

AUSTRALIAN ACADEMY OF SCIENCE **2022 ANNUAL REPORT**



© Australian Academy of Science 2023
ISSN 1448-2037

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Cover: Academy President Professor Chennupati Jagadish welcoming new Fellows for 2020, 2021 and 2022 to the Academy during Science at the Shine Dome in November.

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MESSAGE FROM THE PRESIDENT

It is my honour and privilege to present the Annual Report 2022 for the Academy. I began my term as President in May and at a time of exciting transition. Emerging from lockdowns imposed by the pandemic, in 2022 the Academy's activity and influence grew with a renewed sense of purpose. The successful application of science to respond to COVID-19 was proven time and time again. Attention has now shifted to the many continuing challenges for which science can provide solutions and on which the Academy can have impact.

As the Academy's 2018–2022 Strategic Plan draws to an end, this year we commenced a comprehensive strategic review of the Academy to assess our achievements to date and to map pathways to guide our future directions.

Meanwhile we have continued our work to be an influential and independent source of scientific evidence. In this regard, the Academy hosted a roundtable to consider approaches to remove greenhouse gas emissions, launched a National Strategy for Just Adaptation and published a report to protect the world's most precious heritage assets from climate change, to name just a few. Importantly, Academy Fellow Professor Trevor McDougall was awarded the Prime Minister's Prize for Science for his research of the ocean's role in regulating the world's climate.

Our National Committees, dedicated to shaping scientific disciplines, launched a ten-year-plan for space science and a mid-term review of the plan for mathematical sciences. The Academy was invited to participate in a second inquiry into the convictions of Kathleen Folbigg as an independent scientific advisor demonstrating the role science has in the law. We grew our international engagement through the launch of the STEM Women Global platform and secured funding to establish the International Science Council Regional Focal Point in the Asia Pacific to lead science diplomacy efforts in our region. The Academy also produced a series of videos in collaboration with the Department of Industry, Science and Resources and the Department of Foreign Affairs and Trade featuring the value of science collaboration with India and China.

The Fellowship added 22 of the nation's top scientists to its number. For the first time in our history, the Academy elected the same number of women and men. And, in another first, Professor Tom Calma became our first Fellow identifying as an Aboriginal person.

The richness of our Fellowship was on full display as our flagship event, Science at the Shine Dome, returned to in-person for the first time since 2019. This meant three years of Fellows visited the home of science to sign the charter book and talk about their research. And we congratulated recipients of the Academy's honorific awards and heard from our career awardees. Many early- and mid- career researchers attended, including members of the EMCR Forum. Supporting the next generation of leading scientists is one of the great responsibilities we take seriously.

I also give my thanks to our Fellows for their ongoing leadership and support of the Academy. I would like to acknowledge Council and Executive Committee members who finished their service in May 2022, particularly Professor Hans Bachor AM FAA as Secretary for Education and Public Awareness of Science, and Professor Elaine Sadler AM FAA as Foreign Secretary. We welcomed Professor Lyn Beazley AO FAA FTSE and Professor Frances Separovic AO FAA respectively into these Executive Committee roles, along with Professor Jim Williams AO FAA FTSE who took on a new role as Spokesperson for Integrity.

As we look towards the future, the important role and mission of the Academy is clearer than ever. With your ongoing support we will continue to be an independent source of scientific advice for decision-makers and to champion, celebrate and support excellence in Australian science here and abroad. I am particularly grateful for the support provided by our donors who help secure our independence and allow the Academy to advance science in Australia.

Professor Chennupati Jagadish AC PresAA FEng FTSE



CHIEF EXECUTIVE'S MESSAGE

The 2022 Annual Report for the Australian Academy of Science is a record of achievement and reflects the extraordinary work led by our Fellowship and supported by the Secretariat. It's a privilege to work with our Fellows, donors and partners to deliver the results presented in the following pages.

As always, we have continued in our mission to have science heard wherever decisions are made. This year saw significant advances in this regard particularly in terms of science informing decisions in the parliament, the justice system, the classroom, and across the Asia-Pacific region. We welcome the constructive relationship we have with the government, enabling many Fellows to share their expertise directly with decision-makers.

Importantly, 2022 marked the beginning of the strategic review of the Academy, designed to build on the successes of the past and to never become complacent in shaping ourselves and our activities such that we can meet the changing needs of science and society. The challenges our nation and globe are facing are ever increasing in scale and complexity and the strategic review provides an opportunity for the Academy to think deeply about the way it works, the capabilities it needs and what it must do to bring science to the service of the nation with greatest impact and influence. I very much look forward to sharing the outcomes of our review with our Fellows, collaborators and supporters and in turn be guided by a renewed strategic plan that enables the Academy to advance science for the benefit of all.

After the COVID-19 shutdowns it has been wonderful to spread our wings again and further strengthen our relationship with the International Science Council – the global voice of and for science – and to support the scientific endeavours of Ukrainian scientists whose homes and workplaces have been ravaged by war.

I am proud of our achievements in diversity in inclusion that this year saw 50 per cent women elected to the fellowship, the first time that gender parity has been achieved in the annual elections. And completion of the activities in our *Reflect* Reconciliation Action Plan, enabling us to start work on our next *Innovate* RAP to further advance reconciliation and assist us in drawing on diverse sources of knowledge to build a more sustainable nation and world.

The year 2022 was also when our iconic Shine Dome was formally reopened after having sustained hailstorm damage. It has been joyous to see more than 200 events hosted in the Shine Dome over the course of the year, seeing some 10,000 people visiting an iconic home of Australian science. And in October the Secretariat returned to a refurbished Ian Potter House, also damaged by hail, complete with new facilities and a reduction in energy consumption. It is a delightful environment to welcome our Fellows to and work in, and on behalf of the Secretariat we are very grateful to be home and in a workspace truly fit for purpose.

I thank the Executive Committee and Council for their guidance and incredible commitment to the Academy, as well as the professional staff who every day remind me what hard work and commitment in pursuit of science advancement look like.

Anna-Maria Arabia



STRATEGIC PLAN 2018–2022



OBJECTIVES

INFLUENTIAL VOICE

Be deeply influential in setting Australia's science agenda

Be a trusted independent advisor on scientific matters

INTERNATIONAL ENGAGEMENT

Be a leader in the international science academy network

SCIENTIFIC LITERACY

Deliver innovative education programs at scale and with impact

Enable a better-informed public that values science

EXCELLENCE AND DIVERSITY

Be a national leader in diversity, equity and inclusion in the science sector

Empower the next generation of scientists

OPERATIONAL EXCELLENCE

Ensure long-term sustainability and financial viability along with the highest standards of professionalism

2022 HIGHLIGHTS

22

new Fellows,
50% women

Academy to lead
new **International
Science Council**
regional focal point
in the Asia-Pacific

144

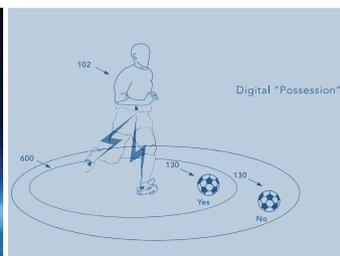
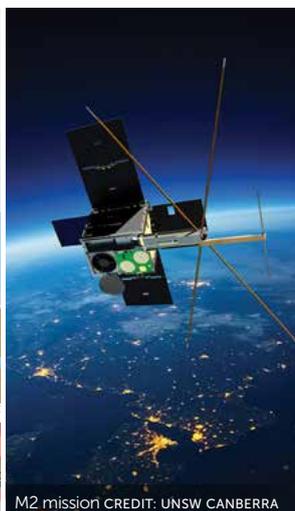
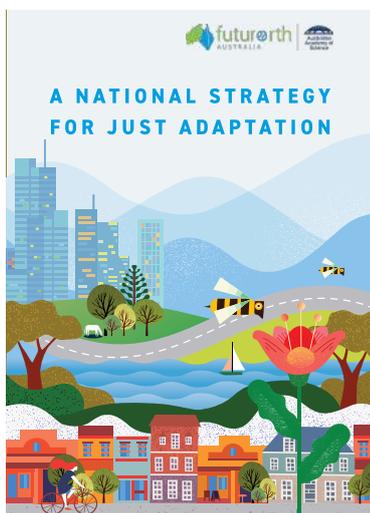
videos
produced

TO ADVANCE SCIENCE IN AUSTRALIA, WE:

- launched 'Australia in Space: a decadal plan for Australian space science 2021–30', and published a mid-term review of 'Australia's 10-year plan for mathematical sciences'
- launched a discussion paper 'Getting Ahead of the Game: Athlete Data in Professional Sport'
- launched 'Australia's Data-Enabled Research Future: Science', a report calling for action to support the future of scientific research
- were accepted as an independent scientific adviser to the Second Inquiry into the convictions of Kathleen Folbigg
- released our 'Science and Australia's positive future' position statement ahead of the federal election, and met with the Prime Minister to discuss ways to bring science to the service of the nation
- established the David Vaux Research Integrity Fellowship Award to recognise individuals who have led efforts to foster and promote integrity in science
- made 31 submissions to government

ON CLIMATE CHANGE SCIENCE, WE:

- hosted a national roundtable to consider the capability of science to explore new negative emissions approaches
- launched Future Earth Australia's National Strategy for Just Adaptation, bringing Indigenous and other relevant knowledges, adaptation science, the social sciences and the humanities together to reshape the national adaptation and resilience agenda
- published a report on what could be done to support the world's most precious heritage assets in the face of climate change



TO ADVANCE SCIENCE INTERNATIONALLY, WE:

- welcomed the announcement that we will lead a new regional focal point for the International Science Council to coordinate scientific engagement in the Asia-Pacific
- launched STEM Women Global to enable women working in STEM fields around the world to raise their profile and discover opportunities to progress their careers
- produced 19 videos highlighting some of the scientific collaborations Australia has undertaken with our Asia-Pacific neighbours
- released a statement condemning the invasion of Ukraine by Russia, and announced funding support of \$800,000 by the Breakthrough Prize Foundation to support Ukrainian scientists

TO SUPPORT SCIENTISTS AND ENCOURAGE DIVERSITY IN SCIENCE, WE:

- welcomed 22 new Fellows, the cohort made up of 50% women and 50% men, the first time in the Academy's history that gender parity has been achieved in the annual election of new Fellows
- recognised 20 leading scientists with honorific awards, and announced support for scientists with grants, fellowships and conference funding
- helped 12 young Australian scientists attend the 71st Lindau Nobel Laureate Meeting in Germany
- hosted the seventh Falling Walls Lab Australia finale for early-career researchers and supported the national winners to take part in the international three-day conference in Berlin
- participated in NAIDOC Week, and supported the research of five Aboriginal and Torres Strait Islander scientists through our Aboriginal and Torres Strait Islander Scientist Award

TO BRING SCIENCE TO A BROAD AUDIENCE, WE:

- welcomed more than 2.7 million visitors to our websites
- published our archival collection of one of the twentieth century's most outstanding biologists, Sir Frank Macfarlane Burnet, in digital format
- delivered 38 online and hybrid events for national and international audiences
- celebrated science in our flagship event, Science at the Shine Dome
- supported early- and mid-career researchers (EMCRs)
- took new developments in science to broad audiences
- informed policymakers about climate change impacts, adaptation and vulnerability
- embraced Indigenous knowledges in STEM
- explored the impact of COVID-19 on women in the STEM workforce in Pacific Alliance countries
- discussed drug use and the law
- recorded more than 28 million impressions on social media
- published 144 videos, 43 of which were embedded in online mainstream media stories a total of 472 times, and 18 articles that were mentioned or quoted 133 times in online news websites, including syndications
- reopened our newly renovated heritage buildings, the Shine Dome and Ian Potter House, following severe hailstorm damage in 2020



THE FELLOWSHIP

The Australian Academy of Science is a Fellowship of the nation's most distinguished scientists, elected by their peers for ground-breaking research and contributions that have clear impact.

582

Fellows at
December 2022

22

Fellows elected in
2022, 50% women

2

Corresponding
Members admitted

34

Corresponding
Members at
December 2022

48

prestigious honours
and awards received
by Fellows

PROFESSOR JAGADISH BECOMES ACADEMY'S FIRST PRESIDENT OF INDIAN HERITAGE

Nanotechnology pioneer Professor Chennupati Jagadish AC PresAA FREng FTSE became the President of the Australian Academy of Science in May. He is the first Australian of Indian heritage to take on the role.

One of the world's leading physicists, Professor Jagadish's expertise is in the field of nanotechnology. He arrived in Australia in 1990 to take up a role as a research scientist at the Australian National University and now leads its Semiconductor Optoelectronics and Nanotechnology Group.

Professor Jagadish helps develop semi-conductors used in LED lights and has designed and developed some of the world's smallest lasers. His research has also been applied to make lightweight flexible solar cells, to split water to create hydrogen as a pure energy source and to manipulate neurons to treat people living with dementia.

Professor Jagadish has also pioneered the creation of high-performance next-generation optical devices, which have huge potential in the field of communications and data storage.

Professor Jagadish was elected to the Academy in 2005 and received the Academy's Thomas Ranken Lyle Medal in 2019 for his outstanding contributions to physics, just two of many accolades received throughout his career.



2022 FELLOWS



Professor Matthew Bailes FAA
Astrophysicist
Swinburne University of Technology



Professor Katherine Belov AO FAA
Biologist
University of Sydney



Professor Marcela Bilek FAA
Physicist
University of Sydney



Professor Stuart Bunn FAA
Freshwater ecologist
Griffith University



Professor Thomas Calma AO FAA FASSA
Chancellor
University of Canberra



Professor John Cannon FAA
Pure mathematician
University of Sydney



Professor Jonathan Carapetis AM FAA FAHMS
Paediatric physician
Telethon Kids Institute



Dr Elizabeth Fulton FAA FTSE
Ecosystem modeller
CSIRO Oceans and Atmosphere



Professor Catherine Greenhill FAA
Pure mathematician
UNSW Sydney



Professor Michelle Haber AM FAA FAHMS
Childhood cancer scientist
UNSW Sydney



Professor Peter Høj AC FAA FTSE
Vice-Chancellor
University of Adelaide



Professor Timothy Hughes FAA FAHMS
Haematologist
South Australian Health and Medical
Research Institute



Professor Emma Johnston AO FAA FTSE
Marine ecologist
UNSW Sydney



Professor Peter Langridge FAA FTSE
Agricultural researcher
University of Adelaide



Dr Janice Lough FAA
Climate scientist
Australian Institute of Marine Science



Professor Naomi McClure-Griffiths FAA
Astronomer
Australian National University



Professor Sarah Medland OAM FAA FAHMS FASSA
Statistical geneticist
QIMR Berghofer Medical Research Institute



Professor Ute Roessner AM FAA
Plant scientist
Australian National University



Professor Craig Simmons FAA FTSE
Groundwater scientist
Flinders University



Professor Kate Smith-Miles FAA
Applied mathematician
University of Melbourne

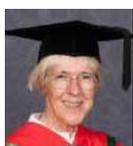


Professor Huijun Zhao FAA FTSE
Chemist
Griffith University



Professor Albert Zomaya FAA
Computer scientist
University of Sydney

CORRESPONDING MEMBERS



Professor Anne Dell CBE FAA FRS
Biochemist
Imperial College London



Professor Lei Jiang FAA
Chemist and material scientist
Chinese Academy of Sciences

HONOURS AND AWARDS TO FELLOWS

FEATURED HONOURS



PHOTO: DEPARTMENT OF INDUSTRY, SCIENCE AND RESOURCES.

