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AUSTRALIAN ACADEMY OF SCIENCE

Newsletter

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EMCRs rethink food and nutrition

September 11, 2017

Early- and mid-career researchers (EMCRs) gathered in Perth in July to explore the future of nutrition science. Sixty researchers with diverse research backgrounds from Australia and New Zealand critically evaluated nutrition science and identified goals, tools and control points to advance the discipline into the future.

The meeting was dynamic, with regular interactions between the four working groups resulting in revising and redeveloping the program and the path ahead.

Following the event the researchers are continuing to work together to produce a series of discussion papers. These will contribute to long-term strategic planning for nutrition science in Australia being led by the Academy's National Committee for Nutrition.

Rethinking food and nutrition science was the 16th Theo Murphy High Flyers Think Tank event.

> *"There was a very positive vibe throughout the meeting, with ... participants keen to make a positive impact on nutrition in Australia."* *Think Tank participant*

Chief Scientist of Western Australia, Professor Peter Klinken, opening the 2017 Theo Murphy High Flyers Think Tank.

Joint winners at the second Australian Falling Walls Lab

September 12, 2017

PhD student Mortaza Rezae from Curtin University is the winner of the second Australian Falling Walls Lab, hosted by the Australian Academy of Science.

In a surprise announcement, second placed competitor Australian National University's Dr Vini Gautam, will join Mr Rezae to represent Australia at the Falling Walls Lab finale in Berlin on 8 November.

Medhi Saeidi from the Auckland University of Technology placed third in the competition.

Dr William Yan, from the University of Melbourne, will also attend the Berlin finale after being chosen as a wild card entry by the Falling Walls Foundation.

25 Australasian researchers and innovators gathered today at the

The Think Tank is a highly focused event that seeks answers to big issues.

Winners of this year's Falling Walls Lab Australia are Mr Mortaza Rezae (left) and Dr Vini Gautam.

Shine Dome in Canberra to present their work in three minutes on subjects including climate change impacts, quantum computing technology and preventing brain injury in pre-term babies.

Inspired to improve the quality his younger brother's life, who was diagnosed with autism, Mortaza Rezae is working on a mobile application to enable independent public transport access for people with autism.

'Public transport is a minefield of anxiety, distress and sensory overload for people with autism spectrum disorder. My research focuses on enhancing transport accessibly for people with autism to enable them to engage in community and social activities and employment.'

Currently there are no treatments to repair brain damage. Dr Vini Gautam is hoping her technique, using nano-scale scaffolds inserted into the brain as implants, can repair this damage by guiding the neurons to form connections with each other.

The Falling Walls Lab, which began in 2011, provides 'emerging talents, entrepreneurs and innovators a stage to pitch their research work, initiatives or business models to their peers and a distinguished jury from academia and business'. Labs have taken place in 50 countries.

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

More information on the international Falling Walls event: http://www.falling-walls.com/

Academy Fellow wins Eureka Prize for mentoring young researchers

September 07, 2017

Australian Academy of Science Fellow Professor Justin Gooding has been awarded the 2017 University of Technology Sydney Eureka Prize for Outstanding Mentor of Young Researchers.

"Through a program of individualised mentorship, Professor Justin Gooding has trained and developed an all-new breed of research leader in bionanotechnology and nanomedicine," reads the award citation.

"He has focused on developing innovative, entrepreneurial and passionate researchers who

Professor Justin Gooding (centre) has been awarded a 2017 Eureka Prize for mentoring young researchers.

Watch the video at https://www.youtube.com/watch?v=mLyjWaex8jI

become talented mentors in their own right."

UNSW Medicine colleague Associate Professor Till Boecking said Professor Gooding's key strength as a mentor is to create a buzz in the lab where people think big.

"He's able to tailor his approach in mentorship to bring out the best in all of us."

Professor Gooding was elected to the Academy in 2016.

Two other Academy Fellows were also selected as finalists at the Australian Museum Eureka Prizes awards: Professor Gordon Wallace and Professor Tom Davis. Professor Gooding was also a finalist in the ANSTO Eureka Prize for Innovative Use of Technology.

2017 Pawsey Medal winner, Associate Professor Igor Aharonovich, was a finalist in the Macquarie University Eureka Prize for Outstanding Early Career Researcher.

See all 2017 Eureka Prize winners: https://australianmuseum.net.au/2017-eureka-prizes-winners

Young Australian researchers collaborate with emerging scientific superpower

July 06, 2017

Can exposure to relaxing music help in the recovery of patients with heart failure? That is the question Dr Samia Toukhsati, Cardiology Research Fellow at Austin Health, is asking as part of an Australian Academy of Science Australia–India EMCR Fellowship.

Heart failure is a major global public health problem. Up to 60% of patients do not adhere to their prescribed medication, partly due to perceived side effects.

Dr Toukhsati's research aims to reduce the risks associated with poor medication adherence in Indian heart failure patients, through music therapy. The trial builds on recent evidence of a positive effect of music exposure in Indian cardiovascular disease patients. Her co-investigators in the trial are Dr Abraham S Babu and Dr Padmakumar R from India's Manipal University and Kasturba Medical College and Hospital.

