



AUSTRALIAN
ACADEMY
OF SCIENCE
ANNUAL
REPORT
2015

A blue-tinted background image showing a close-up of a man's face on the left and reeds on the right.

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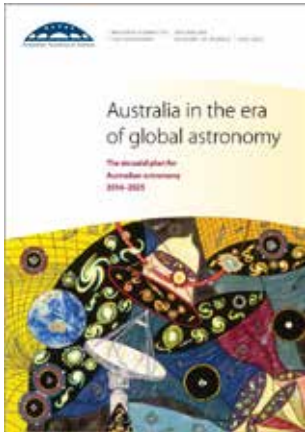
Cover image: Professor Graham Farquhar AO FAA FRS, winner of the 2015 Prime Minister's Prize for Science and the 2016 Macfarlane Burnet Medal and Lecture

CONTENTS

Our top achievements of 2015	1
Welcome from the President	2
Welcome from the Chief Executive	2
Strategic plan	3
Excellence in science	4
The Fellowship	4
Academy Awards	11
Science in Australia Gender Equity (SAGE)	14
National Committees	15
Early- and mid-career researchers	20
International engagement	21
Multilateral engagement	21
Bilateral research collaborations	21
Scientific literacy	23
School programs	23
Science outreach	25
Academy website	26
Events	26
Journals	27
The Basser Library and Fenner Archives	27
Influential voice	28
Parliamentary Friends of Science	28
National Innovation and Research Alliance	29
Australian Council of Learned Academies	29
Operational excellence	30
Philanthropy	30
Governance	31
Infrastructure	31
Financials	32
Treasurer's commentary on Financial Statements 2015	32

OUR TOP ACHIEVEMENTS OF 2015

 <h2>Schools</h2>	 <h2>SAGE</h2>	 <h2>Nova</h2>
SCIENCE AND MATHEMATICS EDUCATION	SCIENCE IN AUSTRALIA GENDER EQUITY	SCIENCE EXPLAINER WEBSITE
 More information page 23	 More information page 14	 More information page 25



WELCOME FROM THE PRESIDENT



Welcome to the 2015 annual report of the Australian Academy of Science. I hope you enjoy hearing about our strong achievements across our five strategic themes. I'd like to draw your attention to just a few highlights.

Working towards our theme of excellence in science, we are proud to have created the Science in Australia Gender Equity program—or SAGE—which will improve gender equity and diversity in Australian science, technology, engineering, mathematics and medicine. And we've welcomed an outstanding group of new Fellows to the Academy.

Under the theme of scientific literacy, we have begun a bold new national mathematics school education program. Our well-regarded primary and secondary school science programs, Primary Connections and Science by Doing, have grown from strength to strength. And we've launched our dynamic new science explainer website, Nova.

Regarding our theme of influential voice, we have made a number of strong submissions to the government that have influenced government policy in areas as diverse as stem cell research, greenhouse gas emission targets, regulation and education. We've also coordinated well-attended parliamentary events.

Under our theme of international engagement, the Academy has supported more than 100 Australian researchers to travel to places around the world to collaborate with international colleagues. We've also represented the interests of Australian science through executive committee appointments and voting delegates attending international scientific unions and inter-academy meetings.

In the area of operational excellence, we've been implementing our governance review and have

established a strong and ongoing philanthropic program to support our work, now and into the future.

I invite you to read through this report for details of these and many more highlights.

And I look forward to another exciting year of striving towards the Academy's vision of excellence in Australian science, a scientifically informed community, and a society that is guided by and enjoys the benefits of scientific endeavour.

I hope you enjoy reading this report as much as I have.

Professor Andrew Holmes AM PresAA FRS FTSE

WELCOME FROM THE CHIEF EXECUTIVE

Welcome to the Australian Academy of Science's 2015 annual report.

We're just beginning a new five-year strategic plan for the period of 2015–20, and as part of this, we're going to report on a calendar year basis in the future. So this report is transitional, covering the period from April to December 2015.

We've taken the opportunity to modernise the way in which we present our key achievements against each of our five strategic themes; we do hope that you'll enjoy the new format.

I am proud to say it's been an excellent year, and I am very grateful to the staff who have worked so hard towards achieving the Academy's mission, which is to champion, celebrate and support excellence in Australian science; to promote international scientific engagement; to build public awareness and understanding of science, and to provide independent, authoritative and influential scientific advice.

Happy reading!

Dr Sue Meek AO FTSE





Australian Academy of Science Strategic Plan 2015–2020

STRATEGIC PLAN

Consistent with our new Strategic Plan for 2015–2020, the activities of the Academy this year have been focused on five strategic themes, underpinned by a commitment to operational excellence.

- Excellence in science—championing, celebrating and supporting excellence in Australian science
- International engagement—promoting Australia's international scientific engagement

- Scientific literacy—building public awareness and understanding of science
- Influential voice—providing independent, authoritative and influential scientific advice
- Operational excellence—being an effective and efficient organisation that supports and values its staff

EXCELLENCE IN SCIENCE

THE FELLOWSHIP

491

FELLOWS AT
31 DECEMBER

23

NEW FELLOWS AND
CORRESPONDING
MEMBERS ELECTED

42

AWARDS AND
APPOINTMENTS
RECEIVED BY FELLOWS

The Academy is a Fellowship of the nation's most distinguished scientists, elected by their peers for outstanding research that has pushed back the frontiers of knowledge. Fellows are eminent by reason of their attainments in natural science. Normally 20 Fellows are elected to the Academy each year, one specially elected (for conspicuous service to science) and up to two Corresponding Members (international Fellows).

New Fellows

21 new Fellows from a wide range of disciplines were elected to the Academy, including one by special election.



MARTIN ASPLUND FAA **ASTRONOMY** Martin Asplund's work in solar and stellar physics has changed the way in which we approach atomic and nuclear physics and a wide range of astrophysics, from planetary science and stellar physics through to Galactic archaeology and cosmology.



PETER BARTLETT FAA **STATISTICS** Peter Bartlett is a pioneer at the interface of computer science and statistics, with a focus on the science behind large, complex statistical decision problems. He has created the theoretical foundations for many key advances in statistical machine learning.



CHRISTINE BEVERIDGE FAA **PLANT BIOLOGY** Christine Beveridge is a world leader on the hormonal control of plant development, discovering a new hormone and demonstrating how shoot architecture, which underpins the yield, productivity and value of crops, trees and shrubs, is controlled.



JENEFER BLACKWELL FAA **GENETIC EPIDEMIOLOGY** Jenefer Blackwell is distinguished for her scientific achievements in the study of neglected tropical diseases, in particular her work on visceral leishmaniasis, which is leading to innovative new vaccines.



CHRISTINE CHARLES FAA **PLASMA PHYSICS** Christine Charles' research on ion acceleration in expanding magnetised plasmas has led to a new generation of space engines and created two new sub-fields of physics.



SUSAN CLARK FAA **CANCER EPIGENETICS** Susan Clark is a leading epigenetic cancer researcher whose DNA methylation and histone modification sequencing technologies have revolutionised the field of epigenetics and led to better outcomes for cancer patients.



MARIA FORSYTH FAA **PHYSICAL CHEMISTRY** Maria Forsyth is a world leader in developing advanced materials for new energy and infrastructure technologies, including fuel cells, battery designs and new ways to prevent corrosion.



JULIAN GALE FAA **COMPUTATIONAL CHEMISTRY** Julian Gale is a theoretical chemist whose work in the kinetics and mechanisms of crystallisation processes in materials science, mineralogy, and geochemistry has become the basis for one of the most widely used commercial packages in his field.



EDWARD HOLMES FAA **EVOLUTIONARY EPIDEMIOLOGY** Eddie Holmes is a world-leading authority on viral evolution who has transformed how we assess what types of viruses, and from which animal species, are most likely to emerge in human populations, and how they will evolve in response to our attempts to control them.



WENDY HOY AO FAA **CLINICAL EPIDEMIOLOGY** Wendy Hoy is recognised internationally for her research into kidney disease, which has transformed Aboriginal health services, saved lives, reduced the need for dialysis and supported the development of early intervention programs globally.



WILLIAM LAURANCE FAA **ENVIRONMENTAL BIOLOGY** Bill Laurance is a world-leading conservation ecologist of tropical forests and their biodiversity, who has made a remarkable array of important scientific findings on the effects of habitat fragmentation, logging, fires, climate change and exotic pathogens on tropical ecosystems.



GEOFFREY MCLACHLAN FAA **STATISTICS** Geoff McLachlan's pioneering work in mixture models has been especially influential, from inference and clustering and error-rate estimation for classifiers, to new techniques in analysing gene expression data.



MICHAEL MCLAUGHLIN FAA FTSE **AGRICULTURAL SCIENCE** Mike McLaughlin is a leader in developing and evaluating fertiliser technologies and developing biosolid re-use, whose approach to assessing contamination risk has been adopted around the world.



HELENE MARSH FAA FTSE **MARINE BIOLOGY** Helene Marsh is the world's premier authority on the ecology and conservation biology of dugongs, and she has been instrumental in advancing scientific understanding of marine megafauna and management of coastal marine mammals.



LINDA RICHARDS FAA **NEUROSCIENCE** Linda Richards is a leading developmental neurobiologist whose discoveries have defined the fundamental mechanisms regulating the wiring of neuronal connections between the two hemispheres of the brain.



MALCOLM SAMBRIDGE FAA **SEISMOLOGY** Malcolm Sambridge's new mathematical approaches to analysing complex geophysical data have fundamentally altered the way in which we understand the Earth and its internal processes.



IAN SMALL FAA **PLANT BIOLOGY** Ian Small has discovered a new mechanism that controls the production of proteins in plant organelles, which shows great promise in modifying specific RNA sequences and specific genes in all living species.



SAN THANG FAA FTSE **POLYMER CHEMISTRY** San Thang is a research innovator in polymer and materials science and a leading expert in the field of radical chemistry, with several key innovations to his name, including the hugely successful RAFT process.



CAROLA VINUESA FAA **IMMUNOLOGY** Carola Vinuesa has revealed how our immune system produces high quality, long lasting antibody responses, which is leading to new approaches to treating diseases such as lupus and type-1 diabetes.



MICHAEL WATERS FAA **DEVELOPMENTAL BIOLOGY** Michael Waters uncovered a new paradigm in cytokine receptor signalling, was the first to purify, characterise and clone the growth hormone receptor, and has developed new physiologies of growth hormone action, including its role in activating neural stem cells in response to exercise.



ZIGGY SWITKOWSKI AO FAA FTSE **NUCLEAR PHYSICS AND CORPORATE LEADERSHIP** Ziggy Switkowski is a trained nuclear physicist and a respected leader in innovation and business, who has advocated at the highest levels for technology, science and academia. Dr Switkowski was specially elected by the Fellowship.

New Corresponding Members



JILLIAN BANFIELD FAA **MICROBIOLOGY** Jillian Banfield is distinguished for her research on natural nanomaterials, including clays, microbiology and biogeochemical cycling in subsurface environments, bioremediation and the human microbiome.



CNR RAO FAA **SOLID STATE AND MATERIALS CHEMISTRY** Professor Rao is one of the world leaders in the area of solid state and materials chemistry, including transition metal oxides, superconductivity, colossal magnetoresistance, multiferroics, and nanocarbons and their analogues.

Deceased Fellows and Corresponding Members

Six Fellows and one Corresponding Member passed away. Their achievements enhanced the global store of scientific knowledge and understanding, and their participation in the life of the Academy will be greatly missed.

