



Think Tank 2013 – *Inspiring smarter brain research*

The Academy hosted the 11th annual High Flyers Think Tank – *Inspiring smarter brain research in Australia* on 24–26 July in Melbourne, involving 60 early- to mid-career researchers from across Australia and neighbouring countries (one each from New Zealand, Malaysia and Sri Lanka).

The Think Tank delegates engaged in creative thinking about how to bring the disparate fields of neuroscience together and make Australia a world leader in brain research. Group discussions were guided by four topics: cognition, intelligence and executive function; neurogenetics: inherited diseases and developmental biology; artificial intelligence, maths and modelling; and ageing, dementia, Alzheimer's disease and end-of-life issues.

The Think Tank was officially opened by Adam Bandt MP, federal member for Melbourne, and this year's program included presentations from renowned Australian and international scientists.

Keynote speaker Professor Steve Furber from The University of Manchester gave a captivating opening address entitled 'Building brains'. Professor Furber was a principal designer of the BBC Micro, which introduced computing into most UK schools, and the ARM microprocessor, which today powers most of the world's consumer electronics.

Professor Terrie Inder, Director of the Washington University Neonatal Development Research (WUNDER) team, and recently appointed first female Chair of Child Health at Harvard University, spoke about 'Imaging insights on brain development'. Professor Inder presented some fascinating findings about the impacts of pre-term birth and neonatal stress on the structure and function of the brain.

The Think Tank dinner was held at the Australian Synchrotron in Clayton.



The Think Tank dinner was held at the Australian Synchrotron

Attendees were welcomed by Professor Andrew Peele, Director of the Synchrotron, and given a fascinating tour of the facilities by staff. Professor Peele also addressed the dinner, at the newly built National Centre for Synchrotron Science, which includes an exhibition space and a 400-seat auditorium named after the Academy's founding President Sir Mark Oliphant AC KBE FAA FRS FTSE.

The full outcomes from the Think Tank will be included in a Recommendations document to be published by the Academy in December 2013. The Recommendations will aim to guide future policy development and research prioritisation to ensure Australia provides a good platform to harness neuroscience's explosive growth. The 2013 Think Tank was generously supported by the Theo Murphy (Australia) Fund courtesy of the UK Royal Society. The event program is available at: www.science.org.au/events/thinktank/thinktank2013



Steve Furber

Message from the President

Working with the new Australian government

Preparations for, and responses to, the federal election have been a major focus of the Academy over the past few months.

But it has been extremely disappointing to note the near absence in the public discourse of any focus on science and research.

Despite the best efforts of the Academy and other significant voices in the science sector in the months leading up to and during the campaign, and with the notable exception of The Greens, there was no substantial or comprehensive articulation of a strategic approach to science, research, infrastructure or science, technology, engineering and mathematics (STEM) education.

Instead, we have had a small grab-bag of innovation and STEM-related announcements: commitments to Antarctic research and some grant funding, some medical research announcements, some talk about international fellowships and a promise to cut red tape.

The Academy welcomes all research commitments – and the Coalition's promise to maintain support and funding for our *Primary Connections* and *Science by Doing* programs – but we will continue to argue for a visionary and focussed national approach to supporting science in Australia.

As this newsletter is published, we are yet to clarify the position of science in the new Cabinet. Regardless of its composition, we look forward to working with Prime Minister Abbott and his ministry to assist in formulating strategic policy for Australian science. We will seek to work particularly closely with those ministers and departments whose portfolio responsibilities are concerned with, and would benefit most directly from, strengthening Australia's research, education and international collaboration in the STEM areas. And we will continue to provide robust scientific advice to inform policy consideration.

Political instability in recent times has meant that we have had changing ministerial leadership in the science portfolio every few months, as well as multiple ministers with somewhat overlapping responsibilities. This has made it extremely difficult to pursue policy engagement and help implement longer term science policy strategies.