2022 PRIME MINISTER'S PRIZE FOR SCIENCE

A leader in oceanic processes and physical oceanography, **Professor Trevor McDougall** AC FAA FRS received the Prime Minister's Prize for Science in 2022

ROYAL SOCIETY

Professor **Bob Pressey** FAA FRS, **Professor Richard Robson** FAA FRS, **Professor Jamie Rossjohn** FAA FAHMS FRS and **Professor Carola Vinuesa** FAA FAHMS FRS were elected as Fellows of the Royal Society

ROYAL ACADEMY OF ENGINEERING

Professor Chennupati Jagadish AC PresAA FREng FTSE was elected a Fellow of the Royal Academy of Engineering

AMERICAN ACADEMY OF ARTS AND SCIENCES

Professor Chris Dickman FAA and **Professor Lisa Kewley** FAA were made International Honorary Members of the American Academy of Arts and Sciences



GLOBAL PRIZE FIRSTS

Two Academy Fellows were the first Australians to win prestigious international prizes. **Professor Susan Scott** FAA won the European Academy of Sciences 2022 Blaise Pascal Medal in Physics, and **Professor Martin Green** AM FAA FTSE FRS won the 2022 Millennium Technology Prize



EUREKA PRIZES

Professor Veena Sahajwalla FAA FTSE was awarded the Celestino Eureka Prize for Promoting Understanding of Science, and **Professor David Lindenmayer** AO FAA is lead scientist in the Sustainable Farms team at ANU, with Sustainable Farms receiving the NSW Environment and Heritage Eureka Prize for Applied Environmental Research

MORE HONOURS AND AWARDS

Professor Tim Bedding FAA	ARC Australian Laureate Fellowship
Professor Jennie Brand-Miller AO FAA	Order of Australia: Officer in the General Division
Professor Igor Bray FAA	Hall of Fame Inductee, WA Premier's Science Awards
Professor Tom Calma AO FAA FASSA	Announced as ACT Senior Australian of the Year for 2023
Professor Tom Calma AO FAA FASSA	Elected a Fellow of the Academy of Social Sciences in Australia
Professor Georgia Chenevix-Trench FAA	GSK Award for Research Excellence
Professor John Church AO FAA FTSE	Order of Australia: Officer in the General Division
Professor Alan Cowman AC FAA FRS	Florey Medal, CSL
Professor Chris Dickman FAA	International Honorary Member, American Academy of Arts and Sciences
Professor Richard Ellis CBE FAA FRS	Royal Medal, Royal Society of London
Professor Joanne Etheridge FAA	ARC Georgina Sweet Australian Laureate Fellowship
Professor Warren Ewens AO FAA FRS	Order of Australia: Officer in the General Division
Dr Alan Finkel AC FAA FTSE FAHMS	Order of Australia: Companion in the General Division
Dr Alan Finkel AC FAA FTSE FAHMS	COVID-19 Honour Roll
Professor Maria Forsyth FAA FTSE	Fellow, Australian Academy of Technological Sciences and Engineering
Dr Beth Fulton FAA FTSE	Fellow, Australian Academy of Technological Sciences and Engineering
Professor David Gardner AM FAA	Order of Australia: Member in the General Division
Professor Justin Gooding FAA FTSE	Frontiers Research Award Sponsored by ANU, Research Australia
Professor Jenny Graves AC FAA	Order of Australia: Companion in the General Division
Professor Martin Green AM FAA FTSE FRS	Millennium Technology Prize
Professor Kliti Grice FAA	Western Australian Scientist of the Year, WA Premier's Science Awards
Professor Min Gu FAA FTSE	Emmett N. Leith Medal, Optica
Professor Glenda Halliday FAA FAHMS	New South Wales Scientist of the Year, NSW Premier's Prizes for Science and Engineering
Professor Ary Hoffmann AC FAA	Order of Australia: Companion in the General Division
Professor Tim Hughes FAA FAHMS	Eva Raik Oration, Royal College of Pathologists of Australasia
Professor Chennupati Jagadish AC PresAA FREng FTSE	International Fellow, Royal Academy of Engineering
Professor Chennupati Jagadish AC PresAA FREng FTSE	Callinan Award, Electrochemical Society
Professor Lisa Kewley FAA	International Honorary Member, American Academy of Arts and Sciences
Professor Yuri Kivshar FAA	Max Born Award, Optica
Professor Maria Makrides FAA FAHMS	South Australian Scientist of the Year, SA Science Excellence and Innovation Awards
Professor Trevor McDougall AC FAA FRS	Prime Minister's Prize for Science
Dr Graeme Moad AC FAA FTSE	Order of Australia: Companion in the General Division
Professor Tanya Monro AC FAA FTSE	Order of Australia: Companion in the General Division
Professor Lidia Morawska FAA	ARC Australian Laureate Fellowship
Professor Bob Pressey FAA FRS	Fellow, Royal Society of London
Professor Richard Robson FAA FRS	Fellow, Royal Society of London
Professor Jamie Rossjohn FAA FAHMS FRS	Fellow, Royal Society of London
Professor Veena Sahajwalla FAA FTSE	Celestino Eureka Prize for Promoting Understanding of Science
Professor Brian Schmidt AC FAA FRS NOBEL LAUREATE	Asia-Pacific Leadership Award, Council for Advancement and Support of Education
Professor Susan Scott FAA	Fellow, International Society on General Relativity and Gravitation
Professor Susan Scott FAA	Blaise Pascal Medal, European Academy of Sciences
Professor Susan Scott FAA	Walter Boas Medal, Australian Institute of Physics
Professor Rod Tucker OAM FAA FTSE	International Member, National Academy of Engineering (US)
Professor Carola Vinuesa FAA FAHMS FRS	Fellow, Royal Society of London
Professor Geordie Williamson FAA FRS	Excellence in Mathematics, Earth Sciences, Chemistry or Physics, NSW Premier's Prizes for Science and Engineering
Professor Huijun Zhao FAA FTSE	Fellow, Australian Academy of Technological Sciences and Engineering
Professor Hala Zreiqat AM FAA FTSE FAHMS	Fellow, International Association of Advanced Materials
Professor Hala Zreiqat AM FAA FTSE FAHMS	Scientific and Technological Achievement, TAKREEM Foundation

FELLOWS' INVOLVEMENT IN THE ACADEMY

Academy-related activities in which Fellows were involved included:

Policy submissions and reports • National Committees for Science • international meetings and collaborations • awards committees • sectional committees for assessing candidates nominated for Fellowship • media participation • video and article reviewers and expert interviewees • symposium and online event convenors and expert participants • organisational governance • regional groups • fundraising and partnerships

All involvement by Fellows in the Academy is in a voluntary capacity.

DECEASED FELLOWS

Dr William 'Bill' Roderick Blevin AM FAA FTSE
31 October 1929 to 11 August 2022

Professor William 'Bill' Francis Budd FAA
16 October 1938 to 23 January 2022

Dr Alec Costin AM FAA
30 September 1925 to 22 August 2022

Professor Robert 'Bob' Woodhouse Crompton AM FAA
9 June 1926 to 21 June 2022

Professor Derek Denton AC FAA FRS
27 May 2024 to 18 November 2022

Professor William 'Bill' Russell Levick FAA FRS
5 December 1931 to 5 May 2022

Professor James (Jim) Graham McLeod AO FAA FTSE
18 January 1932 to 27 June 2022

Emeritus Professor James 'Jim' Patrick Quirk AO FAA
17 December 1924 to 12 February 2022

Professor Sever Sternhell AO FAA
30 May 1930 to 18 November 2022

Professor Stewart Turner FAA FRS
11 January 1930 to 3 July 2022

CONVERSATIONS WITH AUSTRALIAN SCIENTISTS

The 'Conversations with Australian Scientists' interview program continued in 2022. The project recognises the significant contribution to research and public life made by Academy Fellows and the role of oral history in preserving and understanding the ongoing story of Australian science.

HISTORICAL ARCHIVES

The archives of the Australian Academy of Science hold a rich and varied collection of unpublished and primary source material documenting the history of science in Australia. Over its 60-year history, the collection has evolved into a substantial resource providing a rare and valuable window into Australian scientific discovery in the nineteenth and twentieth centuries.

During 2022, the Academy received 29 research requests from internal and external clients, including local, interstate and international scholars from as far away as Scotland, France and the Czech Republic. Materials accessed were drawn from personal archives of Academy Fellows and records of Australian scientific societies, Academy operational records, and collections of architectural information about the Shine Dome and Ian Potter House.

The Academy supports and encourages the use of its archives and is open to the public by appointment. Collections are being progressively digitised and made accessible online—in 2022 this included material belonging to Sir Frank Macfarlane Burnet OM AK KBE FAA FRS NOBEL LAUREATE (1899–1995), whose papers were captured as part of an ongoing collaborative project with the National Library of Australia and made available to the public via [Trove](#) and the [Academy online catalogue](#).

Pictured right and overleaf: The Academy holds one of a very limited edition run of Australian Lepidoptera and their Transformations in our library. Illustrators are Harriet and Henrietta Scott, with the originals held in the Australian Museum. Above is Plate 19, Scott, A. W. & Scott, Harriet. & Forde, Helena. & Olliff, A. Sidney. (1890). Australian lepidoptera and their transformations, drawn from life. Hand coloured lithograph, Australian Academy of Science Library Collection.





1



2



3



4

Chelepteryx Collessi

From Nature by Harriet Scott

On Stone by S. T. Gill

Allan & Wigley - Printers - Sydney

PHILANTHROPY AND PARTNERSHIPS

SUPPORTING EXCELLENCE

Since the Academy's creation by Royal Charter in 1954, donations and bequests have been instrumental in ensuring the Academy has the capacity to innovate and respond to the emerging scientific needs in Australia.

The Academy has a long and proud history of building capabilities for new and early-stage research programs and providing independent advice to inform decisions, with the goal of helping scientific advancement in Australia grow and succeed.

With support from our Fellows, donors and friends, we have been able to develop and implement a breadth of programs that are now sewn into the fabric of Australian science. We thank our supporters for your ongoing commitment and helping us to achieve some of the following outcomes throughout 2022.

INCOME 2022

\$388,172
sponsorships

\$947,281
donations

A SHINING HONOUR

We are proud to have the Shine Dome as our home. It is an iconic structure both architecturally and what it represents in Australian scientific history and future.

In 2021, the Academy launched the Celebrate Science campaign—an opportunity to acknowledge scientists in the community, recognising their significant contribution to science in Australia. Following a severe hailstorm in 2020 that damaged the iconic copper roof, a new roof with 1888 custom-made copper tiles formed the new skin of the Dome.

The Academy took the opportunity to recognise the significant contributions of scientists in the community through the Celebrate Science campaign.

In 2022, the campaign reached a significant milestone, having raised more than \$200,000 for the Academy's important work and recognising the contributions of over 200 scientists.



Dr John Passioura FAA



Professor Sally Smith FAA



Professor Gordon Ada AO FAA



Dr Shirley Jeffrey AM FAA

Some of the many leading scientists who have been celebrated with a copper tile dedicated in their honour.



From left: Academy Chief Executive Anna-Maria Arabia, His Excellency Ambassador of Ukraine Vasyl Myroshnychenko, Academy President Professor Chennupati Jagadish, Ukrainian scientist Professor Vladimir Chegel and Academy Foreign Secretary Professor Frances Separovic.

A HELPING HAND FOR UKRAINIAN SCIENTISTS

Ukrainian scientists who have fled the war with Russia, or who have been unable to work due to the destruction of their workplace, are receiving a helping hand from their Australian counterparts.

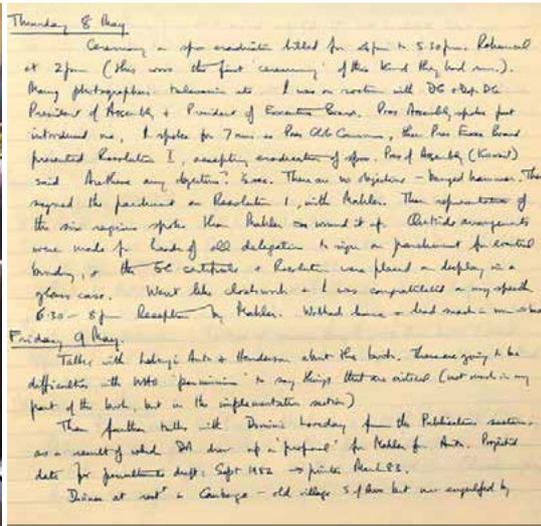
In November 2022, the Breakthrough Prize Foundation provided funding support of \$800,000 to the Academy to support the establishment of long-term research collaborations between Ukrainian and Australian scientists. This support focuses on early- and mid-career researchers, providing Ukrainian scientists with access to leading Australian science and research infrastructure and facilities such as supercomputing programs, synchrotrons, telescopes and NCRIS facilities, and the opportunity to send data and samples to Australian research facilities for analysis, with the results returned to Ukrainian research institutes.

The initiative is part of a global movement to support Ukrainian scientists and will complement work already underway by other countries such as the United States, Poland and Denmark, who have received primarily Ukrainian women scientists who have fled their country. All efforts to assist Ukrainian scientists will ensure measures focus on rebuilding a modern and globally integrated science and research system in Ukraine. This new initiative will be a mutually beneficial partnership and a two-way knowledge exchange between Australian and Ukrainian scientists.

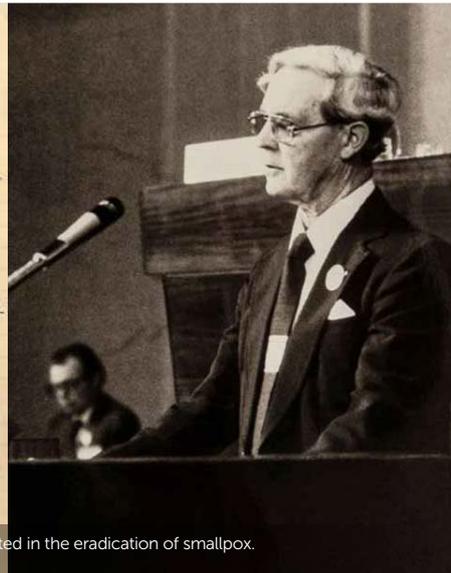
We thank the Breakthrough Prize Foundation for this generous funding and ongoing support for Ukrainian scientists.



Mr Anstice and Academy archivist Clare McLellan examine a folio in the Bassett library at the Shine Dome.



The work of Professor Frank Fenner AC CMG MBE FAA FRS and others resulted in the eradication of smallpox. (AAS MS14 3000309 page 104).



SAVING SCIENCE HISTORY

A \$100,000 donation by philanthropist and former pharmaceutical executive David Anstice supported the digitisation of historic scientific collections held at the Academy's archives.

The archives, housed in the Academy's Shine Dome, contain the unique collections of some of Australia's most famous scientists and have been declared of 'immense research significance'.

"It seems important to me to keep the torch of science, in my case medical science, burning brightly," Mr Anstice said, who is originally from Wagga Wagga, NSW but is now based in the United States.

The Academy's digitisation of the archives program, which began in late 2020, is primarily funded by donations from Fellows and friends of the Academy and would not be possible without this support.

"The Australian Academy of Science, as the pre-eminent Australian scientific body which crosses numerous scientific disciplines, is eminently worthy of support from all who understand just how important science is to humankind, and how significant Australia's past contributions have been in medicine, globally.