Deceased Fellows

Professor John Melvin Swan AO FAA FTSE

Professor Lawrence (Laurie) Walter Nichol FAA

Professor David Parker Craig AO FAA FRS FRSN

Professor Jan Mary Anderson FAA FRS

Professor Robert (Bob) William Bilger FAA FTSE

Dr Leo Michael Clarebrough OAM FAA

Deceased Corresponding Member

Professor Michael James David Powell FAA FRS

Honours awarded to Fellows

15 received international science awards

6 elected to international science academies

1 elected to another Australian learned academy

2 received Queen's Birthday Honours

2 received Prime Minister's Prizes for science and for innovation

3 received NSW Premier's Prizes for Science, including 1 NSW Scientist of the Year

3 received Eureka Prizes

7 received Thomas Reuters Citation Awards

2 received science medals

1 received AFR Australian Business Person of the Year

Election to international academies

The Royal Society

Professor Michael Goddard FAA FRS—elected as a Fellow.

Professor Roger Powell FAA FRS—elected as a Fellow.

Professor Scott Sloan FAA FRS FTSE—elected as a Fellow.

Royal Academy of Engineering

Professor Scott Sloan FAA FRS FTSE—elected as an International Fellow for his work on the prediction of the load capacity of geostructures, such as tunnels, dams and foundations.

National Academy of Inventors (USA)

Professor Andrew Holmes AM PresAA FRS FTSE and Professor Chennupati Jagadish FAA FTSE—elected as Fellows, a high professional distinction accorded to academic inventors who have demonstrated a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and the welfare of society.

American Academy of Microbiology

Professor Geoff McFadden FAA—elected as a Fellow for the field of microbiology.

International awards

Pioneer Award in Nanotechnology

Professor Chennupati Jagadish FAA FTSE—for initiating new areas of research, development or engineering that have had a significant impact on the field of nanotechnology; awarded by The Institute of Electrical and Electronics Engineers (IEEE) at the 15th International Conference on Nanotechnology, July 2015.

European Inventor Award

Professor Ian Frazer AC FAA FRS and his colleague, the late Dr Jian Zhou—for their invention of a vaccine against human papillomavirus (HPV).

Carl G Hartman Award

Professor Roger Short AM FAA FRS—for a career in research and scholarly activities in the reproductive biology field; awarded by the Society for the Study of Reproduction (SSR).

Engineering Achievement Award

Professor Chennupati Jagadish FAA FTSE—for pioneering and sustained contributions to compound semiconductor quantum well, quantum dot and nanowire optoelectronic devices and their integration; awarded by the Institute of Electrical and Electronics Engineers (IEEE) Photonics Society (IPS).

Helmholtz International Fellow Award

Professor Yuri Estrin FAA—elected as a Fellow for the field [PO5] of engineering.

Norman Borlaug Award

Professor Michael McLaughlin FAA—for significant advances in crop nutrition; awarded by the International Fertilizer Industry Association.

Royal Medal

Professor Elizabeth Blackburn AC FAA FRS—for her work on the prediction and discovery of telomerase and the

role of telomeres in protecting and maintaining the genome; awarded by The Royal Society.

Hardy Fellowship

Professor Nalini Joshi FAA—awarded the Special LMS Hardy Fellow for 2015; undertook a lecture tour of the UK in June and July, ending with the Hardy Lecture at the Society Meeting on 3 July in London, UK.

Mehdi Behzad Prize

Professor Cheryl Praeger AM FAA—awarded by the Iranian Mathematical Society at an awards ceremony in Iran in August 2015.

Ramaciotti Biomedical Research Award

Professor Marilyn Anderson AO FAA FTSE and Professor David Craik FAA—for their work using plants as 'biofactors' for producing next-generation pharmaceuticals.

Ramaciotti Medal for Excellence in Biomedical Research

Professor Carola Vinuesa FAA—for her discovery of the ROQUIN family of proteins which has opened up new avenues for diagnosing and treating autoimmune diseases.

Friendship Award from the Chinese Government

Professor Barry Marshall AC FAA FRS Nobel Laureate—awarded to thank and commend outstanding foreign experts for their great contributions to China's social development and economic, scientific, technological, educational and cultural construction.

GSK Award for Research Excellence

Professor Jim McCluskey FAA and Professor Jamie Rossjohn FAA—for a 12-year collaboration that has shown how the immune system recognises pathogens such as salmonella and mycobacteria.



(from left) Professor C. Jagadish, elected as a Fellow of the National Academy of Inventors (USA) and recipient of awards for nanotechnology and engineering; Professor Michael Goddard, elected as a Fellow of the Royal Society; Professor Suzanne O'Reilly, recipient of a citation award for earth sciences; Professor Carola Vinuesa, recipient of an award for excellence in biomedical research; and Professor Victor Flambaum, recipient of a prize for excellence in mathematics, earth sciences, chemistry and physics.

Colloid and Surface Chemistry Lectureship Award

Professor Max Lu FAA FTSE—awarded by the Chemical Society of Japan.

National awards and recognition

Queen's Birthday Honours

Companion of the Order of Australia (AC)

Professor Stephen Simpson AC FAA FRS—for eminent service to biological and biomedical science as an educator, researcher and author, particularly in the areas of human nutrition, obesity and metabolic disease, to higher education, and through roles with a range of professional scientific organisations.

Officer of the Order of Australia (AO)

Dr Marelyn Wintour-Coghlan AO FAA—for distinguished service to medical science in the field of physiology, particularly in the area of maternal and child health, to education as an academic, mentor and researcher, and to professional organisations.

Thomas Reuters Citation Award

Professor Peter Colman FAA FRS FTSE, Dr Andreas Strasser FAA and Professor David Vaux FAA—for the molecular triggers [PO9] of cell necrosis and applications for cancer treatment.

Professor Yuri Estrin FAA—for engineering in the area of severe plastic deformation of materials.

Professor Bryan Gaensler FAA—for the Murchison Widefield Array (MWA).

Professor Suzanne O'Reilly FAA—for earth sciences in the area of the tectonic setting for the area of the North and South China Cratons.

Professor Hugh Possingham FAA—for effects of climate change on habit loss and conservation decisions.

Eureka Prizes

Professor Tanya Monro FAA FTSE—University of New South Wales Eureka Prize for Excellence in Interdisciplinary Scientific Research.

Professor Marilyn Renfree AO FAA—University of Technology Sydney Eureka Prize for Outstanding Mentor of Young Researchers.

Professor Michelle Simmons FAA—CSIRO Eureka Prize for Leadership in Science.

Australian Academy of Technological Science and Engineers

Professor Michelle Simmons FAA FTSE—elected as a Fellow for her leadership and groundbreaking research program in the development of atomic-scale electronics.

Prime Minister's Prize for Science

Professor Graham Farquhar AO FAA FRS—for his research which has led to more durable, water-efficient crops and his discovery that wind and evaporation rates are slowing around the world.

Prime Minister's Prize for Innovation

Professor Graeme Jameson AO FAA FTSE—for his invention of the Jameson Cell, a froth flotation technique used to concentrate ore bodies and metallurgical coal that has added billions of dollars to the value of Australia's mining and energy industries.

Premier's Prizes for Science and Engineering

NSW Scientist of the Year

Professor Scott Sloan FAA FRS FTSE—for his pioneering methods to predict the collapse states of geostructures such as roads and buildings, allowing engineers to design cheaper and safer civil infrastructure around the globe.

Premier's Prize for Excellence in Mathematics, Earth Sciences, Chemistry and Physics

Professor Victor Flambaum FAA

Premier's Prize for Excellence in Medical Biological Sciences

Scientia Professor George Paxinos AO FAA

CSL Florey Medal

Professor Perry Bartlett FAA—for his discoveries that have transformed our understanding of the brain, and for his leadership of neuroscience in Australia.

WH (Beattie) Steel Medal

Professor Joss Bland Hawthorn FAA—in recognition of his leadership and significant contribution to the field of optics, particularly in the application of photonics to astronomical and space instrumentation; awarded by the Australian Optical Society.

Australian Financial Review Business Person of the Year

Ms Catherine Livingstone AO FAA

Regional groups

The Academy's regional groups are state-based, with a chair appointed to each group by Council. The groups meet and hold events as desired.

Australian Capital Territory

Canberra region Fellows met on 6 May and discussed Academy business, including the future of the Academy's library and collections in preparation for the AGM in May. It also discussed the Defence Trade Control Act and its effects on Australian science, the Chief Scientist's statement on the economic value of science, and the Academy's call for a national conversation about Australia's future.

In November the Canberra region held an informal dinner attended by 26 Fellows and partners. Isobel Griffin, the Academy's Manager, Development and Stewardship, gave an address at the dinner.

Queensland

The Queensland regional group was delighted to welcome eight new Fellows to their ranks in 2015, an unprecedented level of representation for Queensland, reflecting the continued development of science in the state. The year also marked the retirement of Academy Fellow Professor Perry Bartlett from the University of Queensland, who has been a great advocate for Queensland science for all disciplines, and neuroscience in particular.

South Australia

The main activity during 2015 related to an initiative by EMCR Dr Pallave Dasari (University of Adelaide) and the Australian Academy of Technology and Engineering (ATSE) to establish 'Science Meets Parliament SA'. The aim is to raise science awareness with state parliamentarians around areas that are relevant to the state's economy. Professor Bob Vincent represents the Academy on the stakeholder steering committee, which includes SA universities, the SA Chief Scientist, industry partners, the learned academies and MPs from both sides of politics. A sequence of meetings with parliamentarians has been scheduled, with the first meeting held in October in Old Parliament House with the topic 'Can STEM save South Australia?' Information and material on the Academy's activities in this area including Primary Connections, Science by Doing and Mathematics by Inquiry were presented as part of the proceedings. Feedback from MPs and staffers was very positive about the event.

Victoria

The annual New Fellows' and Medalists' Symposium was held on 9 July at the Brain Centre of the University of Melbourne. The first of this year's New Fellows, elected by Special Election, was Professor Ziggy Switkowski, Chancellor of RMIT and Chairman of NBNCo, who spoke on the 'NBN and the Digital Economy'. The next speaker was recently elected Fellow Professor San Thang, a highly distinguished and internationally recognised polymer chemist who is an adjunct Professor at Monash University. Professor Thang spoke on 'Making Better Polymers'. Unfortunately the next speaker, recently-elected Fellow Professor Marian Forsythe from Deakin University, was unable to attend so her talk on 'Materials for Advanced Energy Storage' was presented, using her slides, by the evening's Chairman, Tony Klein.

There followed talks by a group of distinguished medal winners:

- Professor Michael Cowley, winner of the Academy's inaugural Jacques Miller Medal, on 'How Does Obesity Cause Hypertension?'. Professor Cowley leads the Obesity and Diabetes Institute at Monash University.
- Dr Peter Czabotar, winner of the Academy's 2014 Gottschalk Medal, on 'The Mechanism of Cell Death'. Dr Czabotar is at the Structural Biology Division of the Walter and Eliza Hall Institute of Medical Research.
- Associate Professor Spencer Williams, winner of the Syme Prize, awarded annually by the Faculty of Science of the University of Melbourne. Associate Professor Williams is at the Bio21 Institute of the University of Melbourne.

The symposium was followed by cocktails and dinner at University House.

The very well attended combined Academies' dinner, organised this year by ATSE, was held in August. The after-dinner speaker was Professor Jeffrey Rosenfeld, Director the Monash Institute of Medical Engineering and Senior Neurosurgeon at Melbourne's Alfred Hospital, who spoke on 'The direct machine-mind connection: a new paradigm for human evolution'. The audience included quite a few Fellows of the recently formed Academy of Medical and Health Sciences.