Dr Toukhsati is one of four Australian scientists selected by the Academy from a competitive field of applicants to conduct research in 2017 at some of India's leading research institutions.

The other Fellowship recipients are:

- Dr Md Shahriar Hossain (University of Wollongong), investigating superconductors for low-cost fusion power for a

Dr Samia Toukhsati (centre) is being hosted by Dr B Rajashekhar, Dean, School of Allied Health Sciences, Manipal University (left). One of her co-investigators is Dr Abraham S Babu, Dept of Physiotherapy (right).

sustainable future, with the Institute for Plasma Research.

- Dr Vicki Thomson (University of Adelaide), working with the Tata Institute of Fundamental Research to study the disease risk from black rat species in India.
- Dr Mike Williams (CSIRO Land and Water, SA), identifying antibiotic and antimicrobial resistance in the Moosi River near Hyderabad using chemical and biochemical markers, with the Indian Institute of Chemical Technology.

Academy President, Professor Andrew Holmes, said that the Fellowships are an important component of Australia's engagement with global scientific enterprise and serve to strengthen existing ties between researchers in Australia and India, the world's second-most populous country and an emerging scientific superpower.

'These Fellowships support high-performing Australian researchers to work with leading Indian scientists at major institutions. They facilitate greater collaboration between our two countries on science, technology and innovation,' said Professor Holmes.

Australian early- and mid-career researchers are invited to apply now for the 2018–19 Australia–India Strategic Research Fund (AISRF) Early- and Mid-Career Researcher (EMCR) Fellowships.

They provide up to $40,500 for Australian researchers to travel to India and work with leading researchers at major Indian science and technology organisations for a period of between three and nine months. Applications close 11 September 2017.

More about the fellowships: https://www.science.org.au/opportunities/travel/grants-and-exchange/fellowships-india

Academy releases expert review of Australia's climate science capability

August 03, 2017

Australia can improve coordination of national climate science programs to deliver better climate information to farmers and infrastructure planners, and to guide national efforts to mitigate the future impacts of climate change, according to a review by leading scientists.

The Australian Academy of Science report recommends that government consider mechanisms to ensure better coordination of climate research across Australia's universities and climate agencies. It also recommends increasing climate science capability in a number of critical areas, amounting to around 80 new research positions over the next four years.

The review surveyed all of Australia's climate research agencies and centres, including the Bureau of Meteorology, the CSIRO, the Australian Antarctic Division and universities to identify how many Australian researchers are working across the various disciplines and sub-disciplines of climate science, and how well these different areas are performing.

It reports that while Australia is strong in areas such as thermodynamics and extreme weather events, there are some significant weaknesses in areas such as climate model development. This includes the Australian Community Climate and Earth System Simulator (ACCESS), micrometeorology (the branch of meteorology that deals with weather conditions on a small scale), boundary layer dynamics (the dynamics of the lowest part of the Earth's atmosphere) and the modelling of two-way human/climate interactions.

The report found that there are around 420 dedicated climate scientists across all of Australia's universities and research agencies, with their research providing constant improvements in weather prediction and climate models in Australia and throughout the world.

- Read the Academy's full media release: https://www.science.org.au/news-and-events/news-and-media-releases/review-australias-climate-science-capability-reveals-mixed-picture
- Read the review: https://www.science.org.au/support/analysis/reports/australian-climate-science-capability-review
- Find out more about climate change: https://www.science.org.au/learning/general-audience/science-booklets-0/science-climate-change

The area most in need of attention is climate modelling, where critical under-resourcing means that Australia's climate models are failing to keep pace with world's best practice. To address this issue, the review estimated that around 30 new climate modellers and scientists would be needed over the next four years.

Other key recommendations from the report include ensuring the work of the Antarctic Climate and Ecosystems Cooperative Research Centre is funded beyond 2019 and that a broader review of climate-related research capabilities is undertaken by the Australian Government.

Mentoring inspires donation to honour outstanding Earth sciences research

July 14, 2017

The Academy's Anton Hales Medal has so far rewarded the extraordinary achievements of nine early-career researchers who are studying our planet.

The Anton Hales Medal gives career encouragement to young earth scientists.

The medal is named in honour of the late Professor Anton Hales FAA. Originally from South Africa, the geophysicist's impressive career spanned three continents and covered nearly nine decades.

The first recipient in 2009 was Professor Jeffrey Walker, a leading Australian expert on the remote sensing of soil moisture.

