities will be funded by the Theo Murphy Initiative (Australia) over the coming year with the aim of supporting Australia's early- and mid-career researchers (EMCRs). The activities will provide tangible career benefits and ultimately further scientific discovery. The five successful proposals include:

- establishing a national LGBTQIA+ STEMM network
- empowering regional research through an EMCR development workshop
- focusing on genomes and biodiversity in the era of big data
- kickstarting the Australian bioeconomy with synthetic biology
- supporting Re:produce through a kick-off meeting of the reproducible research network.

The final two opportunities for EMCRs funded as part of the previous round were delivered in April and May this year.

The 2019 Theo Murphy Australian Frontiers of Science symposium, **Redefining healthy ageing together**[35], was held in Adelaide in April. The symposium brought together EMCRs working on ageing from across Australia to discuss their latest research and spark potential collaborations. The EMCRs also had the unique opportunity to take part in a public engagement session. This involved a conversation with seniors to better understand how researchers can build respectful and valuable relationships when engaging the public as part of their research.

Best presentation winners at the 2019 Theo Murphy Australian Frontiers of Science symposium, Redefining healthy ageing together.

34 https://www.science.org.au/2018-annual-report
35 https://aas.eventsair.com/frontiers-of-science--healthy-ageing/program

The **STEM Transferable Skills Toolkit**[36] pilot program debuted with two workshops at Deakin University and Macquarie University in May. More than 70 EMCRs from these organisations joined the workshops, either face-to-face or online, to learn the key skills required to improve the way they prioritise tasks and manage expectations in the workplace. There are two more workshops scheduled, followed by stage two of the program: online professional development learning modules for EMCRs.

Join the EMCR Forum[37] for updates about the Theo Murphy Initiative (Australia) and more.

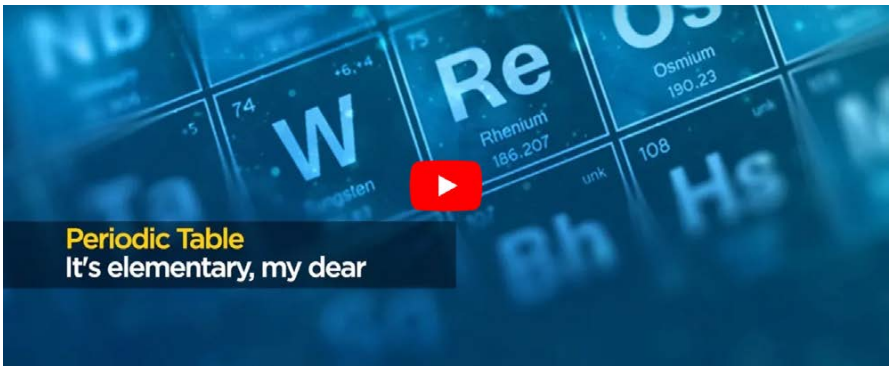
Help kickstart creativity in competition that blends science and art in schools

May 30, 2019

Young Australians have the chance to develop and show their creative talents in a unique competition that is sure to challenge and inspire.

Help the Academy kickstart creativity in 'scienceXart: elements in everyday life', a chemistry-themed art competition for primary and secondary school students hosted by the Academy's National Committee for Chemistry.

If you are a parent or know a young person, encourage them to tell their teacher about this opportunity that is bringing creative perspectives to science. If you are a teacher, see how the resources we provide can contribute to learning outcomes.



Watch the History of the Periodic Table Curious video: https://youtu.be/HFSLdENOPhg

New resources are available that link activities in Academy science education programs **Primary Connections**[38] and **Science by Doing**[39] with the aims of the competition. The resources highlight crossovers of chemical science units and Australian visual arts curriculum outcomes.

There are dozens of suggestions for curriculum-aligned science-and-art activities included, providing a range of fun and engaging activities to create scienceXart entries. These teacher resources are **now available for free download**[40].

The scienceXart (science and art) competition is part of year-long celebrations for the International Year of the Periodic Table and the 100th anniversary of the formation of the International Union of Pure and Applied Chemistry (IUPAC). There are still a few weeks before scienceXart closes—so get the young people in your life and the teachers you know to make the most of this fantastic opportunity.

The competition closes 28 June. You can **sign up to the mailing list**[41] to keep up to date with announcements, or contact **icsu@science.org.au** with any questions.

More information about scienceXart: elements in everyday life[42]

36 https://aas.eventsair.com/transferable-skills-toolkit/
37 https://www.science.org.au/supporting-science/early-and-mid-career-researchers-0/emcrs/emcr-membership-registration
38 https://primaryconnections.org.au/
39 https://www.sciencebydoing.edu.au/
40 https://www.science.org.au/sciencexart
41 https://newsletter.science.org.au/h/i/01B2735E4E5DB11C
42 https://www.science.org.au/supporting-science/national-committees-science/national-committee-chemistry/competition

Virtual reality (VR) has the potential to impact the delivery of healthcare in big ways.