The annual Christmas dinner was held in late November, and included members of the Academy's Executive Committee.

ACADEMY AWARDS

34

TALKS AND LECTURES
CONDUCTED BY AWARD
RECIPIENTS

382

PARTICIPANTS OF
ACADEMY-SUPPORTED
RESEARCH
CONFERENCES

20

SCIENTISTS GIVEN
FUNDING TO SUPPORT
RESEARCH, TRAVEL
AND CONFERENCES

Through the generosity of Fellows, their families and colleagues, and like-minded individuals and organisations, the Academy presents a range of honorific awards, research grants and travelling fellowships each year. These awards celebrate and raise awareness of the achievements of both the person after whom they are named and the recipients, and contribute towards the advancement of science in many fields of research.

2015 honorific lectures and talks

34 talks and lectures funded by the Academy's travelling fellowship and honorific lecture awards took place in **6** states at **14** different venues including 12 universities, with a total of **1500+** attendees.

These included:

- The Haddon Forrester King lecture tour
- The 2015 Selby Fellowship
- The David Craig Lecture tour
- Lectures at Science at the Shine Dome

2015 conferences

4 Academy-supported research conferences were held in **4** states with a total of **382** participants.

- Elizabeth and Frederick White Research Conference, 'Celebrating the 50th birthday of the Narrabri Stellar Intensity Interferometer'
- Boden Research Conference, 'Comparative animal genomics down under'
- Elizabeth and Frederick White Research Conference, 'Mining data for detection and prediction of failure in geomaterials'
- Fenner Conference on the Environment, 'Maximising the capacity of citizen science for science and society'

2016 honorific awards

The 2016 awards were announced in November 2015 and most will be presented at the Academy's annual celebratory event, Science at the Shine Dome, in May 2016.

5 career, **3** mid-career and **10** early-career researchers were awarded **\$32,500** in honorariums and lecture funding.



The 18 recipients of the Academy's 2016 career, mid-career and early-career honorific awards (see next page)

Career awards

2016 David Craig Medal

Professor Jeffrey Reimers *FAA*, School of Mathematical and Physical Sciences, University of Technology, Sydney; and International Centre for Quantum and Molecular Structure, Shanghai University

2016 Haddon Forrester King Medal and Lecture

Professor Murray Hitzman, Department of Geology and Geological Engineering, Colorado School of Mines

2016 Mawson Medal and Lecture

Professor Colin Vincent Murray-Wallace, School of Earth and Environmental Sciences, University of Wollongong

2016 Ian Wark Medal and Lecture

Scientia Professor Martin Green *AM FAA FRS FTSE*, Australian Centre for Advanced Photovoltaics, UNSW

2016 Macfarlane Burnet Medal and Lecture

Professor Graham D Farquhar *AO FAA FRS*, Research School of Biology, Australian National University

Mid-career awards

2016 Gustav Nossal Medal for Global Health

Professor David Wilson, Infectious Disease Modelling, Centre for Population Health, Burnet Institute

2016 Jacques Miller Medal for experimental biomedicine

Associate Professor Katherine Kedzierska, Department of Microbiology and Immunology, Peter Doherty Institute for Infection and Immunity

2016 Nancy Millis Medal for Women in Science

Dr Elena Belousova, Department of Earth and Planetary Sciences, ARC Centre of Excellence for Core to Crust Fluid Systems, Macquarie University

Early-career awards

2016 John Booker Medal

Dr Paolo Falcaro, CSIRO Materials Science and Engineering

2016 Fenner Medal

Associate Professor Jane Elith, School of BioSciences, University of Melbourne

2016 Ruth Stephens Gani Medal

Associate Professor Geoffrey John Faulkner, Mater Research Institute, University of Queensland

2016 Gottschalk Medal

Professor Ostoja Steve Vucic, Westmead Clinical School, University of Sydney

2016 Anton Hales Medal

Professor John Paterson, School of Environmental and Rural Science, University of New England

2016 Christopher Heyde Medal

Dr Luke Bennetts, School of Mathematical Sciences, University of Adelaide

2016 Dorothy Hill Award

Dr Andréa Sardinha Taschetto, Climate Change Research Centre, UNSW

2016 Pawsey Medal

Associate Professor Ilya Shadrivov, Nonlinear Physics Centre, Research School of Physics and Engineering, Australian National University

2016 Frederick White Prize

Associate Professor Michael James Ireland, Research School of Astronomy and Astrophysics, Australian National University

2016 Le Févre Memorial Prize

Associate Professor Cyrille Boyer, Australian Centre for Nanomedicine, Centre for Advanced Macromolecular Design, UNSW

2016 research, travel and research conference funding

These awards were made in 2015 but may take up to two years to complete.

\$181,000 in funding awarded to more than **20** scientists to support scientific research, international travel and scientific conferences.

Research awards

The J G Russell Award

- Dr Yu Chen: to develop a novel diagnostic and therapeutic nanoplatform for cancer treatment that will improve cancer diagnosis and monitoring of treatment and reduce the side-effects of chemotherapy.
- Dr Kristine Crous: to investigate how, and how much, rainforest tree species will adjust to warmer temperatures.

- Dr Guohua Jia: to develop innovative colloidal nanocrystal heterostructures to provide the basis for eco-friendly optoelectronic devices and photocatalysis as well as other advanced applications.
- Dr Jean-Baptiste Raina: to unravel microbiological processes in the ocean to help quantify the ecosystem services carried out by microbes that support our economy and environment.

The Margaret Middleton Fund for endangered Australian native vertebrate animals

- Donna Belder, Australian National University—Survival and persistence of woodland birds in restoration plantings in the south-west slopes region of NSW
- Bonnie-Thais Berne, Flinders University—Investigating the parasite biota of the endangered Pygmy Bluetongue Lizard: its importance for conservation
- Elise Furlan, University of Canberra—Improving surveillance of the critically endangered southern corroboree frog, *Pseudophryne corroboree*, and northern corroboree frog, *P. pengilleyi*, using environmental DNA

- Ella Kelly, The University of Melbourne—Surviving the cane toad: preventing declines in endangered northern quoll populations

The Moran Award for history of science research

- Dr Francesco Gerali

The Thomas Davies Research Fund (for marine, soil and plant biology)

- Martin Francis Breed, University of Adelaide: Adaptive potential in *Dodonaea viscosa* as a model for plant climate change adaptation
- Shu Kee Lam, The University of Melbourne: Overcoming the reduction in cereal grain protein under elevated CO₂ by the use of a nitrification inhibitor
- Peter Macreadie: Can overgrazing of seagrass destroy ancient carbon stocks?
- Robert Sharwood, Australian National University: Unlocking the diversity of Rubisco catalysis from deep-sea ocean α -cyanobacteria for eventual transplantation into higher plant chloroplasts to improve photosynthetic CO₂ assimilation

CASE STUDY

The Margaret Middleton Fund for Endangered Australian Native Vertebrate Animals offers annual science grants of up to \$15,000 each to support conservation-based research of Australian ecosystems. These research projects were awarded in 2014 and completed in 2015.

- Stephanie Hing investigated the role of stress, immunity and infectious disease in the decline of a critically endangered marsupial, the woylie or brush-tailed bettong (*Bettongia penicillata*).
- Laurence Berry investigated the influence of fire severity patterns on movement and habitat selection of the mountain brushtail possum, *Trichosurus cunninghamii*.
- Wendy Neilan investigated the effect of mosaic heterogeneity on the diversity of the avian and insectivorous bat assemblages in a commodity production landscape of temperate Australia.
- Christopher Henderson investigated the effectiveness of marine protected areas at protecting mobile predatory fish species.



Clockwise from left: Adult woylie or brush-tailed bettong; studying bats; marine protected areas.

Travelling fellowships and lectures

Graeme Caughey Travelling Fellowship

M Letnic: to travel to the University of California, Los Angeles, Oregon State University, the University of Wyoming and Yellowstone National Park Center for Resources

Rudi Lemberg Travelling Fellowship

L J Berliner

Selby Fellowship

F Rosei

Lloyd Rees Lecture

K Nugent

Conference funding

Boden Research Conference

Emergence and function of complex shapes in self-assembly and biological cells

Elizabeth and Frederick White Research Conference

Galactic archaeology and stellar physics: understanding the origins of the galaxy and its stellar content

Fenner Conferences on the Environment

International Forward Osmosis Summit (IFOS) 2016

SCIENCE IN AUSTRALIA GENDER EQUITY (SAGE)

32

INSTITUTIONS SIGNED
UP TO TAKE PART IN
THE ATHENA SWAN
PILOT

100

PEOPLE ATTENDED THE
SAGE LAUNCH AT
PARLIAMENT HOUSE

32

SITE VISITS MADE BY
SAGE PROGRAM
MANAGER

The Science in Australia Gender Equity (SAGE) pilot of the Athena SWAN Charter was launched on 16 September at Parliament House in Canberra.

This ambitious project is a joint venture of the Australian Academy of Science and the Australian Academy of Technology and Engineering. It aims to achieve a step change in career prospects and career progression for Australian women and minority gender groups in science through a comprehensive accreditation and quality improvement framework called the Athena SWAN Charter, developed over the past 10 years in the UK. More than half of Australia's universities have signed up to the three-year Australian pilot, as have five Medical Research Institutes, the CSIRO and the Australian Nuclear Science and Technology Organisation (ANSTO).



The launch of SAGE at Parliament House, Canberra, 16 September.

NATIONAL COMMITTEES

202

MEMBERS IN 2015

50

SCIENTIFIC SOCIETIES
AND ORGANISATIONS
REPRESENTED BY
MEMBERS

14

SUBMISSIONS MADE
TO 7 CONSULTATIONS

The Academy has 22 National Committees for Science that are widely representative of its disciplines. The broad aims of the committees are to foster a designated branch or theme of natural science in Australia and to serve as links between Australian and overseas scientists in the same field. National Committees advise the Academy's Council on Australia's representation for the unions and multidisciplinary bodies of the International Council for Science (ICSU) and other international bodies.

Linkages with Australian professional science organisations

Note: the below linkages are not exhaustive and multiple links between committees and professional organisation may exist.