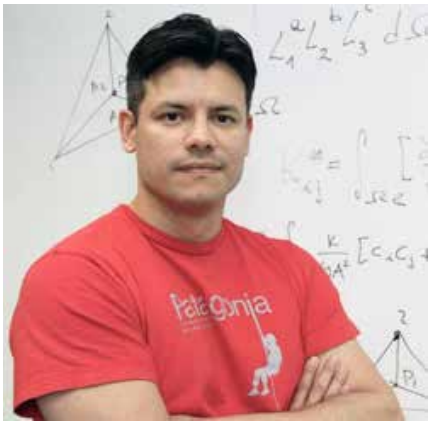
Walker has gone on to make further significant contributions in the field, including developing algorithms to derive high resolution soil moisture imagery from the Soil Moisture Active Passive (SMAP) satellite of NASA. The orbiting observatory measures the amount of water in the top five centimetres of soil everywhere on Earth's surface.

The ninth and most recent recipient of the Medal is Associate Professor Juan Carlos Afonso. He is at the forefront of revolutionising the way that geoscientists interpret the signals they obtain from deep in the Earth by geophysical methods.

The other recipients were rewarded for their research into fossil records, seismic data, global climate, the evolution and dynamics of the solid Earth, weather, groundwater, and seabed sediments.

Professor Hales moved to the Australian National University from the United States as foundation Director of the Research School of Earth Sciences at the age of 62.

Professor McDougall was one of the first members of staff recruited to Hales's new school, where they worked together over the following decades. Like Hales, McDougall is also an internationally distinguished Earth scientist.



Associate Professor Juan Carlos Afonso was awarded the medal in 2017.

Following Hales's death in 2006 at the age of 95, a gift from the McDougalls saw the establishment of an award named in his honour.

Known for his capacity for mentoring, the award not only honours Hales but gives career encouragement to young Earth scientists.

Find out more about the Anton Hales Medal: https://www.science.org.au/opportunities-scientists/recognition/honorific-awards/early-career-awards/anton-hales-medal

Find out more about supporting the Academy: https://www.science.org.au/about-us/support-us

Tri-nation gender equality recommendations released

July 10, 2017

A workshop convened in India late last year by the Australian, Indian and UK governments has led to the publication of cross-national recommendations for achieving gender equality in STEMM. The recommendations are designed to progress work done individually and collectively by the partner nations and recognise the diversity and inclusion benefits to all.

Workshop attendees identified recommendations for each country to action either individually or collectively:

1. Develop a proposal to the Indian Science Academies' inter-academy panel to introduce an Athena SWAN framework to India
2. Develop a strategy to leverage corporate social responsibility to support female internships across all three countries
3. Develop a common set of messages for a digital campaign to promote women in STEMM across Australia, India, and the United Kingdom
4. Consider developing a proposal to expand trilateral cooperation on promotion of Women in STEMM to the Commonwealth
5. Strengthen coordination and development of and support for bespoke professional leadership programs for Women in STEMM
6. Build an entrepreneurial support network under the STEMM professional and academic associations in India, Australia, and the United Kingdom
7. Explore opportunities for University/Industry collaboration between India, Australia, and the United Kingdom
8. Identify common gender STEMM regional and international data sources that provide consistent, systematic reporting of gender data and are available for the three countries.

Read the full report: https://www.science.org.au/files/userfiles/events/news/documents/women-in-stemm-india-summary-report-2016.pdf

Academy welcomes state and territory commitments to zero carbon emissions

July 13, 2017

The Australian Academy of Science has welcomed commitments announced today by the Victorian, Queensland, South Australian and ACT governments to achieve net zero carbon emissions by 2050.

These commitments are consistent with the 2015 Paris Climate Accord committing 195 countries, including Australia, to action on climate change.

In particular, the Paris Accord marked international agreement that limiting global warming to

Photo by Karsten Würth

1.5–2.0 degrees above pre-industrial levels would require the world to achieve zero carbon emissions by the second half of the century, and reduce absolute levels of atmospheric carbon thereafter.

Australia is one of the highest per-capita emitters in the world, and our coastal infrastructure, agricultural and health sectors, and national treasures such as the Great Barrier Reef, are highly vulnerable to climate change.

The Academy has previously called on Australian governments (https://www.science.org.au/supporting-science/science-policy/submissions-government/response-setting-australias-post-2020) to implement policy measures to reduce carbon emissions over the coming decades with the ultimate goal of reaching net zero carbon emissions by 2050, and the announcements by the three state premiers and the chief minister today are a very welcome commitment to achieving this goal.

Find out more about the science of climate change: https://www.science.org.au/learning/general-audience/science-booklets-0/science-climate-change

Moran awardees to research attitudes to GM science and Australia's historical weather records

August 25, 2017

Melbourne climatologist Dr Linden Ashcroft and Adelaide PhD student Ms Kelly McKinley are the joint winners of the Australian Academy of Science's 2018 Moran Award for History of Science Research.

Dr Ashcroft will use the Moran Award to explore the motivations behind some of Australia's earliest weather observers, while Ms McKinley will explore Australian public attitudes towards genetic modification (GM) from the 1970s to the present.

Dr Ashcroft will work with pre-1900 weather observations to uncover the Australian climate prior to the formation of the Bureau of Meteorology in 1908.

"Historic datasets are vital for understanding the natural variability of our climate and putting human-induced climate change in a long-term context," Dr Ashcroft said.