"What [scientists] learned and achieved, and what they found was unproductive, saves today's scientific leaders from unfruitful pathways or opens up new avenues based on new insights.

"I am very happy that I can support the important work of the in-house archivist," Mr Anstice said. "My financial support of the Academy is one small way of recognising that the future can deliver even more value for subsequent generations of Australians."

We thank David for his generous support, allowing us to undertake this important project.



Sir Ian Potter



Academy President Professor Jagadish with some of the Academy awardees.

BUILDING OUR VISION AND CAPABILITY

The Ian Potter Foundation was established in 1964. It was created by Sir Ian Potter FAA who was a financier and stockbroker and had a keen interest in supporting the development of Australian cultural life. His desire to advance knowledge in many spheres extended to science and Sir Ian was an outstanding supporter of the Academy. In 1978 he was recognised as a Fellow of the Academy, a rare honour for a non-scientist.

Since then, the Ian Potter Foundation has continued to support the Academy, and in 2022 provided a significant grant towards helping us to build the future of the Academy and developing plans to help improve our capabilities.

We sincerely thank the Ian Potter Foundation for continuing to support the Academy's vision.

FUNDING THE NEXT GENERATION

In late November we were pleased to once again host our Science at the Shine Dome flagship event, in-person after a two-year hiatus, and one very special event during this time was the Supporters and Awardees Breakfast.

At the breakfast, Academy President Professor Jagadish presented the 2021 and 2022 awards to early- and mid-career researchers in person, and was joined by a number of supporters whose generous support allows EMCRs to undertake ground-breaking research and honours the nation's most distinguished scientists.

We particularly thank the Walter and Eliza Hall Institute of Medical Research Institute which provided funding towards the newly established David Vaux Research Integrity Award, recognising individuals who have led efforts to foster and promote integrity in science.

THANK YOU

We greatly appreciate the generosity of our donors.
Your support ensures the Academy continues to grow.

IN PERPETUITY

Sir Jack Ellerton Becker FAA

Breakthrough Prize Foundation

Professor G W Kenneth Cavill Bequest

Department of Communications, Information
Technology and the Arts

Estate of Thomas Lewis Davies

Professor FJ Fenner AC CMG MBE FAA FRS
and Mrs Bobbie Fenner

Dr Margaret Middleton

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MAJOR



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UNSW SYDNEY

GOLD



AWARDS AND FUNDING

31

award schemes opened
and managed in 2022
with 28 associated award
selection committees

\$438,456

awarded to 47 recipients

20

honorific
awardees

22

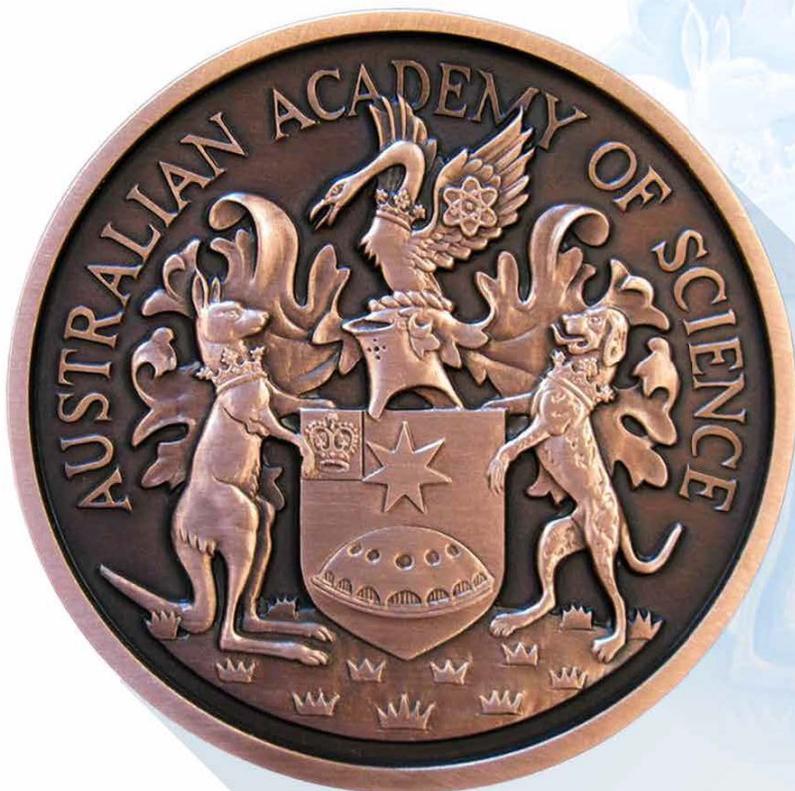
research
awardees

3

conferences and
lectures funded

2

travelling
fellowships
funded



HONORIFIC AWARDS



PREMIER HONORIFICS



2022 MACFARLANE BURNET MEDAL AND LECTURE

Professor Steve Simpson AC FAA FRS, [University of Sydney](#)

Professor Steve Simpson has revolutionised the scientific understanding of swarming in locusts, with research spanning neurochemical events in the brains of individual locusts to continental-scale mass migration. Professor Simpson, with colleague David Raubenheimer, has also developed a powerfully integrative framework for nutrition called the Geometric Framework, which he devised and tested using insects. The Framework has since been applied to a wide range of organisms, from slime moulds to humans, and to problems from aquaculture and conservation biology to dietary causes of human obesity and ageing. Since 2012, Professor Simpson has applied his biological and biomedical research and knowledge to ease the burden of chronic disease in humans through a unique, cross-disciplinary initiative at the Charles Perkins Centre at the University of Sydney.



2022 RUBY PAYNE-SCOTT MEDAL AND LECTURE

Dr Liz Dennis AC FAA FTSE, [CSIRO](#)

Dr Liz Dennis is a distinguished plant molecular biology researcher. She has addressed important basic questions in plant development, vernalisation-induced flowering and the increased yield of hybrid varieties. A feature of her research is that she has worked with *Arabidopsis*, a plant favoured in laboratory research, and then transferred her discoveries to crop plants. This has been a powerful strategy. Her analysis of the basis of hybrid vigour has been outstanding in *Arabidopsis* and subsequently in rice. The development of hybrid mimics in rice has removed the first-generation limit for hybrids and facilitates a continuity of high food grain production. The development of high yielding mimic varieties can be expected in many other crops.

CAREER HONORIFICS

2022 DAVID CRAIG MEDAL AND LECTURE

Professor Christopher Barner-Kowollik **FAA**, **Queensland University of Technology**

Professor Christopher Barner-Kowollik's work fuses the in-depth understanding of chemical processes that are induced by light with their use to prepare soft matter materials, with applications from 3D printing inks to photodynamic materials. His main body of work—based on an esteemed career in physical-organic chemistry—exploits light as a 'molecular surgical tool', where its colour and intensity are finely adjustable gates to 'operate' on the molecular structure of materials with unprecedented precision. This precision gives rise to materials whose mechanical strength and chemical composition can be readily adjusted without bringing them in contact with chemicals or heat. Professor Barner-Kowollik's work has enabled new materials concepts, for example a material that is solely stabilised by light, so-called 'light stabilised dynamic materials'.

2022 HADDON FORRESTER KING MEDAL AND LECTURE

Dr Kathy Ehrig, **BHP Billiton**

Dr Kathy Ehrig is renowned for her insights into the complex geological events involved in the formation of the supergiant copper-uranium-gold-silver Olympic Dam ore deposit. Her leadership in this research has attracted global attention because her advances may contribute to further discoveries elsewhere. She has created highly innovative solutions in characterising in situ ore properties and predicting metal extraction in advance of mining, primarily in the context of the Olympic Dam mine. These solutions are based on her profound knowledge and understanding of mineral assemblages and have proven to be highly robust and transferable to other mines, thereby having a crucially positive impact on productivity. The foundation of her achievements has been her ability to integrate diverse datasets through harnessing cutting-edge research methods and novel approaches. Dr Ehrig's diligence, enthusiasm and dedication to the pursuit of science combine to make her an exceptional research leader.

Professor Richard Henley, **Australian National University**

For over 50 years, Professor Richard Henley has been a leader in the development of understanding of how economic deposits of metals, especially copper and gold, were formed within large-scale hydrothermal systems in volcanoes and mountain belts. The fundamentals that he derived have provided the basis of exploration for epithermal through to orogenic gold deposits, the practical chemistry of fluids in active geothermal systems and many follow-up research programs around the world. He has been acknowledged for his direct contribution to a number of major discoveries including the giant Ladolam Au (Lihir Island, Papua New Guinea) and the Onto Cu-Au (Hu'u, Sumbawa Island, Indonesia) deposits. In the last few years, he has led the recognition of high temperature magmatic gas reactions with rock forming minerals as the principal control on the generation of porphyry copper deposits. He is currently focused on application of X-ray micro CT scanning to derive new and detailed understanding of water-rock interaction chemistry and the properties of rock materials.

2022 IAN WARK MEDAL AND LECTURE

Professor Tim Senden, **Australian National University**

Professor Tim Senden is a physical chemist whose pioneering research has provided new understanding of surface phenomena at the nanoscale, developing methods to quantify colloidal and molecular forces. For two decades, he was involved in the development of novel applications of radioactive nanoparticles for clinical use, which received strong commercial sponsorship leading to clinical trials. From the 2000s, Professor Senden was part of a major translational activity that continues to develop a novel imaging and analysis platform based on X-ray microtomography, leading to new insights into complex granular and porous materials. This activity has greatly enhanced applications in topics spanning papermaking, carbon sequestration, composites, and mineral and hydrocarbon extraction. Following an industry consortium of 23 energy companies, Lithicon was spun-off and became one of the most successful ANU companies.

2022 MAWSON MEDAL AND LECTURE

Professor Andrew Roberts, [Australian National University](#)

Professor Andrew Roberts has made fundamentally important contributions to understanding the magnetisation of sediments, which provides the basis for use of paleomagnetism to reconstruct global plate tectonic movements and to understand variations in Earth's magnetic field through its history. His work influences all aspects of understanding sedimentary magnetisation acquisition, and has particularly contributed to recognising that the previously poorly known magnetic mineral greigite, and magnetic minerals produced by magnetotactic bacteria, make important contributions to the magnetisation of globally distributed sedimentary rocks. He is an international leader in the field of environmental magnetic analyses of climate change, and has developed new methods in rock magnetism that are used widely in solid state physics, materials science, the magnetic recording industry and Earth science. His work in environmental magnetism has made significant contributions to understanding African monsoon dynamics, sea level variations, and Arctic and Antarctic glacial history.

2022 SUZANNE CORY MEDAL AND LECTURE

Professor Georgia Chenevix-Trench [FAA](#), [QIMR Berghofer](#)

Professor Georgia Chenevix-Trench is a cancer geneticist, interested in both inherited and acquired genetic variants that contribute to the risk and development of cancer. Her main focus is on breast and ovarian cancer, but she has also made major contributions to inherited skin and gastric cancers. In the last 15 years, her main focus has been on genome-wide association studies to identify inherited genetic variants associated with cancer risk. These have identified over 200 regions of the genome associated with breast cancer risk. This information is currently being used in international clinical trials to stratify women for breast screening, but has also transformed our understanding of the biological basis of breast cancer. Professor Chenevix-Trench's main focus now is to identify the relevant susceptibility genes in those 200 regions, to determine how they contribute to breast cancer risk, and whether this information can be used to treat breast cancer, or even to prevent it.

MID-CAREER HONORIFICS

2022 GUSTAV NOSSAL MEDAL FOR GLOBAL HEALTH

Professor Rebecca Guy [FAHMS](#), [UNSW Sydney](#)

Professor Rebecca Guy is a renowned international authority in the implementation and evaluation of public health interventions related to HIV and sexually transmissible infections (STIs), particularly among vulnerable populations. Among her many achievements to date, she has introduced STI and COVID-19 point-of-care testing in remote Aboriginal communities and led the evaluation of HIV point-of-care tests that can be conducted by people in their own home (HIV self-tests). Serving as Head of the Surveillance Evaluation and Research Program at The Kirby Institute, as well as leader of both the NHMRC Centre of Research Excellence in the Accelerated Implementation of New Point-of-Care Technology for Infectious Diseases and the ARC Industrial Transformation Research Hub to Combat Antimicrobial Resistance, Professor Guy's research has been highly influential on policy and practice, both in Australia and internationally.

2022 NANCY MILLIS MEDAL FOR WOMEN IN SCIENCE

Professor Vanessa Peterson, [Australian Nuclear Science and Technology Organisation](#)

Our continual need for cheap energy presents major challenges. Professor Vanessa Peterson's game-changing research into the fundamental working mechanisms of energy materials is helping to solve these global challenges. Professor Peterson's significant research targets functional materials at the heart of energy technology such as batteries, fuel cells and materials for the separation and storage of energy relevant gases including hydrogen and carbon dioxide. Vanessa has pioneered methods to understand the atomic level function of materials, revealing in unprecedented detail how the arrangement and motions of atoms can be harnessed to make new and better sustainable-energy devices. Her work has led to discoveries that push the frontier of our understanding of energy materials, helping to reduce Australia's carbon emissions and develop sustainable clean-energy systems. Professor Peterson is an internationally regarded leader in materials characterisation, specialising in neutron scattering methods, and is an outstanding mentor, advocate and role model for women in science.

EARLY-CAREER HONORIFICS

2022 ANTON HALES MEDAL

Associate Professor Jenny Fisher, [University of Wollongong](#)

Understanding of the sources, transport and fate of trace atmospheric species is crucial for the development of evidence-based policies for the management of air pollution and to evaluate their contribution to future climate scenarios. Associate Professor Jenny Fisher's research leads international efforts to model the atmospheric concentrations and transport of these species and to predict their response to future emissions and environmental change, and to quantitatively evaluate impacts of Australian and global environmental policies. The species include mercury, a neurotoxin that is distributed globally through the atmosphere. In recognition of its adverse effects, mercury is now regulated by the UN Minamata Convention on Mercury. Her work also provides new and crucial information on biogenic emissions and atmospheric chemistry of trace species from vegetation which play important roles in air pollutant formation.

2022 CHRISTOPHER HEYDE MEDAL

Dr Francis Hui, [Australian National University](#)

Dr Francis Hui's research focuses on the development of innovative, fast approaches for the statistical analysis of big data, particularly when many correlated variables are collected in space and/or time to produce richly correlated data. He has made substantial contributions to the literature on efficient approximate methods for fitting multi-level models, techniques for data visualisation of many variables and scalable tools for flexibly fitting non-linear models and for selecting which predictors to include in complex correlated data settings. Dr Hui works at the interface between methodological and applied statistics, ensuring that his research has an immediate and substantial impact on the wider scientific community. His research has been particularly impactful in ecology, where his methods and software are applied by practitioners to project spatio-temporal change of species assemblages under climate change scenarios and for enhancing the understanding of terrestrial and marine ecosystems both across Australia and internationally.

2022 DOROTHY HILL MEDAL

Dr Samintha Perera, [University of Melbourne](#)

Australia's per capita carbon dioxide (CO₂) emissions are among the world's highest and the recent drought and bushfire crises clearly illustrate our vulnerability to increases in greenhouse gas emissions. Although carbon dioxide geo-storage in deep coal seams can play a vital role in emission reduction, conversion of CO₂ into a highly chemically reactive "supercritical CO₂ (scCO₂)" at such deep depths causes unpredictable CO₂ flow behaviours in coal seams while modifying its flow and mechanical properties. Dr Samintha Perera discovered the unique interaction between the coal mass and scCO₂ and the resulting impacts on underground applications. According to her findings, all these unique scCO₂ behaviours in coal seams are caused by the significant coal matrix swelling resulted from the coal-scCO₂ interaction. Regardless of that, she found the effectiveness of scCO₂ as a fracking fluid for coal reservoirs, which gave a great value to this problematic scCO₂ as a reservoir stimulation agent.