Agriculture, Fisheries and Food

- Australian Society of Animal Production
- Australian Society of Fish Biology
- Soil Science Australia

Antarctic Research

- Australian Institute of Physics
- The Astronomical Society of Australia
- Australian Antarctic Division

Astronomy

- Astronomical Society of Australia
- Astronomy Australia Ltd

Biomedical Sciences

- Australian Physiological Society
- Australian Society for Biophysics
- Australian Society for Clinical and Experimental Pharmacology and Toxicology
- Australian Society for Immunology
- Australian Society for Microbiology

- Australian Society of Biochemistry and Molecular Biology
- Collaborative Universities Biomedical Education Network

Brain and Mind

- Australian Psychological Society
- Psychology Foundation of Australia
- Australian Cognitive Neuroscience Society
- Australian Society for Psychiatric Research
- Biological Psychiatry Australia
- Australasian Neuroscience Society

Cellular and Developmental Biology

- Australian Society for Stem Cell Research
- Australian Society of Cell and Developmental Biology
- Australian Society of Plant Scientists
- Society for Reproductive Biology
- Stem Cells Australian
- Society for Vascular Research

Chemistry

- Royal Australian Chemical Institute
- Plastics and Chemicals Industries Association

Crystallography

- Society of Crystallographers in Australia and New Zealand (SCANZ)
- Australian Microscopy and Microanalysis Society
- Australian Institute of Physics
- Royal Australian Chemical Institute
- Asian Crystallographic Association (AsCA)
- Asia-Pacific Microscopy Society
- Asia-Oceania Neutron Scattering Association (AONSA)
- Asia-Oceania Forum for Synchrotron Radiation Research (AOFSTR)

Data in Science

- Australian National Data Service (ANDS)
- Research Data Storage Infrastructure (RDSI)
- National eResearch Collaboration Tools and Resources (NeCTAR)

Earth Sciences

- Australian Geoscience Council
- Geological Society of Australia
- Geoscience Australia

Earth System Science

- Australian Meteorological and Oceanographic Association (AMOS)
- Australian Academy of Technological Sciences and Engineering

Ecology, Evolution and Conservation

- Aust Marine Sciences Assoc
- Aust Soc Microbiology
- Council of Heads of Australasian Herbaria
- Ecological Society of Australia
- Terrestrial Ecosystem Research Network

Geography

- Academy of Social Sciences in Australia
- Australian Geography Teachers Association
- Australian Institute of Geographers
- Institute of Australian Geographers
- Royal Geographical Society of Queensland
- Royal Geographical Society of South Australia

History and Philosophy of Science

- Australasian Association for the History
- Philosophy and Social Studies of Science

Information and Communication Sciences

- Computing, Research & Education (CORE)
- Australian Computer Society
- Australian Telecommunications Society
- Engineers Australia
- NICTA

Materials Science and Engineering

- Australian Ceramic Society
- Australian Microscopy and Microanalysis Research Facility
- Australian Microscopy and Microanalysis Society
- Australian Nanotechnology Network
- Australian National Fabrication Facility
- Association of Molecular Modellers of Australasia
- Australian Vacuum Society

- Australian X-Ray Analytics Association
- Materials Australia
- National Computational Infrastructure
- Pawsey Super Computing Centre
- Society of Crystallographers in Australia and New Zealand

Mathematical Sciences

- Australian Association of Mathematics Teachers
- Australian Council of Heads of Mathematical Sciences
- Australian Mathematical Society
- Australian and New Zealand Industrial and Applied Mathematics
- Australian Mathematical Sciences Institute
- Australian Mathematics Trust
- Mathematics Education Research Group of Australasia Incorporated
- Statistical Society of Australia Incorporated

Mechanical and Engineering Sciences

- Australasian Fluid Mechanics Society
- Australian Academy of Technological Sciences and Engineering
- Australian Association of Computational Mechanics
- Australian and New Zealand Society of Biomechanics
- Group of Eight Engineering Deans
- Institution of Engineers Australia

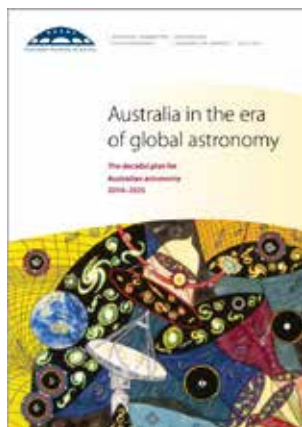
Physics

- Australian Institute of Physics
- Australasian College of Physical Scientists and Engineers in Medicine
- Australian Optical Society

National Committee highlights

Launch of Decadal plan for Australian astronomy 2016-2025

'Australia in the era of global astronomy: The decadal plan for Australian astronomy 2016-2025' was launched in July and presents the strategic vision for Australian astronomy for the next decade. The plan follows the success of the astronomy community's 2006 plan and presents the community's vision to stakeholders outside the research sector, including the Australian Government and industrial and research partners nationally and internationally.



Travel grants for geoscientists

The Academy and the Australian Geoscience Council jointly launched the inaugural 34th International Geological Congress (IGC) Travel Grant Scheme for Early-Career Australian and New Zealand Geoscientists. The fund was established with the proceeds of the highly successful congress held in Brisbane in 2012, and provides support for Australian and New Zealand early-career geoscientists to travel internationally to further their careers.

The Academy's National Committee for Earth Sciences co-administers the IGC Travel Grant Scheme together with the Australian Geoscience Council.

Engagement with CODATA

The National Committee for Data in Science and the Australian National Data Service held 2 meetings with the President and Executive Director of the International Council for Science's Committee on Data for Science and Technology (CODATA), in June and October 2015. The meetings considered:

- global trends associated with the citation of data in scientific publications
- key challenges facing Australia and how to prioritise a way forward.

International Year of Light

2015 was the UNESCO International Year of Light and Light-based Technologies. The Academy celebrated by hosting a public lecture together with Questacon: Lasers can do anything!

Australian activities were coordinated by an organising committee chaired by National Committee for Physics member Professor Ken Baldwin.



**INTERNATIONAL
YEAR OF LIGHT
2015**

International links supported by National Committees

32

NUMBER OF INTERNATIONAL
ORGANISATIONS OF WHICH THE
ACADEMY IS A MEMBER

The International Council for Science (ICSU) is a non-government organisation with 48 scientific and interdisciplinary bodies with a global membership representing 140 countries. Academy Fellow Professor David Black is ICSU's current Secretary-General, and the Academy is Australia's adhering body to ICSU.

The Academy meets its ICSU responsibilities with the help of the National Committees for Science, providing Australia with global science credibility and influence through representation on executive boards of ICSU organisations and in their subcommittees and task groups. In this way Australian scientists contribute to international science policy and strategic planning.

- Member of ICSU and **31** international organisations, including **20** scientific unions and **11** interdisciplinary bodies
- **27** executive positions held in 2015
- **6** nominations to executive positions of international bodies
- Approximately **390** Australians on subcommittees and taskforces
- **19** Australian voting delegates attended **8** union general assemblies

Representation for international scientific unions and organisations

AUSTRALIANS ON INTERNATIONAL EXECUTIVES		
Scientific organisation	Office holder	Position
Future Earth	Dr Mark Stafford Smith	Chair 2013–
	Professor Xuemei Bai	Member 2013–
International Council for Science	Professor David Black FAA	Secretary General
	Professor John Buckeridge	Member
International Commission on Mathematical Instruction (ICMI)	Professor Cheryl Praeger FAA	Vice-President
International Geosphere-Biosphere Programme (IGBP)	Professor Jean Palutikof	Vice-Chair
International Union of Biological Sciences (IUBS)	Professor John Buckeridge	Member
International Union of Crystallography (IUCr)	Professor Mitchell Guss	Member
International Union of History and Philosophy of Science / Division of Logic, Methodology and Philosophy of Science (IUHPS / DLMP)	Professor Cliff Hooker	Second Vice-President
International Union of Immunological Societies (IUIS)	Professor Alan Baxter	Councillor
	Professor Nicholas King	Treasurer
International Union for Pure and Applied Biophysics (IUPAB)	Professor Cris G Dos Remedios	Secretary General
International Union of Basic and Clinical Pharmacology (IUPHAR)	Dr John Miners	Vice-Chair
	Professor David LeCouteur	Secretary—Division on Clinical Pharmacology
	Professor Kathie Knights	Internal Auditor
International Union for Pure and Applied Physics (IUPAP)	Professor Bruce McKellar FAA	President
International Union of Physiological Sciences (IUPS)	Professor Caroline McMillen	Council Member
International Union of Microbiological Societies	Professor Paul Young	Vice Chair Virology Division
International Union of Radio Science (URSI)	Professor Phil Wilkinson	Past President
World Climate Research Programme (WCRP)	Dr Helen Cleugh	Member (2015 – 2018)
International Union of Biochemistry and Molecular Biology (IUBMB)	Dr Janet Macaulay	Chair of the Committee for Education and Training
International Geographical Union (IGU)	Professor Iain Hay	Vice President

AUSTRALIAN VOTING DELEGATES FOR INTERNATIONAL SCIENTIFIC UNIONS

National Committee	Organisation	Date	Location	Delegate/s
Astronomy	International Astronomical Union	3 August – 14 August 2015	Hawaii	Professor Carole Jackson Emeritus Professor Andrew Hopkins Professor Stuart Wyithe
Earth Sciences	International Union of Geodesy and Geophysics	22 June – 2 July 2015	Prague	Professor Ian Allison AO FAA Dr Chris White Professor Ian Jackson Professor Chris Rizos Dr Tom Beer Emeritus Professor Ray Cas Professor Iver Cairns Dr Susan Wijffels
History and Philosophy of Science	International Union of History and Philosophy of Science and Technology – Division of Logic, Methodology and Philosophy of Science and Technology	3 August – 8 August 2015	Helsinki, Finland	Professor Rachel Ankeny
Mechanical and Engineering Sciences	International Federation for the Promotion of Mechanism and Machine Science	25 October – 30 October 2015	Taipei, China	Professor Ross McAree
Earth Sciences	International Union for Quaternary Research	26 July – 2 August 2015	Nagoya, Japan	Dr Jessica Reeves
N/A	International Union of Biological Science	14 December – 16 December 2015	Berlin, Germany	Professor John Buckeridge
Biomedical Sciences	International Union of Biochemistry and Molecular Biology	24 August – 28 August 2015	Brazil	A/ Professor Janet McCaulay Emeritus Professor Philip Nagley AM
Chemistry	International Union of Pure and Applied Chemistry	7 August – 13 August 2015	Korea	Professor Mary Garson Emeritus Professor Brynn Hibbert

EARLY- AND MID-CAREER RESEARCHERS

234

EMCRS ATTENDED EMCR FORUM EVENTS

35

EMCRS SUPPORTED BY THE ACADEMY TO DEVELOP THEIR RESEARCH

180+

EMCRS ATTENDED ACADEMY EVENTS

The Academy supports early- and mid-career researchers (EMCRs) by holding inter-disciplinary events designed to stimulate innovative thinking about future developments and applications of science, and through the EMCR Forum.

EMCR Forum

The Australian Early- and Mid-Career Researcher forum (the forum) is the national voice of Australia's emerging scientists, representing researchers who are up to 15 years post-PhD (or other research higher degree), irrespective of their professional appointment.

- **4** EMCR engagement events run by the Forum in Adelaide, Hobart, Sydney and Perth, attended by **234** people, including Science Pathways 2015 on effective science communication for EMCRCs
- **3** submissions to Australian Government consultations relating to future opportunities for the next generation of science leaders

Academy support for EMCRCs

- **11** Early Career Fellowships for the France–Australia Science Innovation Collaboration (FASIC) program (3 funded by the Rod Rickards Fund) awarded
- **6** EMCRCs attended Japan Society for the Promotion of Science (JSPS) HOPE meeting
- **12** JSPS Postdoctoral Fellowships awarded
- **4** Australia – United States research collaboration projects selected
- **1** nomination to the APEC Science Prize for Innovation, Research and Education (ASPIRE) 2015
- **1** visit to the National Institutes of Health in the USA by an ECR (Adam J Berry Fund) awarded

Academy events supporting EMCRCs:

- **130** EMCRCs attended Theo Murphy High-Flyers Think Tank and Frontiers of Science events, both supported by the Theo Murphy (Australia) Fund, courtesy of the Royal Society of London
- **57** EMCRCs attended the Science at the Shine Dome EMCR program
- engagement events for EMCRCs across various states.

I feel like I developed 10 years of industry-relevant knowledge in three days

HEATHER MAIN, PARTICIPANT IN THE 2015 THEO MURPHY HIGH FLYERS THINK TANK

The Academy administered a number of other events for EMCRCs: the Lindau Nobel Laureates Meeting, the East Asia and Pacific Summer Institutes (EAPSI) program (for US early-career researchers visiting Australia), and the first Australian delegation to the Kavli Frontiers of Science symposium in Indonesia.