I hope that this election result will usher in a period of greater stability and an environment in which longer-term and more strategic planning for science and research can flourish.

In a sign of improved science use within the public service, we welcome the recent launch by the Department of Agriculture, Forestry and Fisheries of its own science strategy. This is very much a step in the right direction, and I urge every Federal Government department to develop and articulate its own such strategy.

Engaging the public in a conversation about science

I was honoured recently to address the National Press Club. During this nationally televised speech, I revealed the Academy's election priorities, which are covered in detail in this newsletter. I was pleased to receive a very strong and positive response to these messages, both from the sector and from the general public – the Academy and the speech even made the top trending topics on Twitter in Australia that day.

Further buzz was created by the release of our popular science literacy survey. Secretary Science Policy, Professor Les Field FAA, was kept very busy by the media interest, which provided a platform to discuss the serious issues of science literacy and quality science education.

The Academy looks forward to working with the ABC to enhance public engagement with science through a new science advisory panel to be chaired by Professor Fiona Stanley FAA at the ABC, announced by ABC Chair



Suzanne Cory

Jim Spigelman AO at the Shine Dome in June.

Educating Australian children

Our high quality education programs continue to attract praise and interest, both nationally and internationally. I am pleased to announce that *Science by Doing* has now completed Stage 2 of its development; eight of its exciting range of digitally-based curriculum resources are now available free online to every Australian secondary school. In coming months we'll further promote these resources and encourage schools to take up the program.

We've also released the latest in our series of *Interviews with Australian scientists*. Please visit the Academy's website for some interesting insights into the life and work of Professor Geoffrey Burnstock.

Vale

Since I last wrote this column, I am sorry to report the death of Professor Bob Street AO FAA. My deepest condolences go to his family and friends.

Professor Suzanne Cory AC PresAA FRS

President addresses National Press Club

In a nationally televised address, Academy President Professor Suzanne Cory made an impassioned plea for all political parties to take a long-term strategic approach to science and science literacy, to build and protect the future well-being of Australia.

Speaking to a full audience at the National Press Club on 3 July, Professor Cory emphasised the integral nature of science to everyday life: through technology, transport, food production, energy production, crime fighting, manufacturing, communications, healthcare, and more.

She said a national strategy for science was crucial if Australia was to remain resilient, responsive and relevant. Australia must invest more in research and development: to protect its economic competitiveness, social wellbeing and quality of life, to build resilience and to protect future productivity.

Professor Cory outlined a plan to invest in high quality science, technology, engineering and mathematics (STEM) education that will produce and sustain internationally competitive scientists, mathematicians, technologists and engineers, a broadly skilled workforce and a scientifically literate community.

Science and education should enjoy greater guarantees than other sectors for

three reasons, she said: because quality science and education takes years to plan and build; because it is the federal government's responsibility to plan and invest for the longer term; and because the cost of not making a strategic investment is to commit Australia to going backwards.

Launching the Academy's Election Policy 2013 (see below), Professor Cory called on federal parliamentarians to develop strategic plans for science and education, and said the Academy would back any strong plan to properly fund Australian science and education.

The full transcript of the National Press Club address is available at www.science.org.au/events/speeches.html



Professor Cory addresses the National Press Club on 3 July 2013 Photo: Sandy Spiers

ELECTION STATEMENT CALLS FOR STRATEGIC VISION

The Academy launched its election policy statement at the National Press Club in July, calling on any future government to work with the science sector to build a long-term strategic vision for Australia's future. Participation in the knowledge economy by the world's seven billion people is rising quickly, and many countries have placed great emphasis on scientific research as a key mechanism to ensure future prosperity. In the election statement the Academy argued that for an economically developed nation such as Australia, creation and use of knowledge through research was not merely one of a range of choices, but an essential foundation, and that strategic support for Australian science was central to any rational vision for Australia's future. A copy of the Academy's election statement can be found here: www.science.org.au/reports/documents/ElectionPolicy2013.pdf

Science literacy report grabs media attention

A science literacy survey conducted by the Academy made headlines around the world after the results were released in July, including a *New York Times* website headline: 'Australians' grasp of science has deteriorated, study finds'.