2022 FENNER MEDAL

Associate Professor Chris Greening, [Monash University](#)

Associate Professor Chris Greening's remarkable discovery that bacteria can live on air has redefined what constitutes life. When bacteria exhaust organic energy sources, they can survive indefinitely by scavenging the unlimited supply of hydrogen and carbon monoxide gas present in the atmosphere. This survival mechanism has broad-reaching consequences for global biodiversity, infectious disease, climate change and public health research. Chris has revealed it supports the biodiversity of life's soils and oceans, regulates greenhouse gases in the atmosphere and enhances agricultural productivity. He has also shown that these gas-eating bacteria provide a basis for life in continental Antarctica, where conditions are too extreme for plants to prosper. Yet similar survival mechanisms are also used by devastating human pathogens, including causative agents of tuberculosis and dysentery. By integrating his One Health microbiology laboratory with large-scale applied programs, Professor Greening is translating these fundamental insights into applied interventions that improve environmental and human health.

2022 FREDERICK WHITE MEDAL

Professor Kerrylee Rogers, University of Wollongong

Professor Kerrylee Rogers has made an internationally significant contribution to one of the most pressing environmental issues of our time: the impact of climate change on the world's most threatened and ecologically important habitat, wetlands. Her work has demonstrated that coastal wetlands (mangrove and saltmarsh) respond dynamically to sea-level rise. By trapping sediment and building root systems, wetlands adapt to climate change but also help mitigate climate change by sequestering atmospheric carbon dioxide. Professor Rogers has used these insights to show that the restoration of coastal wetlands is an effective climate change adaptation strategy that can yield financial benefits to landholders. Carbon captured through wetland restoration can be reported by governments as saved emissions and traded by landholders in emissions trading programs. These insights have been effectively communicated through management and policy-focused papers, presentations and expert advice.

2022 GOTTSCHALK MEDAL

Dr Alisa Glukhova, WEHI (Walter and Eliza Hall Institute of Medical Research)

All cellular organisms exchange information with their environment in the form of chemical molecules or light, electrical or physical stimuli. G protein-coupled receptors (GPCRs) are primary information sensors at the cell surface and are major drug targets for a multitude of conditions. Dr Alisa Glukhova is using structural biology approaches to understand the biology of GPCRs and, specifically, how these receptors recognise chemical signals and how they transmit these signals inside the cell. Her research provided the first structural insights into the activation mechanism of the A1 adenosine receptor, a target for pain management and heart disease, opening possibilities for structure-based drug design. Her current work, in collaboration with researchers from Monash Institute of Pharmaceutical Sciences, aims to understand the biology of other members of adenosine receptor family and identify novel mechanisms for targeting them, either through unconventional binding sites or by altering their signalling path. The current research in her lab at WEHI (Walter and Eliza Hall Institute of Medical Research) is focused on understanding the structural basis of Wnt signalling that involves a different GPCR family that is a major target for cancer therapeutics.

2022 JOHN BOOKER MEDAL

Associate Professor Annan Zhou, RMIT University

Associate Professor Annan Zhou has made seminal contributions to the understanding and modelling of the fundamental hydromechanical behaviour of unsaturated soils. Any soil can be unsaturated with water due to either evaporation or engineering processes like excavation. Unsaturated soils have been widely blamed for many geotechnical problems like slope failures, dam collapses, pavement cracking and foundation failures since they may produce large deformation and even suddenly lose their strength in wetting events. Associate Professor Zhou has established a new modelling framework to tackle the most fundamental issues in unsaturated soil mechanics. Within this framework, many unanswered questions and seemingly conflicting behaviours related to strength, deformation, soil-water interaction of unsaturated soils can be reasonably explained and effectively modelled. Based on the novel constitutive modelling framework and robust numerical techniques, he has developed advanced numerical tools for better design and assessment of infrastructure involving unsaturated soils in Australia and worldwide.

2022 LE FÈVRE MEDAL

Associate Professor Yuning Hong, La Trobe University

Associate Professor Yuning Hong develops chemical probes to detect dysfunctional cells. Proteins are the major component of cells in the human body and are essential for the maintenance of many of its functions. When the protein quality control process in the cell factory fails, the ensuing proteins that are not folded properly can not only lose their original functions, but also damage the cells. At worst this can lead to conditions such as Parkinson's, Alzheimer's and Huntington's diseases. With the aid of her chemical probes, Associate Professor Hong studies how these proteins are generated and how they damage healthy cells. Her goal is to develop tests for the early diagnosis of, and treatments for, dementia and other neurodegenerative diseases.

2022 PAWSEY MEDAL

Dr Keith Bannister, **CSIRO**

Dr Keith Bannister is an exceptional scientist who has led several projects at the forefront of radio astronomy, especially in the area of fast radio burst (FRB) research. His great strength is that he has a deep understanding of both astronomy and radio-science engineering. These qualities enable him to envisage novel and powerful techniques to advance key science goals, to bring systems based on these techniques to fruition, and then to harvest the scientific returns. By exploiting the unique wide-field capabilities of CSIRO's ASKAP radio telescope, Dr Bannister and his team doubled the number of FRBs known at the time. He then went on to devise and implement a scheme to determine their precise sky positions, thereby identifying their source location in distant galaxies. These results provided vital clues on FRBs' astrophysical origin and also identified the location of 50 per cent of the missing baryons in the universe.

2022 RUTH STEPHENS GANI MEDAL

Dr Loic Yengo, **University of Queensland**

Dr Loic Yengo has developed novel theory and statistical analysis methods and applied those to 'big data' in human genomics to address questions about the causes and consequences of human behaviour. He has discovered thousands of DNA variants that are associated with human traits and showed that the pattern of those variants in the human genome are in part the consequence of people seeking partners who are like themselves, in terms of, for example, height and the level of education. This is direct evidence that human behaviour has an effect on the human genome in subsequent generations. In addition, Dr Yengo has developed better analysis methods to study the effect of homozygosity in the human genome and has shown that the larger the proportion of a person's genome that is homozygous, the more detrimental effects it has on traits that are associated with disease.



Award recipients at Science at the Shine Dome in November 2022.

AWARD EVENTS AND LECTURES

LECTURE TOURS AND CONFERENCE FUNDING ANNOUNCED IN 2022

2023 DAVID VAUX RESEARCH INTEGRITY FELLOWSHIP AWARD

Professor David Vaux AO FAA FAHMS

Walter and Eliza Hall Institute of Medical Research

Professor David Vaux graduated in medicine from the University of Melbourne and completed a PhD at the Walter and Eliza Hall Institute (WEHI), before a postdoctoral placement at Stanford University. His research was mainly concerned with the molecular mechanisms by which cells kill themselves, and in 1988 he discovered that BCL2—unlike other cancer-causing genes—promoted malignancy by preventing cell death. This recognition of the first component of the cell death machinery marked a paradigm shift in understanding cellular homeostasis and its connection to cancer. He also has an interest in research integrity and is a member of the board of directors of the Center for Scientific Integrity, the parent organisation of the Retraction Watch blog. He has long advocated for Australia to establish a national office to promote research integrity and handle allegations of research misconduct.



INAUGURAL DAVID VAUX RESEARCH INTEGRITY FELLOWSHIP AWARD

The Academy established a new biennial fellowship award, the [David Vaux Research Integrity Fellowship Award](#), to recognise individuals who have led efforts to foster and promote integrity in science.

Professor David Vaux AO FAA FAHMS, who has championed research integrity in Australia, was [announced as the inaugural recipient](#) of the new award and the award was named in his honour.

The award will be offered biennially commencing in 2023, and awardees will be selected based on their promotion of fairness, honesty, and consideration of others in the practice of scientific research. They will receive up to \$10,000 to present workshops and lectures in Australia, primarily to research higher degree candidates, with the aim of instilling the importance of integrity in science and its outcomes and demonstrating the critical responsibility of every scientist.

A donation from the Walter and Eliza Hall Institute enabled this award to be established and funded until 2033.

Research integrity is a key issue for Australia science, with an Academy survey conducted with publisher Springer Nature finding 73% of the researchers surveyed supported mandatory research integrity training.

2022 LLOYD REES MEMORIAL LECTURE

Professor Dmitri Golberg

[Lloyd Rees Lecture and Geoffrey Frew Fellowship announced](#)

DELIVERY OF 2020 LLOYD REES MEMORIAL LECTURE

The [2020 Lloyd Rees Lecture](#) by Academy President-Elect **Professor Chennupati Jagasish AC FAA FTSE** was delivered in April 2022 (delayed from 2020)

2023 GEOFFREY FREW FELLOWSHIP

Professor Jelena Vuckovic

[Lloyd Rees Lecture and Geoffrey Frew Fellowship announced](#)

DELIVERY OF 2019 GEOFFREY FREW FELLOWSHIP

The [2019 Geoffrey Frew Fellowship Lecture](#) was delivered in 2022 by **Nobel Laureate Professor Donna Strickland FRSC**

2023–24 ELIZABETH AND FREDERICK WHITE RESEARCH CONFERENCE

Integrated Earth: linking our planet's processes from the core to the atmosphere

[Academy-funded research conferences awarded](#)

2023–24 BODEN RESEARCH CONFERENCE

Advancing the science of precision and personalised nutrition

[Academy-funded research conferences awarded](#)



Recipients of the Aboriginal and Torres Strait Islander Scientist Award 2022. From left: Dr Jordan Pitt, Tamara Riley, Vanessa Sewell, Dr Keane Wheeler and Luke Williams.

RESEARCH AWARDS ANNOUNCED IN 2022

ABORIGINAL AND TORRES STRAIT ISLANDER SCIENTIST AWARD 2022

The award recognises research in the physical and biological sciences, allowing interdisciplinary and sociocultural research that could straddle the social sciences and humanities, by outstanding Aboriginal and Torres Strait Islander PhD students and early- and mid-career scientists. It aims to support their research and/or the expansion and growth of their research networks and international knowledge exchange through visits to relevant international centres of research. Awards will be for up to \$20,000, with additional support provided to attend the Academy's Science at the Shine Dome event.

In 2022, five Aboriginal and Torres Strait Islander scientists received the award. They were Dr Jordan Pitt, Tamara Riley, Vanessa Sewell, Dr Keane Wheeler and Luke Williams.

[Five Aboriginal and Torres Strait Islander scientists awarded](#)

DOUGLAS AND LOLA DOUGLAS SCHOLARSHIP IN MEDICAL SCIENCE 2022

The scholarship is offered as a 'top up' scholarship to PhD candidates awarded a National Health and Medical Research Council (NHMRC) Postgraduate Scholarship in one of the areas of Indigenous or primary health care, with preference given by the Academy to the area of Indigenous health research. It is awarded initially for one year (currently \$7,000 per annum) with funding available for a maximum of two years.

The 2022 recipient was Mandandanji woman Lorelle Holland.

[Douglas and Lola Douglas scholar to help reduce youth detention](#)

MAX DAY FELLOWSHIP 2023

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 FAA, who spent a lifetime championing entomology, conservation and forestry, as well as helping other scientists.

The 2023 recipients were Patrick Finnerty and Shawn Scott.

[Using smell to disguise vulnerable plants, and protecting frogs from fire: 2023 Max Day awards](#)



Dr Martin Bush will use the William Albert Amiet Collection, held at the University of Queensland's Fryer Library, as the primary archive for his Moran Award project.

MARGARET MIDDLETON FUND FOR ENDANGERED AUSTRALIAN NATIVE VERTEBRATE ANIMALS 2023

The award was established in 2,000 with Dr Margaret Middleton, who donated generously to this fund across her lifetime. The fund provides grants to support emerging researchers with ecology projects that have tangible conservation outcomes for endangered native vertebrates.

The 2023 recipients were Dr Shaina Russell, Ariana La Porte and Emma Carmichael.

Margaret Middleton Fund recipients to protect fairywrens, mountain frogs and culturally significant species

MORAN AWARD FOR HISTORY OF SCIENCE RESEARCH 2023

The award provides up to \$5,000 in funding each year and is aimed at postgraduate students and other researchers with expertise in the history of Australian science.

The 2023 recipient was Dr Martin Bush.

The role of popular astronomy: Moran Award for the History of Science Research 2023

THOMAS DAVIES RESEARCH GRANT FOR MARINE, SOIL AND PLANT BIOLOGY 2023

The award is funded through a generous philanthropic bequest to the Academy from the estate of the late Thomas Lewis Davies. The fund offers annual research grants of up to \$20,000 each to early- and mid-career researchers in the fields of marine, soil and plant biology.

The 2023 recipients were Dr Cheong Xin Chan, Dr Inka Vanwongerghem, Dr Onoriode Coast, Dr Chaoyu Li, Dr Mariana Mayer Pinto, Dr Martin Breed, Dr Zahra Islam, Dr Joanna Melonek and Dr Maria Ermakova.

'Pure joy': nine marine, soil and plant biologists awarded 2023 Thomas Davies Research Grants

W H GLADSTONES POPULATION AND ENVIRONMENT FUND 2023

The award offers support for empirical research into how the size, distribution, material aspirations and other characteristics of Australia's population are likely to affect our environment—not only our land and landscape, but also social cohesion, health, the economy and defence. The fund was established in 2010 through generous donations from the late Dr William H Gladstones.

The 2023 recipient was Dr Xuan Li.

Wastewater and AI to plan for pandemics: WH Gladstones Population and Environment Fund

POLICY INFLUENCE AND ADVICE

The Academy provides independent, authoritative and influential scientific advice and aims to impact Australia's science agenda and be a trusted independent advisor on scientific matters.

31

submissions
to government

6

major
reports

5

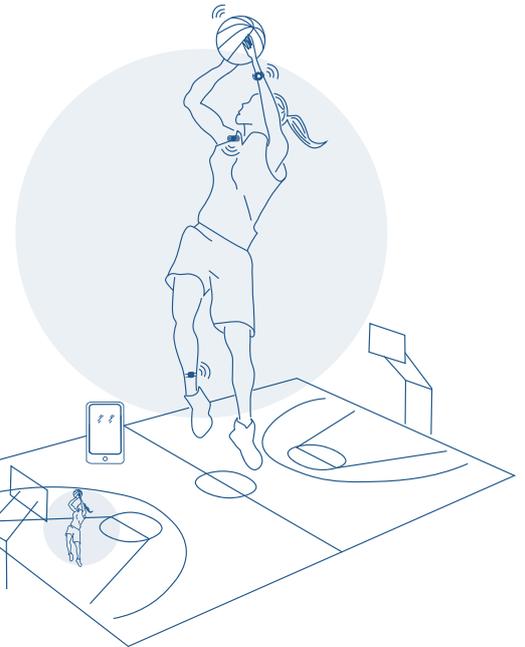
Science
for Australians
features

1

expert
roundtable

1

position
statement



In 2022, the Academy:

- hosted a national roundtable to consider the capability of science to explore new negative emissions approaches
- launched Future Earth Australia's National Strategy for Just Adaptation, bringing Indigenous and other relevant knowledges, adaptation science, the social sciences and the humanities together to reshape the national adaptation and resilience agenda
- was accepted as an independent scientific adviser to the Second Inquiry into the convictions of Kathleen Folbigg
- released 'Science and Australia's positive future' position statement ahead of the federal election, and met with the Prime Minister the Hon Anthony Albanese MP at Parliament House to discuss ways to bring science to the service of the nation
- published the following reports:
 - Addressing the existential threat: climate change as a catalyst for reform in World Heritage, a report generated by an expert roundtable held in late 2021
 - Getting Ahead of the Game: Athlete Data in Professional Sport, a discussion paper on data governance in professional sport
 - Australia's Data-Enabled Research Future: Science, a report calling for action to support the future of scientific research

POLICY HIGHLIGHTS

REVIEW OF FOUR METHODS FOR GENERATING AUSTRALIAN CARBON CREDIT UNITS

The Academy was engaged by the Australian Government Department of Climate Change, Energy, Environment and Water to provide an assessment of the science of four methods for generating Australian carbon credit units for the independent review panel members.