The 2015 participants in the East Asia and Pacific Summer Institutes (EAPSI) program for US early-career researchers visiting Australia

INTERNATIONAL ENGAGEMENT

106

AUSTRALIAN RESEARCHERS SUPPORTED TO TRAVEL OVERSEAS

63

INTERNATIONAL RESEARCHERS SUPPORTED TO TRAVEL TO AUSTRALIA

14

COUNTRIES VISITED BY RESEARCHERS SUPPORTED BY THE ACADEMY

The Academy has a long history of working successfully with overseas counterpart organisations to increase collaborations between Australian and overseas researchers. This year, the Academy administered a number of international exchange programs and activities around the world.



AUSTRALIAN RESEARCHERS SUPPORTED TO TRAVEL OVERSEAS

Country visited	Number of researchers
Japan	31
Indonesia	22
Germany	17
France	11
Czech Republic	7
Brazil	5
USA	4
South Korea	3
India	2
UK	1
Netherlands	1
Taiwan	1
Finland	1

INTERNATIONAL RESEARCHERS SUPPORTED TO TRAVEL TO AUSTRALIA

Country of origin	Number of researchers
USA	30
China	19
Taiwan	14

MULTILATERAL ENGAGEMENT

Academy President Professor Andrew Holmes represents the Academy on the board of the InterAcademy Council (IAC). Professor Holmes and Academy Foreign Secretary Professor Cheryl Praeger participated in the joint session of the InterAcademy Partnership and the InterAcademy Medical Panel executive committees and the IAC board in New Delhi, India, in September. The meeting provided an opportunity to strengthen links and networks within academies.

BILATERAL RESEARCH COLLABORATIONS

The Academy engages with overseas science academies, international scientific organisations and foreign embassies in Canberra, as well as Australian embassies abroad to identify areas of mutual scientific interest and to foster opportunities for collaboration. This year, Academy Foreign Secretary Professor Cheryl Praeger, or her representative, met with embassy officials and international scientists from a range of countries, including:

- Ambassador Sem Fabrizi of the European Union
- incoming Australian Ambassador to Mexico Dr David Engel
- incoming Australian Ambassador to Brazil Mr John Richardson
- Dr Gisella Orjeda, President of the Consultative Commission on Science, Technology and Innovation of Peru and a member of the Peruvian Academy of Science
- Professor Sangkot Marzuki, President, Indonesian Academy of Sciences
- Ms Sawa Koyama, Deputy Head, Bilateral Cooperation Division, Japan Society for the Promotion of Science.

CASE STUDIES

Research on sustainable agriculture in France

Dr Marguerite Renouf from the University of Queensland travelled to France as part of the France–Australia Science Innovation Collaboration (FASIC) Program for young researchers. She worked with French researchers on a project to help agriculture industries use new environmental self-assessment tools to improve their sustainability. The grant was managed by the Academy on behalf of the Department of Industry, Innovation and Science.

Young researchers meet Nobel Laureate heroes

In 2015, the Science and Industry Endowment Fund (SIEF) supported 13 young researchers to attend the 65th Lindau Nobel Laureate Meeting, held in June and July. A record number of 65 Nobel Laureates and 650 young scientists covering the fields of physiology and medicine, physics and chemistry attended. Under a memorandum of understanding between the Academy and the Lindau Foundation, the Academy supports the attendance of Australian-based researchers with funding from SIEF.

Australia–China Symposium on Neuroscience

Leading neuroscientists from Australia and China met in Melbourne in October to share the latest research on neurodegenerative diseases and mental illness, as well as better ways to study the brain. The meeting was the 11th in a series of annual scientific symposiums which are jointly managed by the Australian Academy of Science, the Australian Academy of Technology and Engineering and the Chinese Academy of Sciences, with support from the Australian Government.

Kavli Frontiers of Science

The Kavli Frontiers of Science symposium in Indonesia brought together 80 early- and mid-career researchers from Australia, the US and Indonesia to discuss advances and opportunities in a broad range of disciplines. Dr Judy Hart, Lecturer at UNSW's School of Materials Science and Engineering, led the Australian delegation. Academy Vice-President Dr TJ Higgins FAA FTSE also attended the symposium and presented an overview of Australian funding. The Academy worked closely with the Australian Embassy in Jakarta to stage this symposium, as well as a half-day workshop at which Australian EMCRs showcased their research to Indonesian EMCRs in similar research fields.

Australia–Indonesia health workshops support collaboration

Two health workshops focusing on lifestyle diseases and emerging diseases were held in Jakarta in May. The workshops enabled Australian and Indonesian scientists to share knowledge and create new collaborations, and were a joint initiative of the Academy and the Indonesian Academy of Sciences (AIPI). They coincided with the 25th anniversary of the AIPI, an event at which Professor Jenny Graves AO FAA delivered a presentation on scientific cooperation between Australia and Indonesia.

'This meeting has resulted in a significant new collaboration between The George Institute and University of Brawajiya at Malang. We were fortunate to attract a large philanthropic donation contingent on extending some of our existing research to Indonesia, and we were able to capitalise on this through contacts made at the Australia–Indonesia health workshop.'

ANUSHKA PATEL, WORKSHOP PARTICIPANT



Australian participants at the 65th Lindau Nobel Laureate Meeting

SCIENTIFIC LITERACY

SCHOOL PROGRAMS

The Academy is committed to promoting science and mathematics education as a contribution to informed citizenship and to encourage young people to prepare for the many careers based on science and technology in the future. In close consultation with state and territory education sectors and education experts, the Academy is actively involved in the implementation of the national science and mathematics curricula through the development of inquiry-based resources that stimulate student interest and enhance learning, and through professional learning to improve teacher confidence and quality.

The Academy's school education programs have been made possible through Australian Government funding. Primary Connections also enjoys the generous support of donors and sponsors.



The Academy's Primary Connections program pairs curriculum resources with professional learning for the teaching of science in primary schools, supported by Australian Government funding of \$14.7 million since 2006. The program boosts the confidence of primary school teachers, encourages young students' natural interest in science, and develops students' mathematical and communication skills. This year, with support from government, sponsors and donors, Primary Connections has significantly expanded its reach into rural and remote Australia, and has increased the focus on training university undergraduates who are studying to become primary school teachers.

The Primary Connections resource, 'Feathers, fur or leaves' won best Interactive Teaching Resource in both the Primary Teaching Resource and Outstanding Digital Resource categories of the 2015 Educational Publishing Awards.

The Academy was also invited to showcase Primary Connections to the international school STEM education community at a science teaching conference hosted by the Mexican Academy of Science in November.

Primary Connections



WORKSHOPS
CONDUCTED FOR
TEACHERS AND
TEACHERS-IN-
TRAINING



TEACHERS WHO
RECEIVED BURSARIES
TO ATTEND
WORKSHOPS



INTERACTIVE TEACHING
RESOURCES



Year 6 students exploring science with the Primary Connections' unit 'Change Detectives'.

Photos: Daniel Hall, Blaxcell Street Public School

Supporting primary teachers in STEM

- **54** workshops for **1225** teachers and teachers-in-training from more than **500** schools and universities
- Primary Connections online community has more than **20,000** members, nearly twice as many in 2014
- **24** teachers from regional and remote Australia received bursaries to attend workshops in Queensland, Victoria and Western Australia

This workshop ... builds a confidence in you as a teacher where you may have felt completely lost or intimidated by science.

CSL BURSARY RECIPIENT

New curriculum units and digital resources

- Year 6: Creators and destroyers (Earth and Space Sciences)
- 4 units currently under development
- 6 interactive teaching resources
- Schoolyard safari, Year 1, biological sciences
- Push pull, Year 2, physical sciences
- Melting moments, Year 3, chemical sciences
- Night and day, Year 3, earth sciences
- Smooth moves, Year 4, physical sciences
- Essential energy, Year 6, physical sciences

Science by Doing



AUSTRALIAN HIGH SCHOOL TEACHERS REGISTERED WITH SCIENCE BY DOING



PROFESSIONAL LEARNING WORKSHOPS CONDUCTED FOR TEACHERS ACROSS AUSTRALIA



MILLION HITS PER MONTH ON THE SCIENCE BY DOING WEBSITE

Science by Doing is an innovative online science program developed by the Academy and supported by \$10.3 million in funding since 2010 from the Australian Government. It consists of digital curriculum units for students in Years 7 to 10, designed to engage and excite them in their science learning.

The Science by Doing professional learning approach supports teams of teachers working together in schools to improve student learning. It is underpinned by four important components: professional learning resources, curriculum resources, leadership, and general support.



- **10,000** teachers were registered with Science by Doing by end December, representing **40%** of all Australian high school science teachers
- **30,000** teachers, students and parents registered with Sciency by Doing during the reporting period, nearly doubling the previous number
- The Science by Doing website averaged **2 million** hits* per month
- **4** new curriculum units, including one on how to use Science by Doing resources
- **8** professional learning workshops for teachers in Tasmania, South Australia, Queensland and Western Australia
- **4** presentations at national conferences

*Hits measure total interaction with a website and are recorded for each file that is accessed during a visit. They cannot be compared to visit numbers.

The four new curriculum units are:

- Introduction to Science by Doing
- Year 8: Rock your world
- Year 9: Chemical reactions—Big systems
- Year 10: Chemical patterns—Evolution and heredity; Motion and energy transfer

There is now a complete set of all the curriculum units needed for years 7 to 10 freely available for Australian teachers and students.

reSolve: Mathematics by Inquiry



AWARDED FOR NEW MATHEMATICS PROGRAM

In October, the Academy was awarded \$6.4 million over three years by the Australian Government in a successful competitive tender process to develop a school mathematics program. Known as reSolve: Mathematics by Inquiry, this bold new national program is designed to increase the engagement and achievement of Australian

primary and secondary students through innovative approaches to teaching.

Overseen by a committee led by internationally-recognised mathematician and Academy Council member Professor Cheryl Praeger AM FAA, reSolve is managed by the Academy in collaboration with the Australian Association of Mathematics Teachers.



SCIENCE OUTREACH

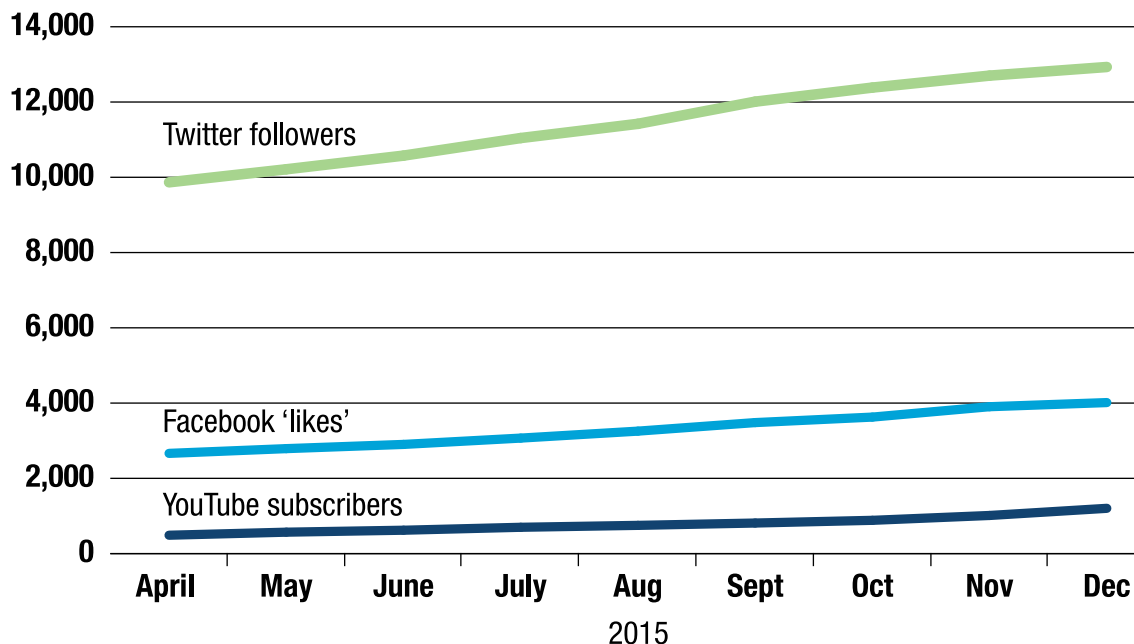
Media and social media

- Academy mentions in the media: **2,559**
- Media releases distributed: **26**
- News articles on website: **54**



Some of the media outlets that featured the Academy or its activities

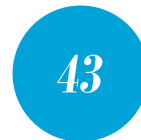
Growth in social media



MEDIA CASE STUDY

In May, the Academy and the Australian Medical Association jointly launched a report from the 2014 Theo Murphy Think Tank warning about the risks that climate change poses to human health. This resulted in 266 media stories by outlets including the ABC, Fairfax and NewsCorp (41 broadcast, 225 print/online).