"However numerical weather records are only half of the story. Understanding why and how weather observations were taken is a crucial part of assessing data reliability."

Dr Ashcroft hopes to uncover the motivations behind some of colonial New South Wales' most dedicated weather observers. Learning why they persisted in keeping regular, detailed weather readings for decades in a foreign landscape will help determine the scientific value of their data.

She will examine manuscript material at the State Library of New South Wales and the Sydney Observatory to better understand the dedication of 19th century 'citizen scientists'.

Ms McKinley will use the award towards her PhD project: 'A history of activism and public attitudes in Australia towards genetic modification (GM) science in agriculture and food production'. The project is part of a larger Australian Research Council grant.

Dr Linden Ashcroft (top) and Ms Kelly McKinley, joint winners of the 2018 Moran Award for History of Science Research

Ms McKinley hopes the exploration of how the Australian public have engaged with GM over time, using archival materials at the National Library, will help inform strategies for civic engagement, science communication and government policy around the issue.

The 2018 Moran Award for History of Science Research is aimed at postgraduate students and other researchers with expertise in the history of Australian science. Its purpose is to support access to archives that record the history of science in Australia, especially by younger researchers.

Find out more about the Moran Award for History of Science Research: https://www.science.org.au/opportunities/research-funding/moran-award-history-science-research

Celebrating the history of women in science

September 04, 2017

The Academy has produced a special online edition of the Academy's journal 'Historical Records of Australian Science' celebrating the history of women in science.

As in other national academies of science, there were no founding women Fellows in the Australian Academy of Science in 1954. Geologist and paleontologist Dorothy Hill became the first female Fellow of the Academy in 1956. The rate of fellowships began to pick up in the 1990s, and by 2000 new female Fellows were admitted every year, with the aim now for the Fellowship to reflect the diversity of senior academic appointments in Australia, and the diversity of society more broadly.

In this special online edition the Academy celebrates the history of women in science with articles previously published in the journal on notable women scientists. These articles are freely available for three months so any member of the public who is interested can access them.

The special edition was published to align with a recent national symposium hosted by SAGE—Science in Australia Gender Equity. A report on the symposium will be published soon.

More information on the special edition of Historical Records of Australian Science: (https://www.science.org.au/news-and-events/news-and-media-releases/celebrating-history-women-science)

Four new institutions join Science in Australia Gender Equity initiative

September 05, 2017

Momentum to improve gender equity and diversity in Australia's higher education and research sector continues to build with four new institutions joining The Science in Australia Gender Equity (SAGE) Initiative pilot of the UK-based Athena SWAN accreditation program.

The new participants are the Australian Institute of Marine Science, Murdoch University, Geoscience Australia and the University of Adelaide. The announcement will be made by Professor Hugh Bradlow, President of the Australian Academy of Technology and Engineering (ATSE) at the 2017 SAGE symposium today.

The new additions brings the total number of participants to 44, with 32 universities (representing 88% of Australian universities), six medical research institutes and six publicly funded research agencies joining the SAGE Pilot Program.

Executive Director of SAGE, Dr Wafa El-Adhami, said the addition of four new members reflects a strong commitment to reversing gender inequality and supporting diversity through effective systematic solutions like Athena SWAN.

"It is also a testament to the sector's confidence in SAGE and our service," Dr El-Adhami said.

Geoscience Australia's Chief Executive Officer, Dr James Johnson, said their organisation was inspired by the UK experience in implementing the Athena SWAN Charter, which has shown accredited organisations have a significant competitive advantage when it comes to attracting first-rate scientists.

"Our involvement in this program is a fantastic next step in our efforts to make our workplace more inclusive for everyone and to further Geoscience Australia as an organisation of scientific excellence and an employer of choice," Dr Johnson said.

Murdoch University Deputy Vice Chancellor Education, Professor Romy Lawson, said their university is proud to be advancing the careers of women in higher education and research through participation in the pilot.

"This is an important step for our university in supporting a diverse and highly talented workforce," Professor Romy Lawson said.

The SAGE initiative is a partnership of the Australian Academy of Science and ATSE. Institutions participating in the SAGE Pilot undergo an intensive two-year program of data analyses and review of policies and practices with the aim to develop actions that address the issues and barriers identified within the institution.

Find out more about the SAGE initiative: http://www.sciencegenderequity.org.au/about/what-is-sage/

Roadmap to accelerate Australian minerals exploration and unlock a trillion dollar prize

August 16, 2017

Australia needs new geoscience, technology and infrastructure to reverse the decline in the rate of discoveries for base and precious metals and deliver Australia's major new mines of the future, according to a report released today.

The AMIRA Roadmap for Exploration Under Cover—Stage 1 lays out a 15-year roadmap that will fundamentally transform our ability to find non-bulk mineral resources such as copper and gold under the majority of Australia's landmass.

"Mining continues to be a major contributor to the nation's GDP, with over $29 billion contributed during 2015-16," said Joe Cucuzza, Managing Director of AMIRA International.