The [report](#), released in October 2022, provides a review of carbon abatement approaches via avoided deforestation, human-induced regeneration, landfill gas management and carbon capture and storage. It seeks to describe each method's underlying scientific evidence base and identify the strengths and limitations of each method's use in an offsets scheme.

Input was sought from the Australian research community, enabled by the convening capability of the Academy and other Australian learned academies.

RESEARCH INTEGRITY

In 2022, research integrity and the management of serious research misconduct were a continued focus for the Academy.

In June, the [results](#) of the first national survey to investigate research integrity in Australia—a collaboration between the Academy and publisher Springer Nature—were published. The results indicate broad support for mandatory research integrity training.

The Academy also continued discussions with the science sector on a model for an oversight body to investigate allegations of serious research misconduct in Australia. The proposed model—Research Integrity Australia—is intended to cover all research organisations that receive public money for research and involves a dedicated body that will work with research organisations to investigate and report on instances of research misconduct.

Academy Policy Secretary Professor Ian Chubb [AC FAA FTSE](#) met with the NHMRC Australian Research Integrity Committee to discuss the Academy's proposed model and spoke at the Australian Association of Medical Research Institutes (AAMRI) national conference in November.

At the Academy's Science at the Shine Dome event in November, the Academy inaugurated the David Vaux Research Integrity Fellowship Award, to recognise individuals who have led efforts to foster and promote integrity in science. The first recipient was Professor David Vaux, a long-time champion of research integrity in Australian science.

SUBMISSIONS TO GOVERNMENT AND PARLIAMENT

In 2022, the Academy made 31 submissions to government and parliament. The Academy provided input on key policy issues for the science and research sector. For example, in December the Academy made submissions to two inquiries of critical importance to the sector: the Australian Universities Accord Terms of Reference and the review of the *Australian Research Council Act (2001)*.

The Academy also highlights where scientific evidence should inform the development and analysis of policy. In 2022, these topics included assisted reproductive technologies, green energy, electric vehicles, disaster readiness, climate-related marine invasive species and quantum science.

These submissions were prepared by drawing on expertise within the Academy Fellowship, the National Committees for Science and the wider science community. Many submissions led to the Academy being called to give expert evidence orally to senate committees.

FUTURE EARTH AUSTRALIA

Future Earth Australia, a program of the Academy, is the Australian arm of Future Earth, a global sustainability, research and innovation network.

Future Earth Australia is a national initiative that enables Australian researchers, governments, industry, peak bodies and civil society to connect and collaborate on sustainability transitions. Future Earth Australia partners with anyone researching the implementation of sustainability knowledge and action, and particularly those working on systemic co-designed and co-produced outcomes for the implementation of the Sustainable Development Goals. It aims to initiate and develop relationships that enable collaborative action for societal transformation. It is leading important conversations that are informing and changing the national policy environment.

NEW STRATEGIC PLAN

In 2022, Future Earth Australia developed a new strategic plan for 2022-25 titled Accelerating Sustainability through Science Impact and Engagement. The strategy reiterates Future Earth Australia's commitment to the themes and mission of the global Future Earth research network and promotes the vision to enhance sustainability through the lens of the Sustainable Development Goals.

NATIONAL STRATEGY FOR JUST ADAPTATION

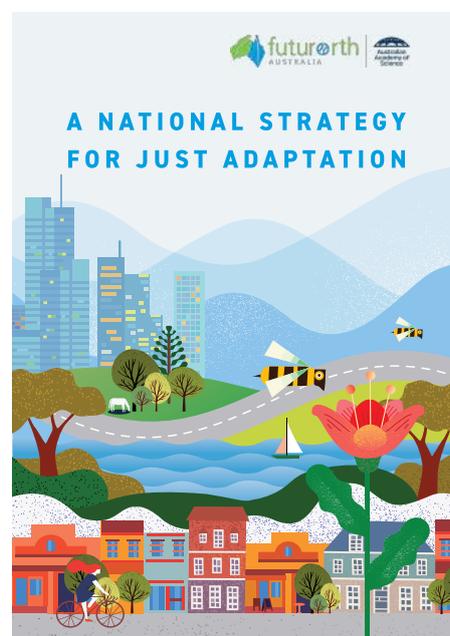
Future Earth Australia published its National Strategy for Just Adaptation, after more than two years of research, consultation, discussion and socialisation. The strategy provides a blueprint for how decisionmakers, governments, communities, Indigenous communities and cultural organisations, and advocacy groups can embed a justice framework throughout their climate change work. The strategy offers a counter narrative to previous policy approaches to climate adaptation, moving from a focus on strictly technical elements of adaptive transitions to a broader acknowledgement of the social, political and behavioural dimensions of systems change.

We coordinated the launch of the National Strategy for Just Adaptation at Parliament House, with the Assistant Minister for Climate Change, Senator Jenny McAllister delivering the keynote address. We also held a roundtable on Just Adaptation with 16 representatives from community organisations which advised Future Earth on how the principles of Just Adaptation may be applied and interpreted across multiple sectors.

Importantly, we socialised the Just Adaptation strategy at key sustainability events including 2030 and Beyond: Adaptation for Our Future, the Nature Conservation Council NSW's Annual Conference, and Western Sydney's Research Week 2022. We also attended the 2022 Future Earth Assembly in Paris to update the wider global network on recent pieces of work, including the National Strategy for Just Adaptation.

SUSTAINABILITY, RESEARCH AND INNOVATION CONGRESS OCEANIA SATELLITE EVENT

We hosted the Sustainability, Research and Innovation Congress Oceania Satellite Event, bringing together more than 200 delegates and 90 speakers to participate in dialogues, panels and workshops on key sustainability issues facing Australia and the Oceania region.



NATIONAL COMMITTEES FOR SCIENCE

The Academy's 22 National Committees for Science foster their disciplines in Australia and are responsible for encouraging and maintaining linkages between Australia and the global scientific community.

The committees provide guidance and advice on Australia's membership to the International Science Council (ISC) and 31 international scientific unions and interdisciplinary scientific committees of the ISC.

Domestically, the National Committees are responsible for engaging and supporting their respective discipline communities. This is achieved primarily by developing and implementing discipline-strategic plans along with periodic state-of-the-discipline reviews, and by contributing to scientifically informed policy through submissions, white papers and other input mechanisms facilitated by the Academy. The National Committees also initiate specialist forums, conferences and workshops.

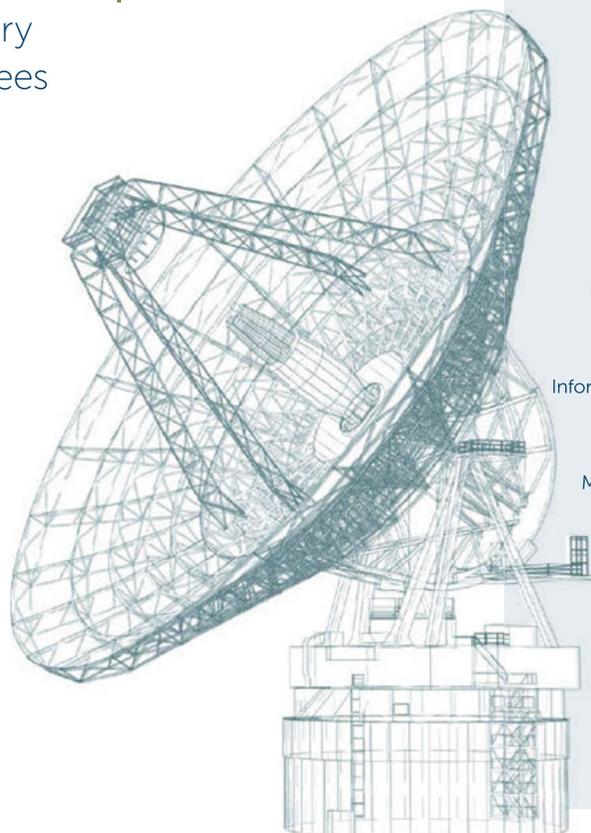
The National Committees for Science increased their reach and influence through greater investment in domestic policy. The committees are uniquely positioned to represent the diversity of the Australian science and research sectors which is extremely advantageous in amplifying and elevating science perspectives to government.

31

international scientific unions and interdisciplinary scientific committees of the ISC

22

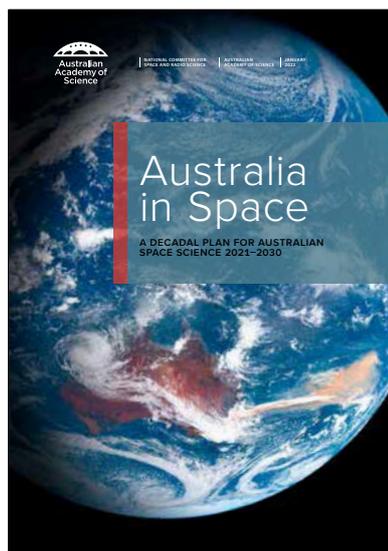
National Committees



NATIONAL COMMITTEES FOR SCIENCE

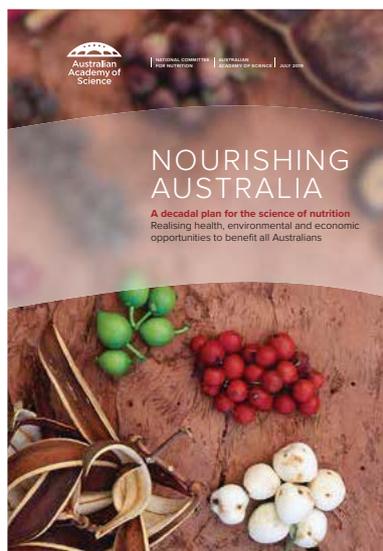
Agriculture, Fisheries and Food |
Antarctic research |
Astronomy |
Biomedical Sciences |
Brain and Mind |
Cellular and Developmental Biology |
Chemistry |
Crystallography |
Data in Science |
Earth Sciences |
Earth System Science |
Ecology, Evolution and Conservation |
Geographical Sciences |
History and Philosophy of Science |
Information and Communication Sciences |
Materials Science and Engineering |
Mathematical Sciences |
Mechanical and Engineering Sciences |
Medicine and Public Health |
Nutrition |
Physics |
Space and Radio Science |

DECADAL AND STRATEGIC PLANS



AUSTRALIA IN SPACE

In January the Academy published [Australia in Space: a decadal plan for Australian space science 2021–2030](#). This important ten-year plan makes recommendations and strategies for advancing national interests and priorities in space; growing the innovation economy, developing sovereign capability and improving the lives of all Australians. It presents a vision for Australia as a respected partner in the global community of spacefaring nations, leading its own space missions with Australian science teams and Australian-built payloads and spacecraft systems. Find out more about the [National Committee for Space and Radio Science](#).



NOURISHING AUSTRALIA

An existing plan, [Nourishing Australia: a decadal plan for the science of nutrition](#), was championed by the committee and its daughter implementation committee. The engagement of a dedicated project officer began the elevation of the plan, to propel its contents and foster community ownership. Find out more about the [National Committee for Nutrition](#).



MATHEMATICAL SCIENCES

The mathematical sciences in [Australia: mid-term review](#) was launched in December. The review examines the effect of national and global events including the COVID-19 pandemic and changes to curriculum on the mathematical sciences. The review reflects on the recommendations of the decadal plan and makes predictions for coming challenges. Find out more about the [National Committee for Mathematical Sciences](#).

Additional progress was made on the following plans and reports:

- Bioscience 2030: recommendations for future curriculum
- Review of the decadal plan for chemistry (2016–2025)
- Evolutionary science for a changing world.

MIKE SMITH STUDENT PRIZE

AWARDS AND FELLOWSHIPS

MIKE SMITH STUDENT PRIZE

The Mike Smith Student Prize for Australian Environmental History is facilitated by the National Committee for History and Philosophy of Science with funding from the National Museum of Australia (NMA). The NMA and Academy re-established a memorandum of understanding in 2019 to allow for three rounds, concluding in 2024. The 2021–22 round awarded two first prizes to:

- Jessica Urwin with her essay titled, 'No time to waste: Aboriginal resistance to Australia's nuclear waste, 1998–2004'
- Margaret Williams with her essay titled, 'Biopolitics and the Bacillus: Sinophobia in an Epidemic of Bubonic Plague in Sydney, 1900–10'.

2023 GEOFFREY FREW FELLOWSHIP

The Academy's 2023 Geoffrey Frew Fellow was selected by the National Committee for Physics in consultation with the National Committee for Chemistry. Awardee Professor Jelena Vuckovic will speak at the 2023 or 2024 Australian and New Zealand Optical Society conference.

CHANGES TO NATIONAL COMMITTEE CHAIRS

National Committee for Agriculture, Fisheries and Food: Professor Peter Langridge FAA FTSE replaced Professor Barbara Howlett FAA

National Committee for Brain and Mind: Professor Jason Mattingley FASSA replaced Professor David Badcock

National Committee for Chemistry: Professor Katrina Jolliffe FAA replaced Professor Frances Separovic AO FAA

National Committee for Earth Sciences: Professor Ian Jackson FAA replaced Professor Patrick De Deckker AM FAA

National Committee for Geographical Sciences: Professor Iain Hay replaced Professor Graciela Metternicht

National Committee for History and Philosophy of Science: Dr Rachael Brown replaced Professor Joan Leach

National Committee for Information and Communication Sciences: Professor Ampalavanapillai Nirmalathas FTSE replaced Professor Shazia Sadiq FTSE

National Committee for Materials Science and Engineering: Professor Lianzhou Wang replaced Professor Joanne Etheridge FAA

All the National Committee chairs were able to meet in person for the first time since 2019. The chairs discussed cross-cutting issues facing scientists across disciplines in Australia, as well as policy, outreach and diversity, and how to best approach these important areas.

INTERNATIONAL SCIENCE COUNCIL AND INTERNATIONAL UNIONS

The Academy is Australia's adhering body to the International Science Council (ISC) and many of its member unions, facilitating Australian involvement in ISC and other international science matters. As part of this role, the Academy coordinated submissions and prepared input into international policy matters and strategies, such as the revised INSGA Strategic Plan, the ISC COVID-19 Scenarios Project and a statement from the International Geographical Union on the importance of geography in the face of global environmental crises. The Academy provided advice to the Australian Government, particularly through engaging with the Department of Foreign Affairs and Trade.