Nova: science for curious minds



SCIENCE TOPICS PUBLISHED ON THE REDEVELOPED OUTREACH WEBSITE, NOVA

The original Nova—one of the first science explainer websites in the world—was established in the 1990s as an online public education program of the Australian Academy of Science. Thanks to a gift from Telstra in 2014, the website underwent a major redevelopment and was launched as Nova: science for curious minds on 30 June 2015. In the six months after launch, Nova built a solid reputation based on strong science and accessible communication.

65 of Australia's best scientists, including **24** Academy Fellows, reviewed topics—which is a major point of difference to other science websites.

Designed by Melbourne company Webplace, Nova was shortlisted for a 2015 Australian Graphic Design

Association Award. **3** animated YouTube science videos produced by German company Kurzgesagt in collaboration with the Academy received nearly **3 million** views and sparked international interest in Nova.

- Number of topics: **43**
- Number of visits: **75,000**
- 3 most popular topics
 - The chemistry of cosmetics
 - The enhanced greenhouse effect
 - The future of plastics
- Videos produced in collaboration with Kurzgesagt:
 - The death of bees explained
 - What is dark matter and dark energy?
 - Quantum computers explained



Brain Box

Scientists come in all shapes and sizes and the Academy's Brain Box videos introduce the brains behind the science. This year the Academy published **6** Brain Box videos.

The videos are published on the Academy's Brain Box channel on YouTube.

ACADEMY WEBSITE

The Academy website received a makeover with a fresher, more modern look and improved navigation. It's not all cosmetic; behind-the-scenes work made the site perform better on both desktop and mobile devices.

- Number of visits: **292,000**
- 3 most popular pages
 - Climate change
 - Immunisation
 - Science by Doing

EVENTS



PEOPLE WHO
ATTENDED PUBLIC
ACADEMY EVENTS



REVENUE FROM THE
HIRE OF THE SHINE
DOME



SPEAKERS AT
ACADEMY EVENTS

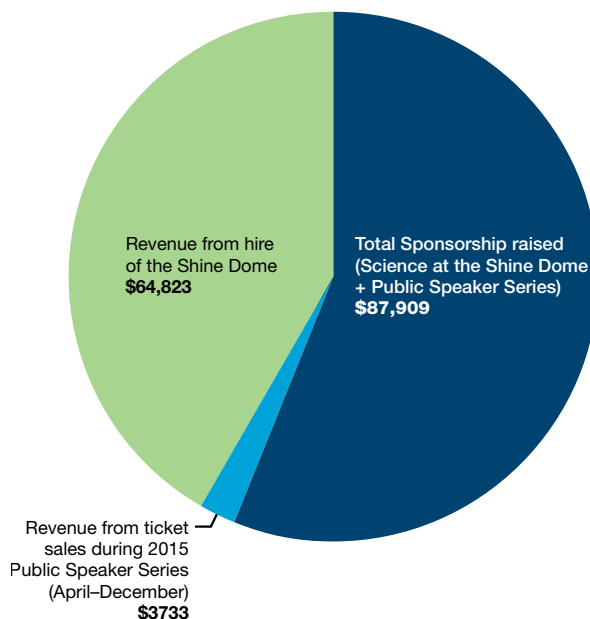
During the year, the Academy held events for scientists and the public in Sydney, Melbourne, Adelaide, Brisbane, Hobart and Canberra, on science as diverse as data, stem cells, forensics, climate change, pain, new materials, epigenetics, quantum computing, astrophysics and artificial intelligence.

Academy events

- Number of people who attended public events: **2,282**
- Number of public events: **11**
- Number of speakers: **53**
- Number of YouTube views of public events: **26,000**
- Number of people who attended all events at the Shine Dome: **10,407**

Revenue from facilities, events and sponsorships

Revenue from facilities, events and sponsorships



The Shine Dome was hired for a total of **64.5** days, with **76%** external and **24%** Academy.

2015 public speaker series sponsors were:

- Series Wine Sponsor—Jirra Wines at Jeir Station
- May Travel Sponsor—CAASTRO
- August Entertainment Sponsor—CUDOS
- October Co-Sponsor—CSIRO Manufacturing Flagship

JOURNALS

Historical Records of Australian Science

The Historical Records of Australian Science (HRAS) is a journal published bi-annually by CSIRO Publishing on behalf of the Academy. This year, for the first time, HRAS was published fully online, widening its accessibility and reducing production costs. Fellows have free access to the online version via the Fellow's section of the Academy website, and hard copies can be ordered from CSIRO Publishing for \$110 per year (both editions).

- institutional subscribers: **83**
- downloads: **11,631**
- historical articles: **8**
- biographical memoirs: **4**
- reviews: **21**

Australian journals of scientific research

The Academy and CSIRO jointly publish 13 Australian journals of scientific research. The journals:

- cover a wide range of chemistry, biology, soil, wildlife and agricultural production research
- have subscribers in 90 countries
- are free for scientists in more than 100 developing nations through the UN Research4Life programme.

During 2015, more than 1.1 million articles from the 13 journals were downloaded. The journals published 113 issues comprising 13,743 pages.

More information about these and other journals is on the CSIRO Publishing website.



THE BASSER LIBRARY AND FENNER ARCHIVES

The Academy's Council closed the Basser Library and Fenner Archives for one year from 1 July 2015 to enable consideration of how best to manage the holdings into the future. Access was maintained for biographers writing for Historical Records of Australian Science, and for recipients of the Moran Award for history of science research. The Council established a taskforce, made up of Fellows and experts in archives and the history of science, to conduct a comprehensive assessment and provide recommendations to Council by mid-2016.

INFLUENTIAL VOICE

100

SECTOR REPRESENTATIVES AND PARLIAMENTARIANS AT THE SAGE PILOT LAUNCH

8

SUBMISSIONS AND RESPONSES MADE TO GOVERNMENT

2

EVENTS HOSTED BY PARLIAMENTARY FRIENDS OF SCIENCE

Drawing on the expertise of Fellows and the National Committees for Science, the Academy made **11** submissions and responses to government consultations, reviews and inquiries, including on the role of ICT in infrastructure, the regulation of autologous stem cell therapies, Australia's Antarctic program, greenhouse gas emissions targets, international education, and research policy and funding.

The Academy also published **3** position statements on science priorities for Australian innovation, freedom and responsible practice of science, and the long-term sustainability plan for the Great Barrier Reef.

A number of the Academy's submissions and statements have had a positive impact. Submissions to inquiries into the Gene Technology Amendment Bill 2015 and the capability of the Defence Department's physical science and engineering workforce were both extensively referenced in the final reports. The Academy's contributions on setting a post-2020 target for greenhouse gas emissions and the draft Reef 2050 plan

led to invitations to participate in Ministerial roundtables to provide further expert advice.

PARLIAMENTARY FRIENDS OF SCIENCE

The Australian Academy of Science held two events for Parliamentary Friends of Science. Sponsored by co-chairs the Hon Karen Andrews MP, Assistant Minister for Science, and the Hon Richard Marles MP, Shadow Minister for Immigration and Border Protection, this bipartisan group engages interested members of federal parliament in discussions about science.

The Academy's National Committee for Astronomy launched its new decadal plan for 2016–25 at a Parliamentary Friends of Science event organised by Science and Technology Australia. There was a panel discussion on the new search for extra-terrestrial intelligence (SETI) program, with **10** members of parliament attending.

Parliamentary Friends of Science, together with the Parliamentary Friends of Women in Science, Mathematics and Engineering, jointly hosted the launch of the SAGE pilot of the Athena SWAN program, attracting a capacity crowd of almost **100** representatives and parliamentarians.



The Hon Karen Andrews MP and the Hon Richard Marles MP

NATIONAL INNOVATION AND RESEARCH ALLIANCE

Members of the National Innovation and Research Alliance (formerly the National Research Alliance), co-convened by the Academy and Science & Technology Australia, met twice during the year: once in March to agree on a series of actions urging the government to provide certainty of funding for the National Collaborative Research Infrastructure Scheme (NCRIS); and a second time in December when 'innovation' was added to the alliance name to provide for a more inclusive membership and scope.

AUSTRALIAN COUNCIL OF LEARNED ACADEMIES

The Australian Council of Learned Academies (ACOLA) comprises the Presidents of Australia's four Learned Academies: the Australian Academy of Science, the Australian Academy of the Humanities, the Academy of Social Sciences in Australia, and the Australian Academy of Technology and Engineering. The ACOLA Secretariat Pty Ltd, established concurrently with the Council, is made up of the Chief Executive equivalents of the Learned Academies, and conducts projects and activities on behalf of the Council.

The ACOLA Council met in April, July and November and the Secretariat Board met in July, October and November (AGM).

Securing Australia's Future

In 2012 the Australian Government announced the allocation of \$10 million over three years for the Securing Australia's Future (SAF) program to provide interdisciplinary research-based evidence for policy development by expert working groups involving Fellows of each of the four Learned Academies.

SAF Project 5: New technologies and their role in our security, cultural, democratic, social and economic systems was developed over three years by an expert working group co-chaired by Academy Fellows Professor Bob Williamson FAA and Professor Rob Evans FAA FTSE. The comprehensive report was launched by the Chief Scientist, Professor Ian Chubb AC FTSE in September. Its analysis of the history of technology development and the key trends, drivers, opportunities and implications for Australia's future economic and social wellbeing was well received by media and stakeholder groups.



In mid-2015, then Minister for Education the Hon Christopher Pyne MP asked ACOLA to undertake SAF Project 13: Review of Australia's higher degree research training system to identify how research students from all backgrounds could be better prepared for a range of academic and non-academic careers. The Academy is working closely with the Australian Academy of Technology and Engineering to provide project management support for the review's expert working group to deliver the report by March 2016.

Strategic plan for Future Earth in Australia

ACOLA funded the Academy to lead a project to develop a comprehensive engagement strategy for Australia's participation in the global Future Earth initiative.

The Future Earth Australia (FEA) Expert Working Group conducted consultations through an online survey, 'co-design' workshops with research and industry stakeholders that were held in Sydney, Melbourne and Brisbane (with additional plans for Canberra, Adelaide and Perth), and one-on-one interviews with influential stakeholders.

Working group members who attended the Paris Climate Change Meeting in December 2015 took with them an initial draft of a strategic plan representing FEA's potential contributions in the context of the global Future Earth initiative, and its relationship to other sustainability initiatives in Australia.