The survey, 'Science literacy in Australia', conducted by Auspoll on behalf of the

Academy, asked respondents questions about basic science.

The proportion of 18–24 year-olds who correctly answered that it takes one year for the Earth to orbit the sun fell to 62%, from 74% in an earlier (2010) Academy survey. The worst-performing age group was 65 plus, in which only 46% of respondents answered this question correctly, compared with 51% in 2010.

There was a small increase in the number of people who knew the earliest humans did not live at the same time as dinosaurs – to 73% from 70%; and the number of Australians who believed that evolution was occurring was steady at 70% compared with 71% in 2010.

A highlight of the results was that 79% of respondents said science education was very important or absolutely essential to the economy.

The Academy's Secretary Science Policy Professor Les Field AM FAA was asked to provide commentary on the survey results by major Australian media. The story was picked up by more than 600 national and international news outlets, including the *New York Times*, Agence France-Presse, the *Bangkok Post* and the *International Business Times* (UK).

The full survey results are available at www.science.org.au/reports/literacysurvey



Photo: © iStockphoto.com/aynos

Academy launches philanthropic campaign

The Academy has enlisted the support of one of its most famous Corresponding Members, Sir David Attenborough OM CH CVO CBE FAA FRS, to help promote a new philanthropic endeavour – The Enlightening campaign.

Sir David is the voice of a promotional video that forms part of a major fundraising campaign developed by the Academy to raise \$12 million to help elevate science in public debate, ensure quality science education at all levels, and invigorate scientific understanding, inquiry and enthusiasm nationwide.

In announcing The Enlightening campaign at the Academy's Annual General Meeting in May, President Suzanne Cory said recent surveys indicated science education in Australia was failing, with the result that the future supply of scientists and mathematicians was threatened and the workforce dangerously ill-prepared for new industries needed to drive future prosperity. Science literacy was dangerously low, with the result that public opinion was too easily swayed by mainstream media bias and lobby groups.

As a result, the Academy needed to redouble its efforts to foster quality science education and enhance scientific literacy in the wider community, including government.

'We have created excellent programs such as *Primary Connections*, *Science by*

Doing and Nova: science in the news and have an in-house science policy unit to coordinate expert input from Fellows,' Professor Cory told the meeting. 'But we are struggling financially to support them adequately. That is why we are launching a major fundraising initiative, aptly named The Enlightening.'

It is hoped the philanthropic campaign – whose patrons are former Academy President Sir Gus Nossal AC CBE FAA FRS FTSE and former CSIRO Chair Catherine Livingstone AO FTSE FCA FAICD – will have a transformational impact in reconnecting Australia with science. It has three key objectives:

- *Nurturing scientific curiosity* through inspiring science and maths education
- *Inspiring scientific literacy* in the community through improved science communication, and
- *Elevating scientific evidence* in public policy and debate.

Professor Cory told the AGM she believed so strongly in The Enlightening campaign, she and her husband Professor Jerry Adams FAA would make a personal contribution of \$50 000 and would also make provision for the Academy in their wills. She encouraged other Fellows to do the same.

For more information and to see the film clip narrated by Sir David, who is patron

...continues on page 5



The Enlightening campaign brochure

A NEW FUND FOR AUSTRALIAN SCIENCE

At this year's *Science at the Shine Dome* outgoing Academy Treasurer Professor Mike Dopita AM FAA launched the Australian Futures Science Fund, a new perpetual endowment fund to support the Academy's work into the future.

The Australian Futures Science Fund will operate in the tradition of funds such as those at Harvard University or the US National Academy of Sciences. It will be funded primarily through bequests and it is hoped that within a decade the fund will grow sufficiently to generate interest of \$750 000 per annum to the Academy. This endowment is intended to ensure the Academy's financial independence and sustainability and enable it to expand its services and continue to promote and inspire scientific excellence in Australia for generations to come.