"The sector also generated 50% of the nation's export earnings. The need for minerals will increase as renewable energy generation, electric and autonomous cars and consumer technologies all require huge amounts of these minerals," said Mr Cucuzza.

"Australia is likely to have significant undiscovered wealth hidden away beneath the 'covered' areas of our continent. This Roadmap spells out the new data, knowledge and technologies that we need to significantly reduce the uncertainty and risk in exploring and finding these essential resources. This will replace what we are currently mining and ensure that Australia remains a major exporter into the future," he said.

The Roadmap was developed to progress the vision of the UNCOVER AUSTRALIA initiative, established by the Australian Academy of Science in 2012.

Academy Fellow and Chair of UNCOVER AUSTRALIA, Dr Phil McFadden AO FAA, said Australian and international minerals companies are moving their exploration investments offshore because they have already discovered most of the economically-viable deposits in the 30% of Australia's land-mass where they occur near the surface.

"The challenge now is to develop the scientific knowledge and the new technologies that are necessary to increase the chances of finding economic deposits in the 70% of Australia that is covered by moderate or deep sediment," Dr McFadden said.

"The demand for base and precious metals is increasing rapidly. With the growth in renewable energy for example, we'll need more copper in the next 15 years than we've used in all of human history.

"We're likely to have trillions of dollars of viable deposits of these minerals, and by investing in the science needed to find them, Australia has the opportunity to re-establish itself as a world leader in minerals exploration and ensure strong economic growth for our future."

The AMIRA International Roadmap is the result of three years of extensive consultation with minerals companies large and small, METS (mining equipment, technology and services) suppliers, federal, state and territory geological surveys, CSIRO and universities, to work out exactly what is needed to increase the success of minerals exploration in Australia.

It was supported by 53 organisations coordinated by AMIRA International and launched this morning at Parliament House in Canberra by West Australian Senator Linda Reynolds CSC (representing the Minister for Resources and Northern Australia) and Senator Kim Carr, Shadow Minister for Innovation, Industry, Science and Research.

Find out more about the AMIRA Roadmap for Exploration Under Cover—Stage 1: http://www.amirainternational.com/WEB/site.asp?section=activities&page=ExplorationUnderCover

One of Australia's oldest scientists remembered

August 03, 2017

At the ripe old age of 97, the late Dr Max Day AO FAA was still contributing to science, helping to uncover the mystery behind the scribbles on gum trees, considered by many to be an icon of the Australian bush.

Dr Day, who died on Monday 31 July at the age of 101, spent a lifetime championing the study of insects (entomology), conservation, the environment, and forestry. His research also played a major role in controlling Australia's rabbit problem.

Dr Day was born in Sydney in 1915. He studied science at the University

of Sydney and was awarded the university medal in 1937, graduating with a bachelor's degree in science.

An ecologist and entomologist who collaborated with Australian greats of both disciplines, Dr Day was a member of the CSIRO Executive for eleven years, during which he was responsible for all the CSIRO Divisions dealing with plant and animal sciences.

Dr Day was the first Chairman of the Australian Institute of Marine Science, and coordinated the report that led to the establishment of the Institute near Townsville, North Queensland. He was the founding Head of CSIRO's Division of Forest Research for five years which led to Australia's international recognition for its contribution to forest research.

Dr Day also worked extensively with the CSIRO insect collection. His passion for studying insects is perhaps best described in an interview he gave with Academy Fellow Professor Robyn Williams AM FAA in 2015 (http://www.abc.net.au/radionational/programs/scienceshow/max-day-oldest-australian-scientist/6998612).

"Insects, there are so many of them. It's a field which goes on forever."

He applied his work on insect hormones and insect digestion to a critical study of how animal and plant viruses are spread by insects. Dr Day worked with Academy Fellow and virologist Professor Frank Fenner AC FAA FRS to control Australia's wild rabbit population using the virus that causes myxomatosis, a project he described as the most satisfying achievement of his career.

A young Max Day

Dr Day with Dr Marta Yebra, a recipient of the inaugural Max Day Environmental Science Fellowship, in May this year.

"The government introduced myxo into Australia in 1950 to control rabbits as they had become a serious problem across the country," he told his Academy colleagues in 2015 (https://www.science.org.au/academy-newsletter/australian-academy-science-newsletter-100/100-years-dr-max-day).

'Frank, who I had never previously met, approached me at a meeting here in Canberra and said: 'We believe myxomatosis might be mosquito-borne. Would you be interested in taking on the mosquito side of it while I do the biology?', and so for the next five years Frank and I worked on the transmission of the myxo virus."

Elected to the Australian Academy of Science in 1956, just two years after the Academy was founded, Dr Day was the Academy's longest serving Fellow and one of Australia's oldest scientists. He told his Academy colleagues that he still clearly recalls watching the then Prime Minister Sir Robert Menzies lay the foundation stone for what is now known as the Shine Dome in 1958.

Dr Day was one of the founding members of the Australian Conservation Foundation, a strong supporter of national parks, and was made an Officer of the Order of Australia (AO) in 1977.