OPERATIONAL EXCELLENCE

PHILANTHROPY

This year, the generous support of donors and sponsors has enabled the Academy to celebrate and nurture excellence in science, and to bring outstanding science education to more Australians of all ages. Donations have:

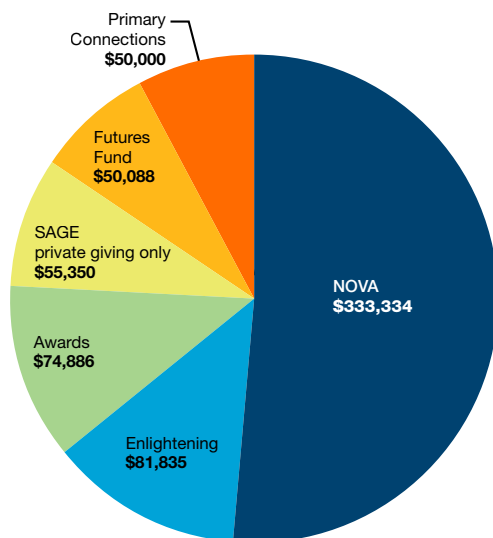
- supported primary teachers in regional, rural and remote locations to deliver outstanding science
- supported the improvement of systemic gender equity in science
- funded new research by Australia's best and brightest scientists
- enabled the redevelopment of the Nova website for all Australians
- allowed the Academy to double its science policy capacity
- helped Australian scientists to collaborate with their peers internationally
- **\$645,493** in private donations (including corporate)
- **\$98,881** in sponsorships and corporate partnerships
- **\$32,277** in foundation grants
- Total: **\$744,373**



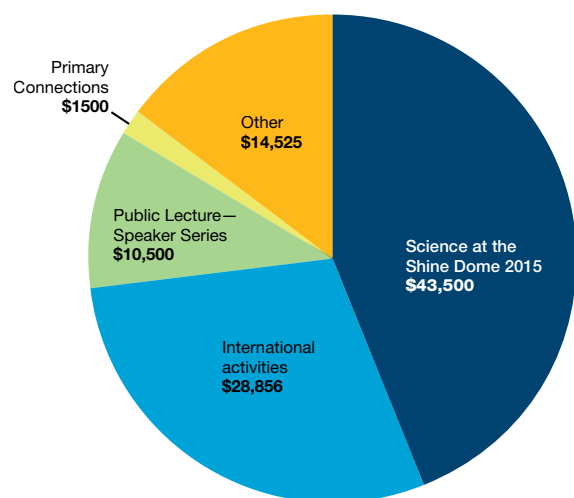
Astronomer Ray Jayawardhana, 2015 Selby Fellowship recipient. Picture courtesy Professor Jayawardhana via Twitter

- Donors to the Academy supported bursaries for **24** school teachers to attend science literacy workshops; enabled the SAGE pilot to extend its reach to include **25** universities, **5** medical research institutes and **2** publicly funded research agencies; supported **7** fellowships for scientists, enabled the website Nova: science for curious minds to be redeveloped and publish **43** topics
- First issue of new twice-yearly donor report, Shine on, published
- Academy visited Fellows, supporters and stakeholders in **5** states

Private Giving—Donations (including Corporate)



Sponsorship and Corporate Partnerships



GOVERNANCE

The Australian Academy of Science is managed by a Council of 17 Fellows, which met twice during the reporting period. To ensure Academy business was managed effectively between Council meetings, the Executive Committee (EXCOM) met 5 times, and the Finance Committee met twice.

The Finance Committee comprised the Executive Committee, Council representative Professor Ian Hume FAA, Fellows' representative Professor Michael Barber FAA FTSE and external members Mr Mark Waldron and Mr David Holmesby (Audit Committee Chair).

INFRASTRUCTURE

The Academy owns two unique and historic buildings in Canberra. The national heritage listed Shine Dome, especially, is a city landmark. However, they do take some upkeep. This year the Academy:

- upgraded the lights in the Shine Dome's Ian Wark Theatre to LEDs
- replaced the telephone system
- replaced the Ian Potter House heating boilers.

The state of the art LEDs will last many years meaning the Dome will no longer have to close once a year for two full days to change the light globes. Now replacements are as simple as lowering the fixture to the floor with a remote control rather than bringing in a cherry picker to reach up to them.



The Academy's members of Council at their October meeting



The heritage-listed Shine Dome, Canberra. Photo by Mark Graham

FINANCIALS

TREASURER'S COMMENTARY ON FINANCIAL STATEMENTS 2015

The Academy has posted an accounting deficit of **\$52,547** (2014 - \$2,530,311 surplus) for the year ended 30 June 2015 incorporating a non-cash impairment loss of \$470,331. It must be noted also that Academy investments have increased in value overall by \$880,949 (2014 - \$2,235,756) which creates a comprehensive (but not realised) gain of \$828,402 (2014 - \$4,766,067). Please refer to the below table that details the Academy's operating deficit and how it has been funded:

	Academy Operations	Untied Investments	Special Purpose Funds	Primary Connections Operations	Total per Accounts
INCOME					
Operational Income	\$7,191,317			\$1,169,069	\$8,360,386
Investment Income		\$2,165,689	\$965,390	\$61,635	\$3,192,714
Donations			\$436,167		\$436,167
Total Income	\$7,191,317	\$2,165,689	\$1,401,557	\$1,230,704	\$11,989,267
EXPENSES					
Operational expense	\$9,467,765			\$1,355,886	\$10,823,651
Net write downs / Loss on sale*		\$544,198			\$544,198
Fund expense		\$98,724	\$575,241		\$673,965
Total Expense	\$9,467,765	\$642,922	\$575,241	\$1,355,886	\$12,041,814
RESULT	-\$2,276,448	\$1,522,767	\$826,316	-\$125,182	-\$52,547

This shows that Academy operations lost \$2.27 million and Primary Connections Operations \$0.12 million, this was funded by net untied investment income of \$1.52 million. Please note that there were also some small transfers over the year from the Enlightening Fund to Academy Operations.

Performance to budget – The major positive variances can be attributed to Investment income (net of sales and brokerage) well up on budget by 35% and a strong increase on the previous year of \$716 thousand which is a similar performance to the prior 2014 year of \$608 thousand growth. This continues to be primarily due to the investment restructuring away from term deposits to fully franked blue-chip stocks.

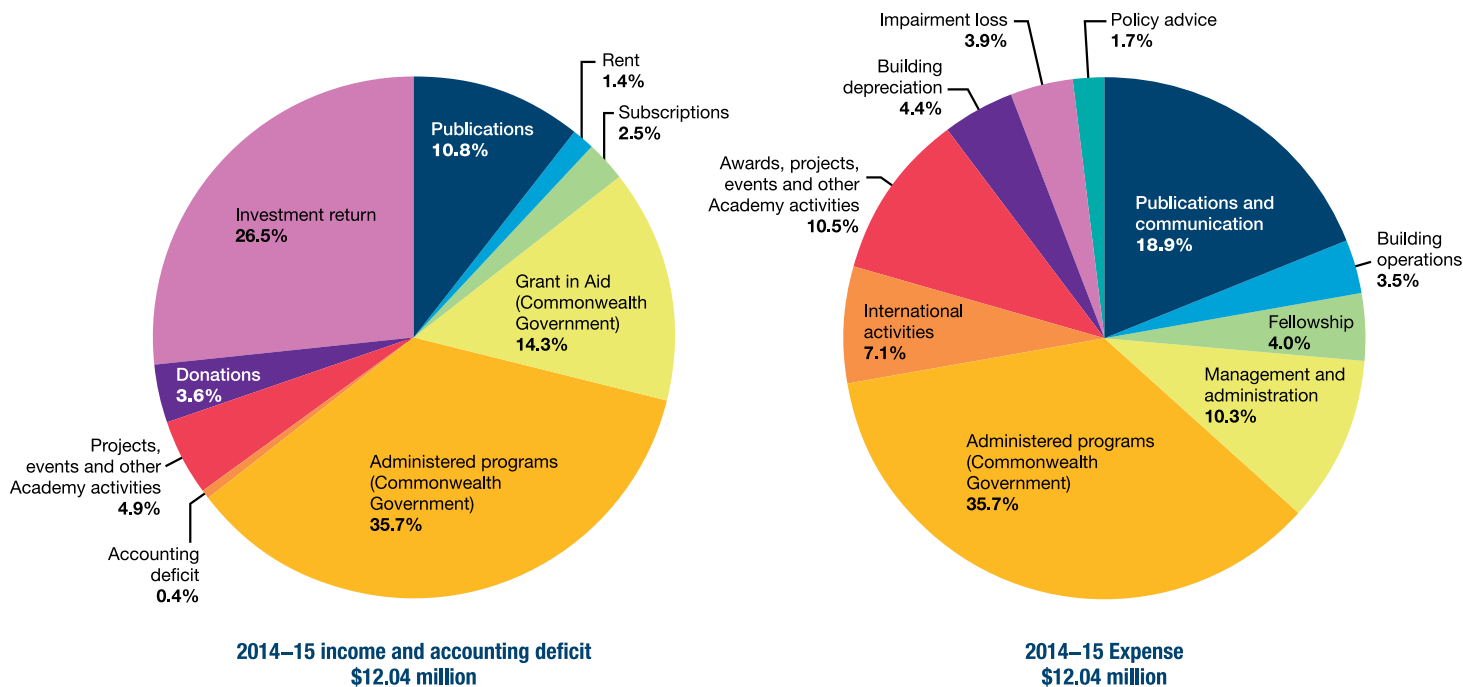
Negative variances can be attributed to:

1. Primary Connections financial performance. For the first time in many years Primary Connections has gone from being a net contributor to a net receiver of funds. Primary Connections Operations no longer has some of its publication salary costs absorbed by grant funding and sales have been reduced dramatically due to the units being available at no cost on Scootle. Please note: The result includes an apportionment of "interest" to the business unit of \$61,635 balancing this the unit contributed \$75,000 to central overheads such as Accounts, Insurance, IT and HR. Unit development costs are capitalised and then expensed once units are sold.
2. A non-cash impairment loss has been booked as two hybrid investments and Woolworths stocks dipped below 20% of their opening value for the year.
3. Total donation income has been made up primarily of the NOVA funding from Telstra, the regular Awards funding and amounts pledged previously from the Enlightening Campaign. This totals roughly two thirds of the amount anticipated in the budget as there have been few new donations. An increase in donations is targeted this financial year.

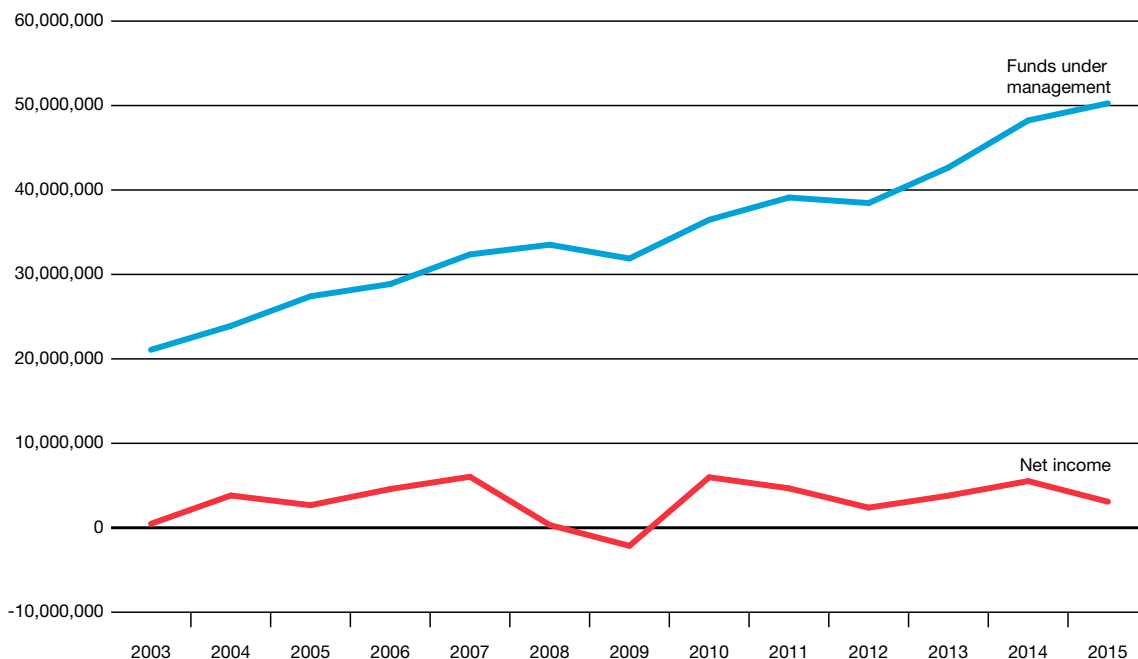
4. International Subscription expense is higher due to timing issues and negative currency fluctuation.