Donations and bequests to the Australian Futures Science Fund will help to underpin the Academy's work in Australia and internationally – free from external influence. Program development monies will be allocated from a portion of the accrued interest from the fund. The remainder will continue to grow the funding base in perpetuity.

Information about how to leave a bequest in trust to the Australian Futures Science Fund has been sent to all Fellows. More information is available by emailing bequests@science.org.au. All correspondence and discussions are completely in confidence and are not legally binding.



Suzanne Cory with patron of the Academy's education and outreach programs, Sir David Attenborough

of the Academy's education and outreach programs, go to www.science.org.au/support-us

In tandem with The Enlightening campaign, the Academy has also launched Australian Futures Science

Fund, a new bequest trust for the Academy. (See stories about the fund above and below). ▲

Photo: Mark Graham



PROFESSOR MIKE DOPITA – WHY I HAVE LEFT A BEQUEST TO THE AUSTRALIAN FUTURES SCIENCE FUND

Former Treasurer of the Executive Committee, Professor Mike Dopita, speaks about his commitment to the Australian Academy of Science:

'I am passionate about the future of science in Australia and the role the Academy has in promoting this. I'm truly excited about this opportunity to give back to the Academy, which has given me so much already and to ensure the primacy of science in Australia for future generations.

'In order to remain a truly independent voice of evidence-based science in Australia the Academy must secure sources of financial support other than government funding in order to build its internal capabilities. The seed that is planted through donations and bequests to the Australian Academy of Science Australian Futures Science Fund will help to underpin the Academy's work in Australia and internationally – free from external influence.

'I personally have already included the Australian Futures Science Fund in my will; I am proud to be contributing to ensuring the Academy remains on a strong financial footing and continues its vital work promoting scientific excellence in Australia long into the future.'

Research sector unites in support of science

For the first time, Australian research bodies including the Australian Academy of Science have come together as a Research Alliance to urge non-partisan support for science and all forms of research.

On the morning of 17 June 2013 at the Shine Dome, the Academy hosted a Research summit where representatives from a range of peak science bodies and organisations discussed how the sector

should respond to organisational and funding challenges in the lead-up to the federal election.

Following the Research summit the Research Alliance – including the Academy and other bodies such as Science & Technology Australia, the Australian Academy of Technological Sciences and Engineering, Universities Australia, and the Cooperative Research

Centres Association, among others – endorsed and issued a joint statement in support of research and held a media conference at Parliament House.

Each group spoke to the principles expressed in the statement, supported by Australia's most recent Nobel Laureate Professor Brian Schmidt AC FAA FRSc. The statement called on all politicians to take action in line with six fundamental principles in support of research. The event attracted significant media attention, including mentions in *The Australian* and Fairfax media.

The same day, the Academy's Secretary Science Policy Professor Les Field FAA, Council member Professor Schmidt, and former Secretary Science Policy Professor Bob Williamson AO FAA FRSc met with then Opposition Leader The Hon. Tony Abbott to put forward the concerns of the science sector.

A copy of the joint statement in support of research signed by each of the Research Alliance groups can be found at www.science.org.au/policy/researchalliance.html ▲



The Research Alliance at Parliament House

ABC Chair at the Shine Dome

The Chair of the Australian Broadcasting Corporation, The Hon. Jim Spigelman AC QC, has announced the ABC will establish a new reference panel with expertise in scientific research, science education, and science communication.

To be chaired by Professor Fiona Stanley AC FAA FASSA, the new panel will advise on the ABC's coverage of science and science content generally across the broadcaster's platforms.

Mr Spigelman made the announcement during a special address at the Shine Dome in June, in which he discussed the ABC's involvement in raising public awareness of science over the past 50 years.