In 2012 aged 97, Dr Day co-authored a paper with Dr Marianne Horak and others about the *Ogmograptis* scribbly gum moth, describing eleven new species of the moth. Even more remarkable was the recognition that different species made different scribbles.

The author of the Snugglepot and Cuddlepie books, May Gibbs, made scribbles a feature of the gumnut babies' world, and the great Australian poet Judith Wright cemented their place in literary culture with her 1955 poem Scribbly-Gum.

Dr Day and his co-authors found that the patterns are made by the moth's various developmental stages, and change according to the stage.

"The eggs are laid on the bark and the caterpillar burrows in and then just goes around making scribbles," Dr Day said in his 2015 interview with Professor Williams.

In May this year, Dr Day presented two early-career researchers, Mr Nicholas Leseberg and Dr Marta Yebra, with inaugural Max Day Environmental Science Fellowships, established in his honour.

Through sponsoring this award Dr Day acknowledged the support that he himself received as a young researcher to travel overseas to gain his PhD at Harvard.

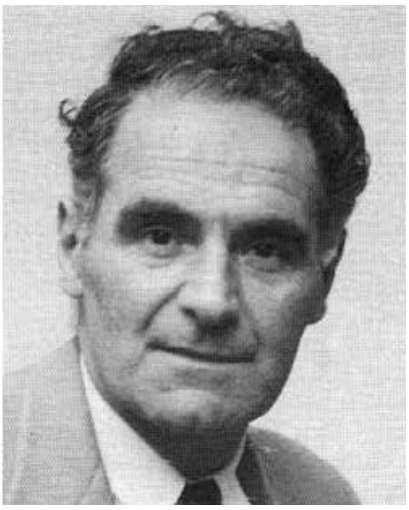
Find out more about Dr Day's life and work: https://www.science.org.au/learning/general-audience/history/interviews-australian-scientists/dr-max-day-ecologist.

Medals for three honorific awards

September 11, 2017

The Academy is calling for design suggestions, portraits, images or wording to be considered in the design of medals for three of its honorific awards.

The Le Fèvre Memorial Prize, the Dorothy Hill Award and the Frederick White Prize medals will be designed and minted by the Royal Australian Mint for presentation to awardees in 2018. This means that



(L to R) Dorothy Hill, Frederick White and Raymond Le Fèvre.

all of the Academy honorific awards will have Academy medals associated with them.

If you'd like to contribute to the design, contact the Awards Officer by the end of October on awards@science.org.au or phone +61 2 6201 9407.

More about the Academy's honorific awards: https://www.science.org.au/opportunities-scientists/recognition/honorific-awards

International news—September 2017

September 08, 2017

Lindau 2018 applications now open

Applications for the 68th Lindau Nobel Laureates Meeting with Nobel Laureates from the field of physiology or medicine are now open. Applications for Lindau close 3 October 2017.

The successful candidates will receive a grant-in-aid from the Academy up to $6,750 towards travel and accommodation costs.

More about Lindau: https://www.science.org.au/opportunities/travel/nobel-laureates-meetings/lindau-nobel-laureates-meetings

Postdoctoral Fellowships for research in Japan

The Academy invites applications from Australian researchers for the Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellowships commencing between 1 April and 30 November 2018.

Applications for the fellowships close 30 October 2017.

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

Candidates must hold a doctorate degree when the fellowship goes into effect, which must have been conferred within six years prior to 2 April 2018. Alternatively, candidates should be scheduled to receive a doctorate degree before the fellowship commences. MD (medical doctor) holders without a PhD are not eligible. Applications are invited from suitably qualified researchers in any field of natural sciences (including technology, engineering and medicine), the humanities and social sciences.

More information and application form: https://www.science.org.au/opportunities/travel/grants-and-exchange/japan-society-promotion-science-fellowships

Summer program for graduate students expands

In June, 11 PhD students from Brazil and Mexico joined 21 students from the US in an expanded version of the summer program for graduate US students that the Academy has been coordinating since 2004.

The students were introduced to Australian culture and science during an orientation program in Canberra, with visits to the National Gallery of Australia and Parliament House, and learned about Australian geography and topography, wildlife, bush tucker and Australia's Indigenous history at Tidbinbilla Nature Reserve.

> *"Based on my experience here and the connections I have made, I am very interested in future PhD work based in Australia... Participating in this program as a masters student has been critical for my current and future success. I expect much of my career will be traced back to these 10-weeks—this is likely to become a turning point in my professional life!"*
> *Ms Amber Datta, University of Montana*

They then travelled to cities around Australia to undertake two-month research projects at host institutions, including universities, CSIRO and Museum Victoria. Research areas ranged from investigating early career decisions by women in academia to analysing the use of drone technology to address key knowledge gaps in the life histories of sea turtles.

Science is too vast for any individual, institution or nation to go it alone, with the global nature of some challenges only possible to address through international efforts. For many of the students, this was the first time that they had travelled outside of their home country and certainly the first time they had had the opportunity to experience life in an Australian research environment. Programs for early- and mid-career researchers, such as this one, are

32 PhD students from Brazil, Mexico and the US participated in the expanded 2017 summer program.

crucial to opening the door to international collaborations.