At the end of June 2015 the Academy employed 48 full time equivalent staff. The full audited accounts of the Academy are available on the Academy website (www.science.org.au/about-us/governance/annual-and-financial-reports/financial-report-2014-15) and a hard copy can be printed off for those that require one by calling the Academy Secretariat on 02 6201 9400.

Dr Oliver Mayo FAA FTSE
Treasurer
Australian Academy of Science



Investment history



Note: **Funds under management** includes cash at bank. **Net Income** includes investment income, donations, write ups/downs and profit/loss on sale.

Balance sheet as at 30 June 2015

	Note	2015 \$	2014 \$
Current assets			
Cash and cash equivalents	18	2,940,783	2,920,735
Investments	3	6,250,000	8,800,000
Receivables	4	6,447	15,177
Interest receivable		1,083,262	837,284
Other receivables and prepayments	5	574,107	251,192
Inventories	6	151,168	203,896
Total current assets		11,005,767	13,028,284
Non-current assets			
Investments	7	41,068,446	36,515,050
Land and buildings	8	2,036,740	2,306,976
Furniture and fittings and equipment	8	788,885	552,542
Total non-current assets		43,894,071	39,374,568
Total assets		54,899,838	52,402,852
Current liabilities			
Payables	9	835,562	846,859
Employee benefit provisions	10	723,528	608,924
Unexpended grants – projects	11	4,816,293	3,292,063
Total current liabilities		6,375,383	4,747,846
Non-current liabilities			
Employee benefit provisions	10	62,906	21,859
Total non-current liabilities		62,906	21,859
Total liabilities		6,438,289	4,769,705
Net assets		48,461,549	47,633,147
Academy funds			
Capital accumulation funds		6,418,782	6,418,782
Special purpose capital funds	13(a)	14,841,786	14,015,470
Available-for-sale investment reserve	13(c)	3,385,320	2,504,371
General funds	13(b)	23,815,661	24,694,524
Total Academy funds		48,461,549	47,633,147

The balance sheet is to be read in conjunction with the notes to the financial statements set out on pages 11-25.

**Statement of comprehensive income
for the year ended 30 June 2015**

	Note	2015 \$	2014 \$
Revenue			
Revenue			
Publication revenue	12	1,295,309	2,034,265
Government grants - grant-in-aid	19	1,720,191	1,689,775
Rent and building hire		242,019	195,772
Fellowship revenue		299,741	313,645
Academy special projects		508,028	262,188
Unexpended funds recognised in income		44,457	72,188
Grant income	17 (c)	3,984,009	3,568,694
Donations		436,167	2,035,352
Income			
Investment income	2(g)	3,192,714	2,476,427
Profit on sale of investments		-	1,016,492
Other income		266,632	64,726
Total revenue		11,989,267	13,729,524
Expenditure			
Publication cost of sales		115,750	279,500
Primary Connections development		40,896	126,730
Publication – administration		2,059,425	2,086,490
Administration expenses	19	1,147,447	1,050,356
Building operations		422,292	459,040
Fellowship expenses		477,602	467,810
Projects		135,613	-
International and national relations		704,917	542,070
International exchange operations		152,774	221,708
Grant expenses	17 (c)	3,984,009	3,568,694
Library		61,189	76,145
Science policy		202,741	379,063
Awards and lectures administration costs		39,077	23,774
Events		122,150	109,625
Fundraising		121,964	-
Academy special projects		504,443	319,462
Other Academy funded activities		6,428	33,971
Loss on Sale of investments		73,867	-
Loss on sale of fixed asset		146	-
Brokerage and management fees		98,724	96,112
Impairment loss	16	470,331	-
Depreciation and amortisation	2(b)	524,788	497,929
Projects, lectures, discussions, meetings, awards and administration fees		575,241	860,734
Total expenditure		12,041,814	11,199,213
Total profit (loss) for the year		(52,547)	2,530,311
Other comprehensive income			
Net change in fair value of available-for-sale financial assets		880,949	2,235,756
Total comprehensive income/(loss) for the year		828,402	4,766,067

The statement of comprehensive income is to be read in conjunction with the notes to the financial statements set out on pages 11-25.

**Statement of changes in equity
for the year ended 30 June 2015**

	capital accumulation funds \$	special purpose funds \$	available-for- sale investment reserve \$	general funds \$	total \$
At 1 July 2013	6,418,782	12,093,421	268,615	24,086,262	42,867,080
<i>Profit/(loss) for the year</i>		1,922,049		608,262	2,530,311
<i>Transfers</i>					-
<i>Unrealised profit/(loss)</i>			2,235,756		2,235,756
At 30 June 2014	6,418,782	14,015,470	2,504,371	24,694,524	47,633,147
<i>Profit/(loss) for the year</i>	-	826,316	-	(878,863)	(52,547)
<i>Transfers</i>		-		-	-
<i>Unrealised profit/(loss)</i>			880,949		880,949
At 30 June 2015	6,418,782	14,841,786	3,385,320	23,815,661	48,461,549
Note		13(a)	13(c)	13(b)	

The statement of changes in equity is to be read in conjunction with the notes to the financial statements set out on pages 11-25.

**Statement of cash flows
for the year ended 30 June 2015**

	Note	2015 \$	2014 \$
Cash flows from operating activities			
Income from grants & donations		5,944,406	6,322,179
Other receipts		4,659,263	3,787,381
Expenditure on grants & donations		(3,984,009)	(3,568,694)
Expenditure on customers		(6,956,889)	(6,648,522)
Goods and services tax net amount received		(431,773)	(374,897)
Net cash flows used in operating activities	18 (b)	(769,002)	(482,553)
Cash flows from investing activities			
Investment income received		2,943,452	3,130,023
Proceeds from sale of investments		25,952,588	30,378,192
Acquisition of property, plant and equipment		(491,041)	(340,556)
Acquisition of investments		(27,615,949)	(32,334,832)
Net cash flows from investing activities		789,050	832,827
Net increase/(decrease) in cash held		20,048	350,274
Add: Cash at beginning of financial year		2,920,735	2,570,461
Cash at end of financial year	18 (a)	2,940,783	2,920,735

The statement of cash flows is to be read in conjunction with the notes to the financial statements set out on pages 11-25.

INDEPENDENT AUDITOR'S REPORT
TO THE MEMBERS OF
AUSTRALIAN ACADEMY OF SCIENCE

We have audited the accompanying financial report of Australian Academy of Science ("the entity"), which comprises the balance sheet as at 30 June 2015, the statement of comprehensive income, statement of changes in equity and cash flow statement for the year then ended, notes comprising a summary of significant accounting policies and other explanatory information, and the Council declaration.

Council's Responsibility for the Financial Report

The Council of the entity are responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards and the *Australian Charities and Not-for-profits Commission Act 2012* (ACNC Act) and for such internal control as the Council determine is necessary to enable the preparation of the financial report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance with Australian Auditing Standards. Those standards require that we comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance about whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Council's preparation of the financial report that gives a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the registered entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Council, as well as evaluating the overall presentation of the financial report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion the financial report of Australian Academy of Science has been prepared in accordance with Division 60 of the *Australian Charities and Not-for-profits Commission Act 2012*, including:

- (a) giving a true and fair view of the registered entity's financial position as at 30 June 2015 and of its financial performance and cash flows for the year ended on that date; and



- (b) complying with Australian Accounting Standards and Division 60 of the *Australian Charities and Not-for-profits Commission Regulation 2013*.

RSM BIRD CAMERON

A handwritten signature in black ink, appearing to read "G Stenhouse".

Canberra, Australian Capital Territory

Dated: 7 October 2015

GED M STENHOUSE

Director

STATEMENT BY COUNCIL

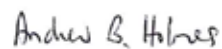
In the opinion of the Council of the Australian Academy of Science (the Academy):


(a) the statements of financial performance for the General Funds, General Purpose Capital Funds, Special Purpose Capital Funds and Grant Funds are drawn up to give a true and fair view of the results of the Academy for the year ended 30 June 2015;

(b) the balance sheet is drawn up to give a true and fair view of the financial position of the Academy as at 30 June 2015; and

(c) there are reasonable grounds to believe that the Academy will be able to pay its debts as and when they become due and payable.

Signed in accordance with a resolution of the council:


A. Holmes
President


O. Mayo
Treasurer

CANBERRA
7th October 2015

SPECIAL GRANTS FOR ACADEMY ACTIVITIES

Funding body	Project/program	Amount
Australian Academy of Technology and Engineering	Science in Australia Gender Equity Initiative	\$150,000
Australian Council of Learned Academies	Securing Australia's Future	\$143,658
Australian Council of Learned Academies	Future Earth Australia Initiative	\$111,535
Australian Council of Learned Academies	Research training system review	\$135,058
Australian Research Council	Decadal Plans for Science	\$109,771
Commonwealth Scientific and Industrial Research Organisation	UNCOVER Executive Support	\$125,000
Defence Science and Technology Group	Future of Accelerator Science	\$68,181
Defence Science and Technology Group	Studies on the Future of Accelerator Science and New Energy Science	\$68,181
Department of Education and Training	Science by Doing Stage 3	\$1,200,000
Department of Education and Training	Desktop Review of Mathematics School Education RFQ	\$24,120
Department of Education and Training	Primary Connections - Linking Science with Literacy Stage 6	\$1,000,000
Department of Education and Training	IPAIES Trilateral Research Workshops	\$90,000
Department of Education and Training	Research Seminars in Malaysia	\$34,000
Department of Education and Training	Brazil Research Seminar and Pilot Summer Program	\$115,000
Department of Education and Training	Mathematics by Inquiry RFT	\$1,300,000
Department of Industry, Innovation and Science	11th and 12th Australia China Academies Symposia	\$319,000
Department of Industry, Innovation and Science	International Science Engagement (G001533)	\$544,700
Department of the Environment	Upgrade of the Ian Wark Theatre Lights	\$22,277
National Health and Medical Research Council	Australia–Indonesia Health Workshops	\$19,260
Office of the Chief Scientist	Science in Australia Gender Equity Initiative	\$50,000
Office of the Chief Scientist	Grant G001507—Understanding the contribution of science to the Australian economy	\$250,700
Primary Industries Education Foundation	Primary Connections	\$10,000
Science and Industry Endowment Fund	Fellowships to the Lindau Nobel Laureate Meetings	\$75,800
UK Royal Society	Travel grants to the 2014 Commonwealth Science Conference delegates	\$15,980