Highlights of Australia's work with the ISC and its member bodies included:

- publication of a statement condemning the unprovoked and unlawful military aggression by Russia on the sovereign country of Ukraine
- involvement in the ISC's Committee on Freedom and Responsibility in Science
- being awarded the 2024 International Mathematical Union's (IMU) International Congress on Mathematical Education in Sydney and the 2025 CODATA International Data Week in Brisbane
- funding by the International Union of Nutritional Sciences toward the development of a Federation of Oceanic Nutrition Societies (FONS)
- elections of Australian researchers to union executive positions, including:
 - Professor Phil McManus as Vice-President of the International Geographical Union
 - Professor Nalini Joshi AO FAA as a Member-At-Large of the International Mathematical Union Executive Committee
 - Dr Steve McEachern as elected Treasurer of the Committee on Data
 - Dr Welma Stonehouse as elected treasurer of the International Union of Nutritional Sciences

Notable awards given to Australians in 2022 included:

- the inaugural ISC Fellowship to Professor Eva Alisic FASSA, Dr Marlene Kanga AO FTSE and Professor Ruth Fincher FASSA
- International Union for Nutrition Science Fellowships to Professor Frank Dunshea, Professor Caryl Nowson and Professor Andrew Sinclair.

REGIONAL FOCAL POINT FOR ASIA AND THE PACIFIC

In 2022 the Academy was awarded funding from the Australian Government to host the ISC's Regional Focal Point in Asia and the Pacific from 2023 for a period of five years. See more on this exciting development in the next section.

INTERNATIONAL PROGRAMS AND COLLABORATION

The Academy facilitates Australia's access to global science and technology, promotes strategic partnerships between Australian and overseas researchers, and contributes Australian expertise and leadership in regional and global science networks.

19

videos highlighting Australia and Asia-Pacific collaborations

10

EMCRs nominated to the Japan Society for the Promotion of Science Postdoctoral Fellowship program

12

young Australian scientists attended Lindau Nobel Laureate Meeting

3

Australian EMCRs participated in the Japan Society promotion for HOPE

\$800,000

Breakthrough Prize Foundation funding to support Ukrainian scientists

In 2022, the Academy:

- welcomed the announcement that we will lead a new regional focal point for the International Science Council to coordinate scientific engagement in the Asia-Pacific (see next page)
- produced 19 videos highlighting some of the scientific collaborations Australia has undertaken with our Asia-Pacific neighbours
- released a statement condemning the invasion of Ukraine by Russia, and announced funding support of \$800,000 by the Breakthrough Prize Foundation to support Ukrainian scientists
- helped 12 young Australian scientists attend the 71st Lindau Nobel Laureate Meeting in Germany
- hosted the seventh Falling Walls Lab Australia finale for early-career researchers and supported the national winners to take part in the international three-day conference in Berlin
- held an online event series, 'Cutting-edge solutions to shared challenges', to discuss innovations and opportunities for collaboration between Australian and Japanese researchers in AI and robotics and health research and technologies
- supported 3 Australian EMCRs to participate in the Japan Society for the Promotion of Science 13th HOPE Meeting with Nobel Laureates
- nominated 3 Australian EMCRs to the 2022 APEC Science Prize for Innovation, Research and Education (ASPIRE Prize)
- successfully nominated 10 EMCRs to the Japan Society for the Promotion of Science Postdoctoral Fellowship program.

More information on our international activities is in the National Committees section.



ACADEMY LEADS SCIENTIFIC ENGAGEMENT IN THE ASIA-PACIFIC

The Australian Academy of Science was announced as leading a new regional presence coordinating scientific engagement in the Asia-Pacific with the support of the Australian Government. The Academy welcomed the government's strategic commitment in October to establish the International Science Council (ISC) Asia-Pacific regional focal point at the Academy.

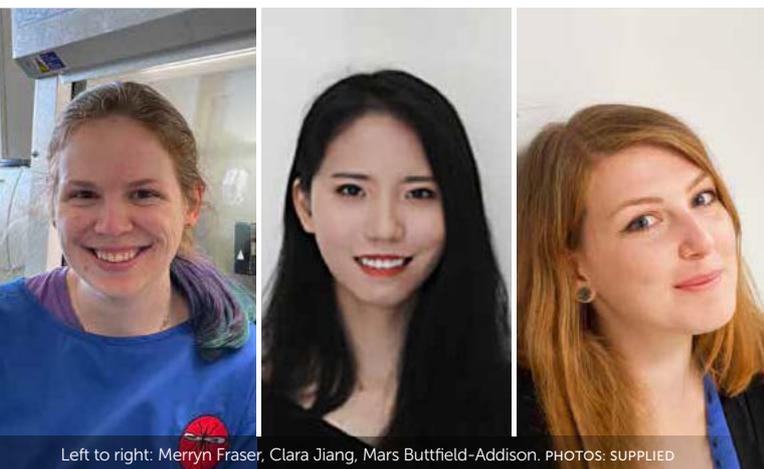
The Academy will work with scientific organisations across the Asia-Pacific to voice regional needs and priorities to the ISC, ensuring regional representation in the governance and strategic direction of the ISC.

ISC regional focal points are central to translating the ISC's global vision into actions tailored to meet the unique needs of the different regions of the world. The main objectives of the regional focal point will include engaging emerging science academies into ISC membership, developing and leading scientific programs within the region to advance shared goals, and promoting knowledge sharing and scientific exchange across the region.

“The Academy will work with scientific organisations across the Asia-Pacific to voice regional needs and priorities to the ISC, ensuring regional representation in the governance and strategic direction of the ISC.”

Since our foundation in 1954, the Academy has facilitated international partnerships and collaborations in pursuit of solutions to pressing global challenges. This investment enables Australia to leverage its standing as a science and research leader and engage in strategic science diplomacy in our region and globally.

The ISC Asia-Pacific regional focal point begins operation in 2023.



Left to right: Merryn Fraser, Clara Jiang, Mars Buttfield-Addison. PHOTOS: SUPPLIED

THREE AUSSIE INNOVATORS COMPETE IN BERLIN FOR FALLING WALLS LAB 2022

Merryn Fraser from the Australian National University won the seventh Falling Walls Lab Australia event, hosted online by the Australian Academy of Science in partnership with the Embassy of the Federal Republic of Germany in Canberra, DAAD, the German Academic Exchange Service and EURAXESS Australia and New Zealand.

Merryn's work explores the biology of *Plasmodium* parasites which cause malaria, using modified cholesterol molecules to sneak antimalarial drugs past the parasite's defences.

Second place went to Clara Jiang from the University of Queensland, whose idea of repurposing drugs which share similar gene expression fingerprints, like statins and anti-depressants, could save time and money.

Mars Buttfield-Addison from the University of Tasmania took third place, with her idea of using existing sensors such as astronomical radio telescopes to track space debris.

In November, the Australian winners represented Australia in the hybrid International Falling Walls Conference alongside the other 97 global winners and the top 10 global finalists in the Emerging Talents category.

The question of every Falling Walls Lab is: Which walls will fall next?



Ten of the Australian scientists in front of the Brandenburg Gate in Berlin.

YOUNG AUSTRALIAN SCIENTISTS LEARN FROM NOBEL LAUREATES AT 71ST LINDAU MEETING

Twelve of Australia's brightest young scientists attended the 71st annual Lindau Nobel Laureate Meeting dedicated to the discipline of chemistry from 26 June to 1 July in Germany. This event is a highly prestigious annual gathering of Nobel Laureates and emerging scientists from around the world.

The Australian delegation was led by mathematician and Academy Fellow, Emeritus Professor Cheryl Praeger AC FAA. She was joined by renowned Australian quantum physicist and Academy Fellow, Emeritus Professor Hans Bacher AM FAA.

The group joined 600 other young scientists from all over the world. The meetings provided an opportunity for the young scientists to share their research, experiences and ideas, and gain inspiration from fellow emerging scientists and Nobel Laureates. The Nobel Laureates shaped the scientific program, and the delegates were given the opportunity to find out more about both the professional and the personal side of the Laureates.

The Academy organised a Research Innovation Tour in Berlin the week before the Lindau meeting. The tour enabled the young researchers to visit the science museum FUTURIUM, laboratories at the Humboldt University and Technical University, and companies such as leading chemical company BASF to learn about research and industry links in Germany and network with counterpart German researchers.

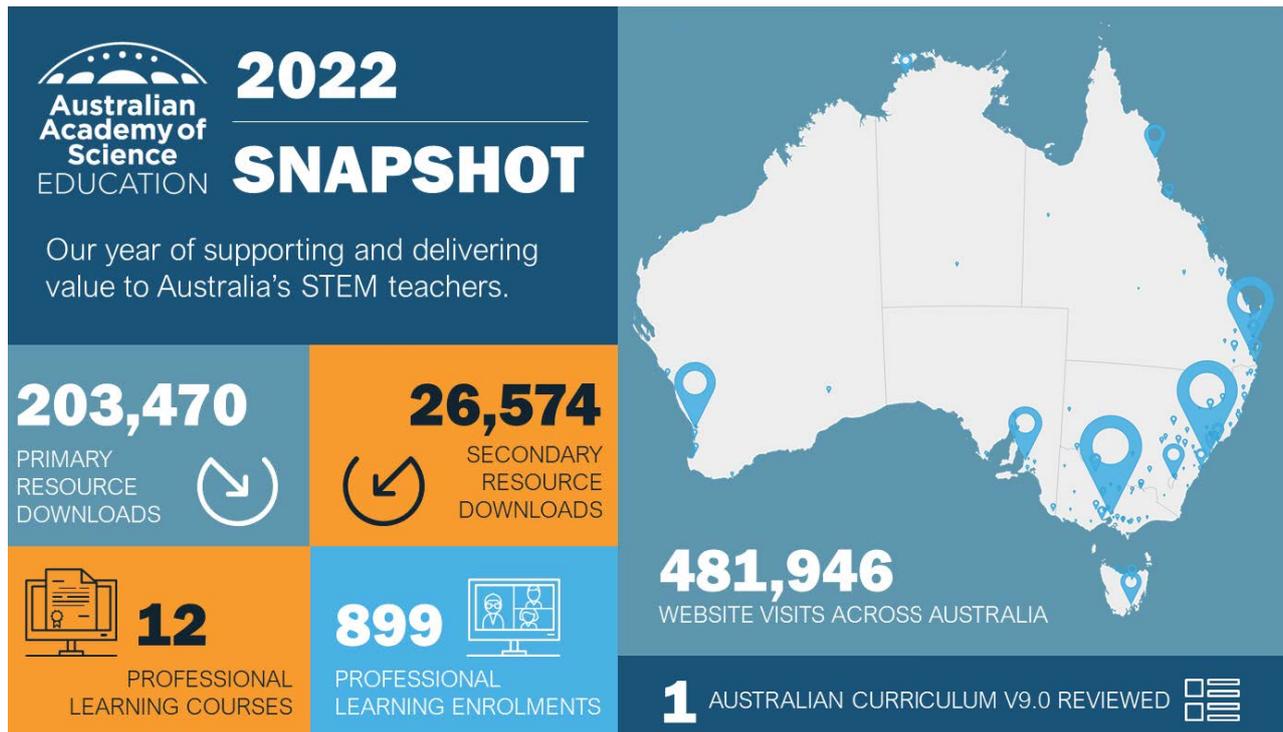
The annual Lindau event is generously supported by the Science and Industry Endowment Fund (SIEF). Seven researchers were selected by the Academy to attend the event this year. They were joined by five researchers who were selected in 2020 to attend the virtual 70th Lindau Nobel Laureates Meeting and were given the opportunity to participate in person at this year's meeting.

[More about the Australian Lindau participants](#)

[More about the Lindau Nobel Laureate Meeting](#)

EDUCATION

The Academy's involvement in school education continues to focus on providing support for teachers of science and mathematics spanning Foundation to Year 10. We do this through our three programs, Primary Connections: linking science with literacy, Science by Doing, and reSolve: Mathematics by Inquiry.



AUSTRALIAN GOVERNMENT GRANT 2020–21 TO 2024–25

Work continued with the extension of the Academy education programs to develop and deliver innovative, high-quality online science and mathematics teaching and learning resources for teachers and schools across Australia. Our programs are supported by grant funding from the Australian Government Department of Education and remain free to access and use.

In 2022, teachers across Australia accessed more than 230,000 teaching resources to support learning with students from Foundation to Year 10 and spanning topics from skip counting and multi-digit multiplication to changes of state between solid and liquid and how living things can be grouped based on observable features.

Professional learning is offered as asynchronous, self-paced, limited-duration online courses that are actively moderated by the Academy team. Course topics in 2022 included reasoning and problem-solving, a sense-making classroom culture, the active role of the teacher, exploring assessment and supporting student investigations.

ANALYSIS OF THE REVISED AUSTRALIAN CURRICULUM

A key focus of the year was a comprehensive analysis of the revised Australian Curriculum Version 9.0 which was published in May 2022. With a key deliverable of the grant being curriculum-aligned mathematics and science teaching and learning resources, understanding the changes to the overall curriculum design and intent, as well as the detailed changes to the Mathematics, Science and Technologies learning areas, is essential. The analysis was received positively by the department and revealed several opportunities that will be addressed in the design and development of future resources and professional learning. The Academy is underway with a major transformation project to develop digital teaching resources aligned with Australian Curriculum V9.0 and which include embedded just-in-time professional learning to support the teaching and learning of mathematics and science in Australian schools, Foundation to Year 10.

STRENGTHENING TEACHER STEM CAPABILITIES

Informed by and complementary to the review of the Australian Curriculum Version 9.0, work commenced on the development of design frameworks which will guide and inform high-quality user experiences incorporating contemporary pedagogies to strengthen teacher STEM capabilities. The Academy also investigated how digital technologies can enhance program offerings in effective ways, to improve the programs' abilities to support teachers in building their capacity and confidence in teaching science and mathematics.

The reSolve research project continues to assess the impact of the reSolve approach and educative curriculum materials on the professional learning, thinking and practices of Australian mathematics teachers of Foundation to Year 6. The intent of the research is to determine if Communities of Inquiry will be an effective way of working at scale with primary mathematics teachers across Australia.

We continued to maintain productive relationships with a variety of education organisations across Australia including the Australian Curriculum, Assessment and Reporting Authority; Education Services Australia; CSIRO Education and Outreach; CSIRO Publishing; the Australian Association of Mathematics Teachers; the Australian Science Teachers Association; and Deadly Science.

ACKNOWLEDGING TEACHERS ON WORLD TEACHERS' DAY

The Academy acknowledged the valued role that teachers play in our schools and communities through an awareness campaign for World Teachers' Day 2022 featuring neuroscientist, educator, former WA Chief Scientist and current Academy Secretary Education and Public Awareness, Professor Lyn Beazley AO FAA FTSE.

PARTICIPATING IN NATIONAL SCIENCE TEACHERS CONFERENCE

In September the Academy participated in CONASTA, the annual science education conference of the Australian Science Teachers Association (ASTA). After two years of being cancelled due to the COVID-19 pandemic, the originally scheduled 2020 conference CONASTA69 was held in Canberra in 2022.

The conference theme, 'Science Revealed', was chosen to inspire educators to focus on the less obvious and most intriguing aspects of science, and how these aspects contribute to the broader body of scientific knowledge that supports breakthrough technologies.

The conference featured keynote addresses from Academy Fellow and ANU Vice Chancellor Professor Brian Schmidt AC FAA FRS NOBEL LAUREATE, and from Associate Professor Bradley Moggridge, a member of the Academy's Reconciliation Action Plan Working Group.