Women in Science and Engineering, Asia

Academy Fellow and Foreign Secretary, Professor Cheryl Praeger, chairs the Committee on Women in Science and Engineering (WISE) in the Association of Academies and Societies of Sciences in Asia (AASSA). Professor Praeger has finalised membership of the WISE committee with representatives from China, Georgia, Japan, South Korea, Malaysia, Nepal, Pakistan, the Philippines, Russia, and Sri Lanka.

Fellows update—September 2017

September 08, 2017

Honours and awards to Fellows

Professor Brian Kennett FAA FRS: 2017 Inge Lehmann Medal of the American Geophysical Union for outstanding contributions to the understanding of the structure, composition, and dynamics of the Earth's mantle and core. This is the first time the award has gone to someone who has not held an academic position in the US and only the second time to be awarded outside the US.

Emeritus Professor John Pate FAA FRS: inducted into the Western Australian Science Hall of Fame, for greatly influencing plant science, particularly plant ecology and physiology, in Western Australia.

(from left) Professor Brian Kennett, Emeritus Professor John Pate and Professor Justin Gooding

Professor Justin Gooding FAA: 2017 University of Technology Sydney Eureka Prize for Outstanding Mentor of Young Researchers.

Obituaries

Dr Maxwell Day AO FAA 1915 to 2017

Dr Max Day was a distinguished biologist, with an international reputation for his fundamental contributions to insect physiology. He later applied his work on insect hormones and insect digestion to a critical study of the mechanisms of transmission of animal and plant viruses by insects. Dr Day worked with Professor Frank Fenner AC FAA FRS on the myxoma virus, and was recognised as an extremely learned and productive biologist who championed entomology, conservation and forestry throughout his lifetime. Sir Gustav Nossal AC FAA FRS FTSE described Dr Day as 'the driving force behind the Academy's involvement in the environment'.

Dr Day was very actively involved in the Academy and served on and chaired Sectional Committees for Biological Sciences and Animal Sciences since the early 1960s until the mid-1990s, the Fenner Conferences on the Environment during the 1970s and 1980s, the Boden Research Conferences during the 1980s and numerous other committees and funds over several decades. He was also a member and Chair of the Editorial Board of the Records of the Academy, the Basser Library and the Publications committee on several occasions over many decades.

Dr Day co-authored his final scientific paper on the *Ogmograptis* scribbly gum moth at the age of 96, and co-authored a 2017 paper on the history of Australia's response to the environment. To celebrate his 100th birthday in 2015, the ABC's Science Show, presented by Professor Robyn Williams AM FAA, featured Dr Day. In 2017, the Academy's Max Day Environmental Science Fellowship Award was established and Dr Day attended the inaugural award presentation held during Science at the Shine Dome in May.

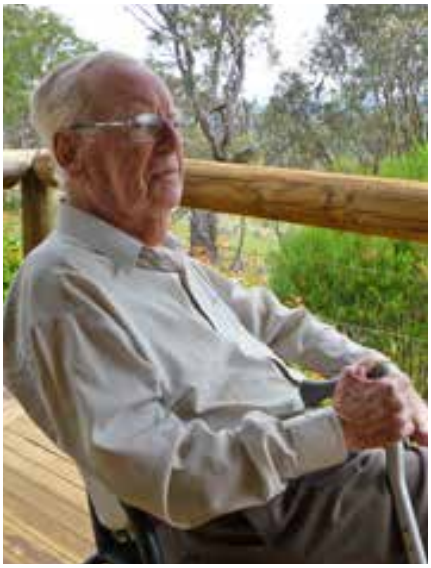
Elected in 1956, Dr Day was the Academy's oldest and longest serving Fellow.

More about Dr Day: https://www.science.org.au/news-and-events/news-and-media-releases/one-australias-oldest-scientists-remembered

Professor George (Ken) Cavill FAA 1922 to 2017

Professor Ken Cavill was elected to the Academy in 1969 and was distinguished for his research on the chemistry of natural products and the relationship between chemical constitution and biological activity. His contributions in the heterocyclic field include structural and synthetic studies on mould metabolites. Professor Cavill also published valuable contributions on organic processes, particularly on the mechanism of lead tetra-acetate reactions. He also worked on the chemistry of insect venoms, attractants and repellents, and isolated a series of novel monoterpenes from various species of ants, establishing their structural correlations by degradation and synthesis. He was one of the leading authorities in the expanding field of cyclopentanoid monoterpenes.

Professor Cavill served on several Academy committees, including Sectional Committee 3: Chemistry (1971-75 and 1981-85) which he Chaired from 1982-83, and Sectional Committee 8: Applied Sciences (1976-80). He also served on the Academy's Council from 1972-75 as an Ordinary Member representing the Physical Sciences.