Join us to hear how AI and VR are changing lives

May 30, 2019

Canberra, 18 June

Enthralling tales of breakthroughs and innovation continue at the Shine Dome in June, as the third instalment of 'Changing lives with science' is set to take place. Two engaging speakers will explore the burgeoning world of robots, VR and AI.

Social roboticist and artificial intelligence (AI) expert Distinguished Professor Mary-Anne Williams researches 'disruptive innovation'. She is working with the United Nations investigating the impact of AI on human rights, sustainable development, and peace and security.

Dr Naseem Ahmadpour researches at the interface of design and health. She will discuss virtual reality (VR)—it turns out VR doesn't just make cool video games, but also has the potential to impact the delivery of healthcare in big ways.

Presented in partnership with the University of Canberra, 'The robots will see you now: how AI and VR are changing lives' promises to be a fascinating evening to satisfy your curiosity.

Join us on Tuesday 18 June from 5.30 pm to 7.30 pm at the Shine Dome.

Book your tickets now[43]

More about Changing Lives with Science[44]

Opportunities for scientists—May 2019

May 30, 2019

Academy opportunities

Urgent reminder for travelling fellowships, research awards and conferences

Applications close 1 June for the Academy's travelling fellowships, research awards and conferences.

Travelling fellowships[45]

Research awards[46]

Research conferences[47]

External opportunities

CSL Florey Medal

The CSL Florey Medal is awarded to an Australian biomedical researcher for significant lifetime achievements in biomedical science and/or human health advancement for research conducted primarily in Australia—$50,000

More information on the CSL Florey Medal[48]

Applications close 28 June 2019

2020 Australian of the Year Awards

Australian of the Year awards celebrate the contributions of leading Australians who excel in their chosen field or who make outstanding achievements for the betterment of others.

More information on the 2020 Australian of the Year Awards[49]

Applications close 31 July 2019

Millennium Technology Prize

The Millennium Technology Prize is presented every two years and awarded for a technological breakthrough made anywhere in the world. The innovation shall help to solve the great challenges of humanity while also being environmentally sustainable—€1 million

More information on the Millennium Technology Prize[50]

Applications close 31 July 2019

See more external awards and prizes[51]

43 https://www.eventbrite.com.au/e/changing-lives-with-science-june-tickets-53416065891
44 https://www.science.org.au/news-and-events/events/public-speaker-series/changing-lives-science/changing-lives-science-june
45 https://www.science.org.au/opportunities/travel/travelling-fellowships
46 https://www.science.org.au/opportunities/research-funding
47 https://www.science.org.au/opportunities/conference-and-lecture-funding
48 http://www.aips.net.au/news-events/the-florey-medal/selection-criteria-and-procedure/
49 https://www.australianoftheyear.org.au/nominate/
50 https://taf.fi/millennium-technology-prize/
51 https://www.science.org.au/opportunities/recognition/external-sources-recognition

Fellows update—May 2019

May 30, 2019

Honours and awards to Fellows

Professor Jenny Graves AO FAA—elected to the United States National Academy of Sciences

Professor Krzysztof Matyjaszewski—elected to the United States National Academy of Sciences

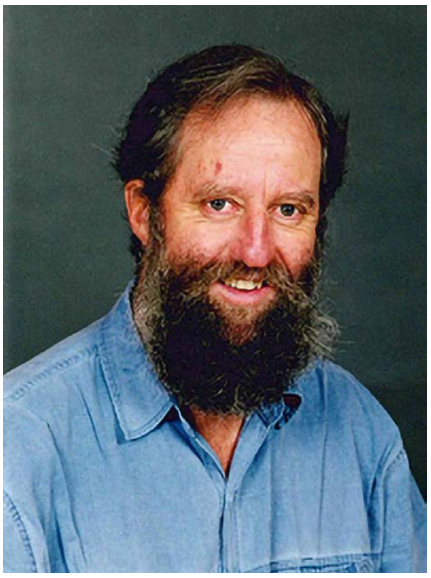
Obituary

Professor John 'Jack' Pettigrew FAA FRS
2 October 1943 to 7 May 2019

Professor Jack Pettigrew was Emeritus Professor of the Queensland Brain Institute and internationally known for his work on the physiology of binocular vision with extensions to the fields of binaural hearing and somatic sensation. Professor Pettigrew also discovered that owls have independently evolved a system of binocular neurons like those found in mammals.

Professor Pettigrew had a great love of nature and in his younger days he was a very keen climber. He and another climber were the first to climb the south-east face of Frenchman's Cap in Tasmania. He was also the first to ascend Ball's Pyramid, the world's tallest volcanic stack off the coast of Lord Howe Island. Following his retirement, Professor Pettigrew continued to pursue his love of the Australian bush and Kimberley rock art which led him to the Tanzanian Plateau, where he discovered in 2012, a new species of African mountain boab[52], Adansonia kilima.

Professor Pettigrew was elected to the Academy in 1987, the same year he was elected to the Royal Society of London. He was an active contributor to the Academy and served as a committee member and as a member of the Academy's Council from 1998 to 2001.



Professor John 'Jack' Pettigrew FAA FRS

52 http://www.abc.net.au/local/stories/2014/01/10/3923776.htm