More than 200 delegates from across Australia attended CONASTA69, including primary and secondary school teachers as well as representatives from science education and science organisations. The Academy's education team presented workshops on assessment and STEM education and ran an exhibition booth to talk with teachers about their needs and the challenges and opportunities of science education.

The Academy also hosted a key conference event at the Shine Dome, the Stanhope Oration and ASTA Award night, where delegates gathered to listen to Academy Fellow and Australian Chief Scientist Dr Cathy Foley AO FAA FTSE deliver the 2022 oration.



Academy Education team members Claudette Bateup, Lynn Walker, Nicola Dziadkiewicz, Jennifer Lawrence and Melanie Hughes at the CONASTA69 conference.

DIVERSITY AND INCLUSION

The Academy aims to be a national leader in diversity and inclusion in Australia's science sector. We are committed to supporting excellence in science and empowering the next generation of scientists, and recognise that to achieve this we must celebrate and embrace diversity and inclusion in all its forms and embed diversity and inclusion in everything we do.

STEM WOMEN

stemwomen.org.au

400+

new profiles created on the website STEM Women. By the end of the year, the platform had

4888 profiles

STEM WOMEN ASIA

stemwomen.asia

30

new profiles created on the website STEM Women Asia. By the end of the year, the platform had

416 profiles

STEM WOMEN GLOBAL

stemwomen.global



STEM Women Global website launch. By the end of the year, the platform had

992 profiles

WOMEN IN STEM DECADAL PLAN CHAMPIONS

Australia's Women in STEM Decadal Plan provides a shared vision for the STEM ecosystem to attract, retain and progress girls and women in STEM education and careers. Gender equity in STEM will make significant and measurable improvements in the Australian STEM sector.

In 2022, we continued to steward the [Women in STEM Decadal Plan](#) initiative, hosting a network of 44 Decadal Plan Champion organisations. The Decadal Plan Champions have publicly aligned their gender equity activities with the six opportunities outlined in the Women in STEM Decadal Plan. This emergent network of leading STEM organisations spans all parts of the ecosystem, including academia and research, industry, small to medium enterprises, institutions and the public sector.



STEM WOMEN GLOBAL

STEM Women Global enables women working in STEM fields around the world to raise their profile and discover opportunities to progress their careers.

STEM Women Global has multilingual capability for equity of access across locations, languages and cultures, and has tools and mechanisms to support women scientists who have experienced displacement or are at risk.

PLATFORM LAUNCH

The STEM Women Global platform was officially launched on 10 November in an online event hosted by the Academy. [See a recording of the launch.](#) By the end of the year the platform had 992 profiles listed.

The aim of the event was to acknowledge and celebrate the new platform and to inform member networks and others about the platform and encourage participation. It was also an opportunity to recognise supporting partners and organisations, in particular the:

- Association of Academies and Societies of Sciences in Asia (AASSA)
- European Academies' Science Advisory Council (EASAC)
- InterAmerican Network of Academies of Sciences (IANAS)
- Network of African Science Academies (NASAC).

The event was hosted late evening Australian Eastern Daylight Saving Time to enable global participation. Academy Foreign Secretary Professor Frances Separovic AO FAA provided a welcome and hosted the event; Cheryl Praeger AC FAA, Academy Fellow and Chair of the Women in Science and Engineering (WISE) Committee of AASSA, provided an overview of the entire project; and Professor Dr Asma Ismail, President of the Academy of Sciences Malaysia and InterAcademy Partnership Co-chair spoke. Global stakeholders also conveyed their views on the value of the platform and the importance of gender equity and global collaboration.

EARLY- AND MID-CAREER RESEARCHERS

In November 2021, the Early- and Mid-Career (EMCR) Forum ran the biannual national EMCR professional development conference [Science Pathways 2021: Sustainable Careers](#) in a majority virtual format due to COVID-19. The themes from this conference guided the Forum's direction in 2022.

In 2022, the EMCR Forum initiated engagement with a broader, more diverse EMCR community by revising the definition of an EMCR to make it more inclusive. The new definition captures non-linear/non-traditional career paths (where individuals have moved between academia, industry and government, post-PhD) in addition to career disruptions. The definition also includes people with a master degree and practitioners of Indigenous knowledges who are involved in active research. Updating the definition has helped the Forum to commence engagement with the Aboriginal and Torres Strait Islander EMCR community. This change has improved the diversity of the Forum Executive and the network, which amplifies the Forum's capacity to address the challenges in our research system.

“The EMCR Forum initiated engagement with a broader, more diverse EMCR community by revising the definition of an EMCR to make it more inclusive ... This change has improved the diversity of the Forum Executive and the network, which amplifies the Forum's capacity to address the challenges in our research system.”

The EMCR Forum became more active in international engagement activities. An international highlight was the Forum Executive's hybrid workshop at the InterAcademy Partnership (IAP) Worldwide Meeting of Young Academies. This was a collaboration between the EMCR Forum and The Future of Meetings, on diversity and accessibility lessons learned through COVID. Following these activities, it is exciting to share that the EMCR Forum is among the first group of Young Academies and Associations, worldwide, to apply to join the International Science Council (ISC) as an Affiliate Member. Forum Executive members also participated in the judging panel for the Falling Walls Lab Australia finale.

The EMCR Forum also engaged with the government, funding bodies and the media. The year saw the initiation of regular engagement with the Australian Research Council (ARC). This resulted in invitations to ARC consultations, the establishment of regular meetings between the Forum and the ARC, and co-organisation of a national workshop to support EMCR fellowship applicants. Forum Executive members also contributed to the Nature [news article](#) on 13 May 2022, 'Dark mood: Australian researchers lament state of science ahead of election'.

SUBMISSIONS TO GOVERNMENT

The EMCR Forum made the following public submissions:

- in December, the Forum made a submission to the [independent review of the Australian Research Council Act \(2001\)](#)
- in June the Forum made a submission to the Department of Education, Skills and Employment on the consultation paper [Research block grant reform](#) to boost incentives for greater university and industry collaboration
- The EMCR Forum contributed to the Academy's submission on the [Australian Research Council Amendment \(Ensuring Research Independence\) Bill 2018](#).

THEO MURPHY INITIATIVE (AUSTRALIA)

Through the [Theo Murphy Initiative \(Australia\)](#), the Academy facilitates grants for activities and events to support EMCRs in STEM.

The purpose of the Theo Murphy Initiative (Australia) is to further scientific discovery in Australia by delivering opportunities that empower the next generation of science leaders.

In 2022, events and activities included:

- [Connecting the dots: knowledge brokering for impact and innovation](#)
- [Catalysing Australia–Japan Science and Innovation Symposium](#)
- [Science for the public good](#)
- [Flourish! Interdisciplinary solutions for a thriving planet](#)

In the 2022–23 round, the Theo Murphy Initiative (Australia) is funding interdisciplinary activities that provide research and career development opportunities for EMCRs in Australia.

DIVERSITY AND INCLUSION EVENTS

Five promising researchers from universities around Australia were the 2022 recipients of the Academy's Aboriginal and Torres Strait Islander Scientist Award. The award recognises research in the physical and biological sciences, allowing interdisciplinary and sociocultural research that could straddle the social sciences and humanities, by outstanding Aboriginal and Torres Strait Islander PhD students and early- and mid-career scientists.

During the Academy's flagship Science at the Shine Dome event, we hosted a workshop about the intersections between contemporary science and Indigenous knowledges. Academy Fellow Professor [Tom Calma AO FAA FASSA](#) led this workshop for all attendees to discuss how their practices can be enriched by effective and meaningful engagement with Aboriginal and Torres Strait Islander knowledge holders and contemporary science practitioners.

We celebrated NAIDOC Week by hosting a webinar. In a Q&A format, four Indigenous STEM professionals shared their journeys in STEM and discussed their experience embracing Indigenous knowledges in STEM and the ways in which they foster a more inclusive and diverse STEM sector.

Academy staff celebrated Wear it Purple Day to celebrate diversity and young people from the LGBTIQ+ community. In addition, the Academy held an online session with Associate Professor Ada Cheung and Dr Mohammad Taha to discuss with Associate Professor Ada Cheung and Dr Mohammad Taha, to discuss the challenges LGBTIQ+ youth experience, while raising awareness and supporting our community with this important discussion. We also explored the science and unintended social consequences of LGBTIQ+ exclusion.

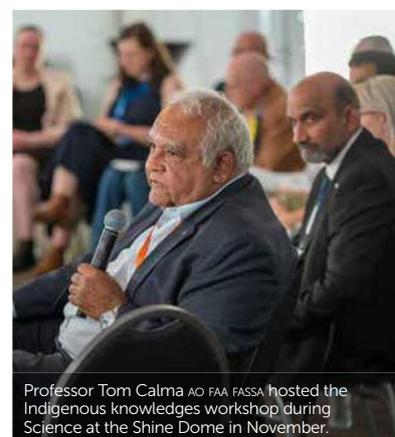
RECONCILIATION ACTION PLAN

The Academy is committed to advancing reconciliation and creating opportunities to work respectfully with Aboriginal and Torres Strait Islander peoples. We strive to support their contribution to scientific activities, increasing the recognition and understanding of Indigenous knowledges and their intersections with contemporary science.

In August 2019, we were proud to launch our first [Reconciliation Action Plan](#), a Reflect RAP, which set the foundations for future reconciliation initiatives and represented the Academy's commitment to our reconciliation journey. Since then, the Academy has continued seeking and strengthening relationships with Aboriginal and Torres Strait Islander peoples based on mutual respect.

In 2022, we remained committed to and started to work on our Innovate Reconciliation Action Plan. Our vision for reconciliation is that all Australians respect and celebrate the traditional knowledges and cultures of Australia's Indigenous Peoples and that we draw on diverse knowledge systems to build a stronger, more innovative and sustainable nation and world.

The Academy will continue to identify opportunities for direct action, be a driver for broader change and support the efforts of others to make significant changes for Aboriginal and Torres Strait Islander peoples.



Professor Tom Calma AO FAA FASSA hosted the Indigenous knowledges workshop during Science at the Shine Dome in November.

COMMUNICATING SCIENCE

The Academy continued to expand its reach and impact through communication across its many established and growing channels, including online publications, media, social media, email and events. The easing of COVID-19 restrictions allowed the return of Science at the Shine Dome in-person, and recordings of the event continue to be freely accessible online across Australia and around the world.

28M+

impressions on
social media

144

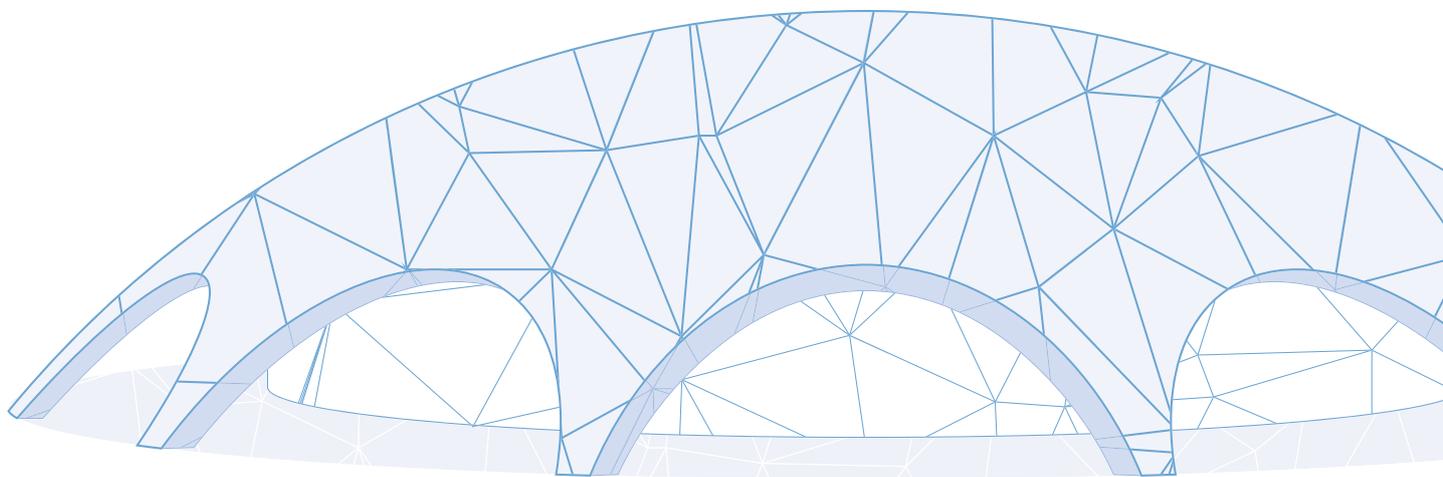
videos
published

2.7M+

visitors to
our websites

38

events
held



TOP SCIENCE VIDEOS AND ARTICLES

More than 144 videos were produced on varied science topics and to profile Academy Fellows elected in 2020, 2021 and 2022, and to celebrate the achievements of awardees.

The Academy published three videos on Australia's biosecurity for the Centre of Excellence for Biosecurity Risk Analysis (CEBRA), and eight videos illustrating Australia and India's close bilateral relationship, in partnership with the Department of Foreign Affairs and Trade.

The content that garnered the most engagement on Facebook in 2022 included the three videos in our series on biosecurity: 'Smelly invader threatens Australia', 'Why Australia needs biosecurity', and 'Australia's battle with red imported fire ants'. Other top performing videos included 'Monarch butterfly', and 'World's largest radio telescope', the latter of which was part of our series titled Science Beyond Borders. These posts ranged in reach from 848,000 to 2 million people.

Our science-inspired Curious website (science.org.au/curious) received 2.2 million visits. Top articles were 'Which came first—the chicken or the egg?', 'Batteries' and 'Animals that live forever'.

The Academy website (science.org.au) received 519,000 visits. Top visited pages related to climate change, the Fellows, and our awards and opportunities.

144

videos produced on scientists and science topics

2.7M

website visits



MEDIA

A total of 92 Academy news stories and media releases were published on the Academy website, a 24% increase on the previous year.

There were 3,814 media stories about the Academy or mentions of the Academy across Australian TV and radio news (1,409) print media (146) and online news sites in Australia and internationally (2,259).

The top news article for 2022 mentioning the Academy (by reach and volume) was a [story by Associated Press](#) when the second Inquiry into the convictions of Kathleen Folbigg was announced. It reached an estimated audience of 62.8 million people.

The news story most shared on social media in 2022, in which the Academy was mentioned, was a [story by ABC News](#) on the latest State of the Environment report. The Academy's President was quoted in the story, reacting to the release of the report. The story was shared on social media 9,583 times.

Of the Academy's videos produced, 43 were embedded into online news websites a total of 472 times, and 18 Academy articles were mentioned or quoted 133 times in online news websites, including syndications.

SOCIAL MEDIA

Across all the Academy's social media channels, 28 million impressions, 4.4 million engagements and 159,000 post clicks were recorded in 2022.

Facebook: 2.3 million followers. Our 222 posts reached 13 million people and videos were viewed 2.8 million times and watched for 1 million minutes on Facebook. The Academy received 62,000 reactions, comments and shares on our posts in 2022.

Twitter: 61,681 followers. 2,774 tweets were posted, which gained 83,000 engagements. The account received around 4 million tweet impressions for the year.

Instagram: 23,100 followers. 345 posts and stories were published and received 6,391 combined likes, comments, saves and story replies.

YouTube: 33,743 subscribers. Videos received 367,500 views, 554,000 minutes of videos were watched and 3 million impressions on YouTube were recorded.

LinkedIn: 12,000 followers.