Dr Max Day

Professor Ken Cavill

Events and outreach—September 2017

September 11, 2017

Academy action in National Science Week

The Academy was flat out keeping up with the activities in this year's annual celebration of science in Australia, National Science Week, on 12–20 August.

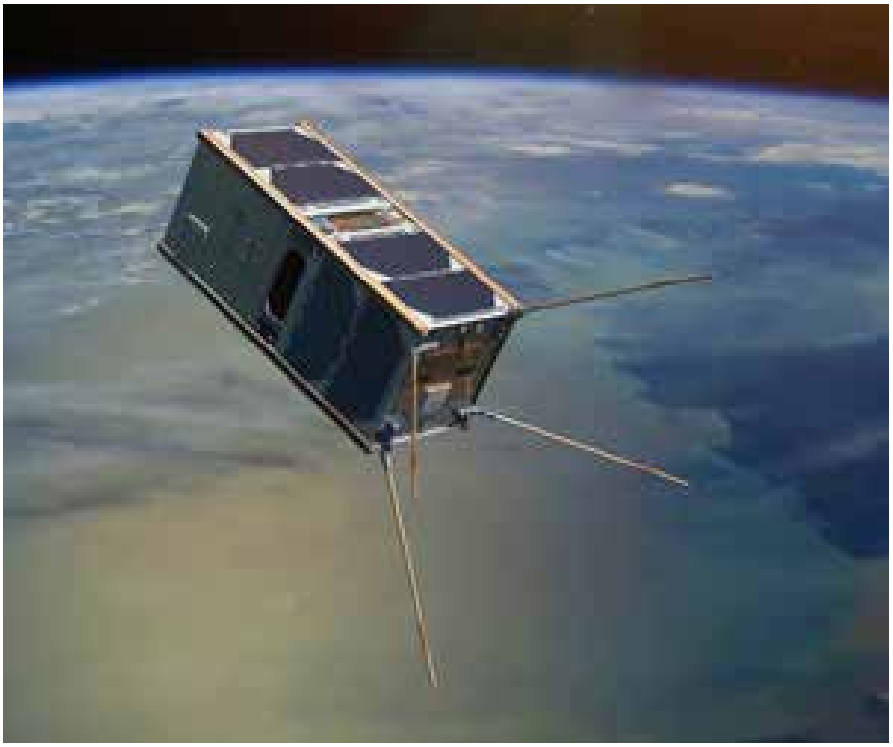
On Monday we challenged the knowledge of more than 120 trivia buffs with a packed Super Science pub trivia night in Canberra.

On Tuesday more than 140 people attended our public talk at the Shine Dome on Australian satellites and where to find them.

Wednesday saw the launch of UNCOVER—a roadmap for searching the deep earth and the role of geoscience in Australia.

On Thursday the Academy hosted the National Research and innovation Alliance and their speaker, the Leader of the Federal Opposition, the Hon Bill Shorten MP. In addition to those attending, many more tuned in via live-tweeting of the event and a video livestream.

Also on Thursday, 140 people attended the first of our 'Making Better Humans' talk in Wollongong as part of the Academy's Plastic Fantastic National Speaker Series.



Australian satellites was just one of the many topics we explored in National Science Week

Are Australian snakes the deadliest in the world?

Exploration of emerging issues in science and society

This unique event in early July covered a range of topics, from deadly snakes to the science of nutrition. We teamed a scientist with a researcher from the humanities and social sciences to cover the basic science behind the issues, implications for policy and society, and the challenges of science communication and public misconceptions.

The four questions explored were:

- Are Australia's snakes the deadliest in the world?
- Can we predict bushfires?
- Does nutrition science (mis)inform our diets?
- How does the microbiome change what it is to be human?

The event was held in partnership between the Academy, the newly formed Deakin University Science and Society Network (a network of the Alfred Deakin Institute for Citizenship and Globalisation, and the Society for the Social Studies of Science. It was opened by Academy

Join us on a journey to the centre of the planets

President Professor Andrew Holmes and MC'd by science broadcaster Paul Willis.

More about the event: (https://www.science.org.au/news-and-events/events/emerging-issues-science-and-society)

Coming to Canberra: Journeying to the centres of the planets

In our next Canberra public talk, Dr Helen Maynard-Casely will take us on a journey to get to know the planets of our solar system more intimately through understanding their varied and downright dangerous insides. We've yet to actually dive under the clouds of the gas giants, crack through the ice of the dwarf planets or drill into the rocks of the terrestrial planets—so how do we know what lies beneath planetary surfaces? Every planetary interior a high-temperature and high-pressure environment and pressure can have amazing effects on even the simplest of materials.

To build up the pictures of planetary interiors requires the merging of keenly observed astronomy, complex theoretical calculations and the most elegant of experiments. Dr Maynard-Casely will explain how we've got to the pictures that we do have, how we can re-create these planetary conditions here in Australia, and where there's work to be done.

Journeying to the centres of the planets: https://www.science.org.au/news-and-events/events/public-speaker-series/dawn-new-space-age/journeying-centres-planets