4.4M+
social engagements



EVENTS

The Academy delivered 38 online and hybrid events for audiences across Australia and around the world, including the return of the Academy's in-person flagship event, Science at the Shine Dome.

PUBLIC SPEAKER SERIES 2022: SURPRISING SCIENCE

The 2022 Public Speaker Series, titled 'Surprising Science: Borrowed ideas leading to unimagined consequences' was convened by Academy Fellow Professor Mahananda Dasgupta and Professor Drew Evans. The six-part series looked at breakthroughs, new technologies and research with unexpected outcomes, born from scientific disciplines borrowing each other's ideas. The series demonstrated how discoveries from our everyday lives inspire scientific solutions in unusual ways. The series was delivered in a hybrid style, offering both in-person and online options for attendees and speakers.

PRIME MINISTER'S PRIZES FOR SCIENCE BREAKFAST

The annual Prime Minister's Prizes for Science Breakfast was held at the Shine Dome on the morning after the prizes dinner at Parliament House. This breakfast was held on Tuesday 22 November, which was the first day of Science at the Shine Dome 2022. The event was also livestreamed online for those unable to attend in person. The formalities included an address by Senator Jess Walsh, and an award ceremony recognising those who received prizes, as well as the teachers highly commended for teaching excellence.

ANNUAL SCIENCE-LAW SYMPOSIUM

In conjunction with the Australian Academy of Law, the Academy delivered the annual joint symposium for 2022 on 18 October at the Shine Dome. The topic was illegal drugs, and the panel members were experts in criminal law, pharmacology and social research. The symposium was chaired by ACT Chief Justice Lucy McCallum FAAL.

OTHER ACADEMY EVENTS

Other Academy events included Academy President Professor Jagdish delivering the 2020 Lloyd Rees Lecture, the launch of a report on athlete data in professional sport, and the exciting Falling Walls Lab Australia finale.





The Academy broadcast live interviews from the event.



Professor Kathy Belov FAA signing the Charter Book on her admission to the Academy.

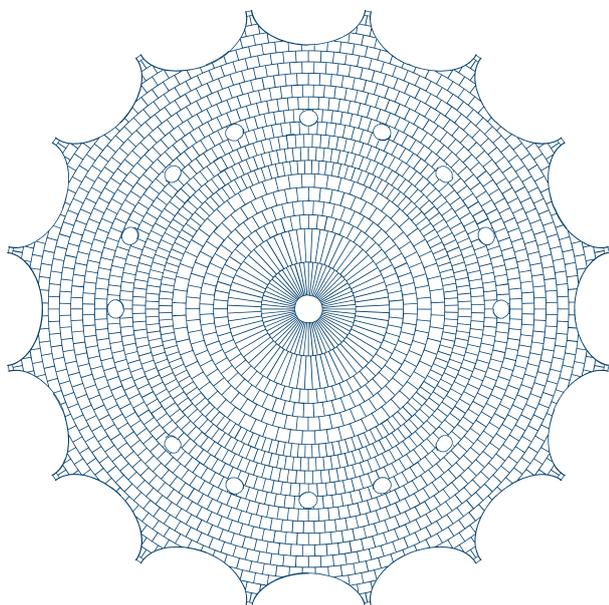


SCIENCE AT THE SHINE DOME

Science at the Shine Dome is the Academy's flagship event.

Over three days, Australia's most influential scientists gather at the Shine Dome in Canberra to celebrate and honour outstanding achievements in science. It enables researchers from all disciplines and career levels to come together to present, share, network and collaborate.

Science at the Shine Dome in 2022, held from 22 to 24 November, was a special year as we came together in person for this event for the first time since 2019. The event was a hybrid format, so audiences were able to join us in person in Canberra and online from anywhere in the world.



DAY 1

The first day of Science at the Shine Dome was a major celebration of Australian science as more than 60 leading scientists, elected in 2020, 2021 and 2022, were formally admitted to the Academy.

Also celebrated were the recipients of the Prime Minister's Prizes for Science, with a breakfast at the Shine Dome. The breakfast followed the official prize ceremony at Parliament House on Monday night, where Academy Fellow Professor Trevor McDougall AC FAA FRS took home the 2022 Prime Minister's Prize for Science for his research on the role the ocean plays in transferring heat around the globe.

For the first time, the Academy enriched the experience of those watching online by broadcasting live interviews with scientists and other attendees from the grounds of the Dome. These fascinating discussions revealed more about each person's research, what drives them to discover new things, and their interests outside of science.

731

attendees,
675 in person
and 56 online

60+

leading scientists
admitted to the
Academy



Karlie Alinta Noon in conversation with the Hon Ed Husic MP at the Gala Dinner.



Dr Liz Dennis AC FAA FTSE delivering the 2022 Ruby Payne-Scott Lecture

DAY 2

The second day of Science at the Shine Dome focused on the Academy Fellows elected in 2022. They spoke passionately about their life's work and achievements, acknowledged the people who have supported them on their journey of discovery, and shared their thoughts about possible futures for Australia and the world. Many in-depth interviews were also filmed with Fellows.

GALA DINNER

More than 400 scientists and science supporters attended the Academy's annual gala dinner on Wednesday night at the Great Hall of Parliament House. The evening was hosted by Academy Council members Professor Lyn Beazley AO FAA FTSE and Professor Frances Separovic FAA.

One of the highlights of the evening was a conversation on stage between Karlie Alinta Noon, a Gamilaroi yinnar woman and astronomy PhD candidate and lecturer from the Australian National University, and the Minister for Industry and Science the Hon Ed Husic MP. Other highlights were the presentation of the Academy's most prestigious medals: the 2020 Macfarlane Burnet Medal to Professor Marilyn Renfree AO FAA FRS and the 2022 medal to Professor Steve Simpson AC FAA FRS; the 2021 Matthew Flinders Medal to Professor Andrew Holmes AC FAA FTSE FRS; and the 2021 Ruby Payne-Scott Medal to Professor Cheryl Praeger AC FAA and the 2022 medal to Dr Liz Dennis AC FAA FTSE.

During the evening the Academy paid tribute to iconic ABC broadcaster and Academy Fellow, Professor Robyn Williams AO FAA, and showed two videos to mark his nearly five decades of dedication to reporting, promoting and exploring science for the ABC.

DAY 3

On the third and final day of the event, we continued to recognise excellence in Australian science with award and medal presentations.

The recipient of the 2020 Macfarlane Burnet Medal, Professor Marilyn Renfree gave her associated lecture, outlining how she came to be a world authority on marsupial reproduction and development.

There were also Premier Honorary awards for Professor Steve Simpson of the University of Sydney and Dr Liz Dennis AC FAA FTSE of CSIRO.

Recipients of career honorifics included scientists who've transformed our understanding of the biological basis of breast cancer, those using light as a 'molecular surgical tool', and those illuminating how deposits of copper and gold form within the hydrothermal systems of volcanoes.

Mid-career and early-career awardees included trailblazers who introduced point-of-care testing for sexually transmissible infections (STIs) and COVID-19 in remote Aboriginal communities, are leading international efforts to model the concentrations of atmospheric pollutants, and are identifying the source locations of fast radio bursts in distant galaxies.

In the afternoon, Professor Tom Calma AO FAA FASSA led a workshop for all attendees to discuss how their practices can be enriched by effective and meaningful engagement with Aboriginal and Torres Strait Islander knowledge holders and contemporary science practitioners.

Professor Calma is Chancellor of the University of Canberra and a descendant of the Kungarakan and Iwaidja tribal groups. He was elected a Fellow of the Academy in 2022, having championed the improvement of Indigenous peoples' health, education, and justice for over 45 years.

They also discussed how researchers can help to build a more inclusive and diverse science sector, with other Indigenous scientists sharing their experiences of working within the contemporary science paradigm.

NEWSLETTERS AND EMAIL CAMPAIGNS

Newsletters and emails are key communication tools for the Academy, providing stakeholders and other interested people with targeted information on coming events, important announcements, and the Academy's activities and achievements. The Academy sent 141 email campaigns and newsletters to subscribers of Academy email lists, which equated to 473,631 emails sent.

Subscribers of Academy newsletters steadily increased, with the number of subscribers at December 2022 at just over 37,000.

20K  **37K+**

newsletter subscriber increase

SCIENCE JOURNALS

HISTORICAL RECORDS OF AUSTRALIAN SCIENCE

Historical Records of Australian Science (HRAS) is published in January and July each year by CSIRO Publishing on behalf of the Academy. HRAS publishes peer-reviewed articles with supplementary material on the history of science in Australia and the southwest Pacific, biographical memoirs of deceased Fellows of the Academy, subject bibliographies, and book reviews.

The journal's editors are Dr Sara Maroske and Professor Ian Rae, with book review editor Dr Martin Bush. There is an Editorial Committee of Fellows and other experts to guide the direction of the journal. HRAS is published online only, with hard copies available on request for an annual subscription fee. Biographical memoirs of Fellows are available free on the Academy website after publication in HRAS. Academy Fellows have access to all content in the online version of the journal for free.

In 2022, 19 papers were submitted for publication compared to 14 in 2021.

The journal published 7 historical articles, a historical document, 7 biographical memoirs and 13 book reviews.

AUSTRALIAN JOURNALS OF SCIENTIFIC RESEARCH

CSIRO Publishing and the Academy jointly published 14 journals of scientific research. The journals have an international readership, with subscribers in 90 countries. They can be accessed for free by scientists in more than 100 developing nations through the United Nations' Research4Life program. About half the published papers originate outside Australia. Editorial policy is determined by a Board of Standards, which is jointly chaired by CSIRO and the Academy.

CSIRO Publishing supports both 'Green' and 'Gold' Open Access to help authors reach the broadest audience and to enable unrestricted access to scholarly research. All Open Access articles undergo the same rigorous peer review as those published under a subscription model.

The 14 CSIRO Publishing Journals published 139 issues comprising 13,055 pages for 2022 volumes.

ACADEMY OPERATIONS

GOVERNANCE

COUNCIL AND EXCOM

Professor John Shine AC PresAA FRS
President (until May 2022)

Professor Chennupati Jagadish AC PresAA FREng FTSE
President (commenced May 2022)

Professor Malcolm Sambridge FAA
Secretary Physical Sciences

Professor Helene Marsh AO FAA FTSE
Secretary Biological Sciences

Professor Elaine Sadler AO FAA
Foreign Secretary (until May 2022)

Professor Frances Separovic AO FAA
Foreign Secretary (commenced May 2022)

Professor Ian Chubb AC FAA FACE FTSE
Secretary Science Policy

Professor Hans Bachor AM FAA
Secretary Education and Public Awareness (until May 2022)

Professor Lyn Beazley AO FAA FTSE FACE
Secretary Education and Public Awareness
(commenced May 2022)

Professor Marilyn Anderson AO FAA FTSE
Treasurer

Professor Lyn Beazley AO FAA FTSE FACE
Member (until May 2022)

Professor Bob Graham AO FAA
Member

Dr John Kirkegaard FAA
Member

Professor Ivan Marusic FAA
Member (until May 2022)

Professor Julian Gale FAA
Member (commenced May 2022)

Professor Paul Mulvaney FAA
Member

Professor Suzanne O'Reilly AM FAA
Observer (until May 2022)

Professor Jim Williams AO FAA FTSE
Observer (commenced May 2022)

Professor Colin Raston AO FAA
Member

Professor Louise Ryan FAA
Member

Professor Veena Sahajwalla FAA FTSE
Member

Professor Jonathan Sprent FAA FRS
Member

Professor Bob Williamson AO FAA FAHMS(Hon) FRS
Member (until October 2022)

Professor Alan Andersen FAA
Member (commenced October 2022)

Professor David Bowtell FAA
Member (commenced May 2022)

EXCOM

Professor John Shine AC PresAA FRS
President (until May 2022)

Professor Chennupati Jagadish AC PresAA FREng FTSE
President (commenced May 2022)

Professor Malcolm Sambridge FAA
Secretary Physical Sciences

Professor Helene Marsh AO FAA FTSE
Secretary Biological Sciences

Professor Elaine Sadler AO FAA
Foreign Secretary (until May 2022)

Professor Frances Separovic AO FAA
Foreign Secretary (commenced May 2022)

Professor Ian Chubb AC FAA FACE FTSE
Secretary Science Policy

Professor Hans Bachor AM FAA
Secretary Education and Public Awareness (until May 2022)

Professor Lyn Beazley AO FAA FTSE FACE
Secretary Education and Public Awareness
(commenced May 2022)

Professor Marilyn Anderson AO FAA FTSE
Treasurer

Professor Suzanne O'Reilly AM FAA
Spokesperson, Diversity and Inclusion (until May 2022)

Professor Jim Williams AO FAA FTSE
Spokesperson for Integrity (commenced May 2022)

SECRETARIAT SENIOR MANAGEMENT TEAM

Anna-Maria Arabia
Chief Executive

Melissa Abberton
Chief Operating Officer

Andrew Hood
Chief Information Officer

Paul Richards
Director, Communications and Outreach

Zach Ghirardello
Director, Diversity and Inclusion

Claudette Bateup
Director, Education

Karen Holt
Director, Fellows and Archives

Chris Anderson
Director, Science Policy

Dr Petra Lundgren
Director, Future Earth Australia
(commenced January 2022)

Nancy Pritchard
Director, International Programs and Awards

Shauna McKay
Human Resources Manager

Isobel Griffin
Manager, Philanthropy
(until August 2022)

Kate Groves
Director, Philanthropy
(commenced December 2022)

FINANCIAL REPORT 2020–21

[Read the Academy's financial report for 2021–22](#)

ACADEMY EMPLOYEES

70 staff at the end of 2022
39 FT, 32 PT, 51 female, 17 male,
2 gender not specified

The Academy hosted 7 interns for various periods. Academy staff worked across 5 Australian states and territories and 1 international location, with staff based in the following:

58 staff ACT • 3 staff QLD • 4 staff NSW • 3 staff VIC • 1 staff TAS • 1 staff O/S



Australian Academy of Science staff gather outside the newly refurbished Ian Potter House.

THE SHINE DOME

EXTERNAL EVENTS AT THE SHINE DOME

Activity at the iconic Shine Dome recovered from the pandemic in 2022, with clients making a return to booking in-person events. There were 175 external events held at the Dome. Nearly 10,000 participants attended from many different organisations, including universities, federal and state government departments and not-for-profit organisations.

200+

events at the Dome
(including online-only broadcasts)

HERITAGE BUILDINGS

REOPENING

Two-and-a-half years since severe damage caused by a Canberra hailstorm, our heritage-listed Shine Dome was reopened by the Governor-General of Australia, His Excellency General the Hon David Hurley AC DSC (Retd) and the Hon Ed Husic MP, Minister for Industry and Science.

Heritage building Ian Potter House reopened after it also sustained significant damage during the hailstorm.

10K

people attended
events in person

IMPROVEMENTS

The Academy upgraded external lighting to a low energy programmable LED system and installed a new energy efficient heating and cooling system at the Dome in 2022.



(L-R) Governor-General His Excellency General the Hon David Hurley AC DSC (Retd), Her Excellency Mrs Linda Hurley, Academy Chief Executive Ms Anna-Maria Arabia, and Academy President Professor Chennupati Jagadish AA PresAA FTSE, standing in front of the foundation stone of the Shine Dome, placed by Prime Minister Robert Menzies in 1958. PHOTO: BRADLEY CUMMINGS FOR THE AUSTRALIAN ACADEMY OF SCIENCE.