The Academy, along with other major science organisations, will assist in establishing the panel.

Mr Spigelman's address is available at the Academy's YouTube channel www.youtube.com/ScienceAcademyAu



Jim Spigelman at the Shine Dome

Policy submissions

Australia in the Asian Century – country strategies

Following the release of the 'Australia in the Asian century' white paper, the Department of Foreign Affairs and Trade has started developing country strategies for Japan, China, Indonesia, India and South Korea. Following a request from the Secretary of the department, the Academy put forward a submission to assist in development of the country strategies. Other countries in the region already have world-class research infrastructure and capabilities, and access to such facilities can provide enormous opportunities and benefits for Australia, which we are unable to realise on our own. Therefore the Academy's submission stressed the importance of developing a strategic program for Australia's international scientific engagement. Country strategies for Indonesia and South Korea have now been published and, consistent with the Academy's advice, science features prominently in both strategies. The strategies recommend exploring ways to increase scientific exchange, and investigating potential funding mechanisms to support science collaborations. A copy of the Academy's submission can be found here: www.science.org.au/reports/documents/

AsianCenturyWhitePaperCountry Strategies.pdf

The department's country strategies are available at: www.dfat.gov.au/issues/asian-century

The Academy would like to thank Professor Anthony Thomas FAA, Professor Andrew Smith FAA, Professor John White CMG FAA FRS, Professor Philip Kuchel FAA, Professor Michael Dopita AM FAA, Professor Chennupati Jagadish FAA FTSE, Professor Andrew Holmes AM FAA FRS FTSE and Professor Tam Sridhar FAA FTSE for their assistance in developing the Academy's submission.

Assessing the wider benefits from university research

In November 2012 the Government announced its intention to assess the broader economic, social and environmental benefits arising from all elements of government research investment, including from university-based research. In support of this, the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) has prepared a discussion paper 'Assessing the wider benefits arising from university-based research' and asked for comments from the sector. The Academy has put forward a detailed

response to the discussion paper, supporting the general principle of communicating the benefits of public investment in university research, but outlining a number of areas that need further consideration before such an exercise could be undertaken. A copy of the Academy's submission can be found here: www.science.org.au/reports/documents/BenefitsOfResearchDiscussionPaper.pdf

Senate inquiry into extreme weather events

In January this year the Academy put forward a submission to the Senate inquiry into recent trends in and preparedness for extreme weather events, outlining how a shift in the climate baseline will change the frequency and intensity of extreme weather events. The Academy's submission was referenced 13 times in the final report, published by the Senate Standing Committee on Environment and Communications last month. The Academy would like to thank Dr Michael Raupach FAA FTSE, Professor Trevor McDougall FAA, and Dr Graeme Pearman AM FAA FTSE for their assistance in developing the Academy's submission. A copy of the submission can be found here: www.science.org.au/reports/documents/SenateInquiryExtremeWeatherEvents.pdf

Australians take leading roles in Future Earth

The Academy was pleased to note the recent appointment of Dr Mark Stafford Smith of CSIRO to the role of inaugural Chair of the Future Earth Science Committee; and (remarkable for a global committee of 18) a second Australian appointment of Professor Xuemei Bai from the Australian National University.

Future Earth is a new 10-year international research initiative to develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades. It will mobilise thousands of scientists while strengthening partnerships with policymakers and other stakeholders to provide sustainability options and solutions

in the wake of the Rio+20 conference on sustainable development.

Future Earth brings together the United Nations, the International Council for Science (ICSU), and the International Council for Social Science to build on the success of existing global environmental change programs including the International Geosphere Biosphere Program (IGBP) and the World Climate Research Program (WCRP).

The Science Committee is the first governing body to be appointed and the inclusion of Dr Stafford Smith and Professor Bai is significant for Australia's involvement in the initiative as it will help to ensure strong engagement between Australian and international communities. Future Earth is central to

the interests of the Academy's National Committee for Earth System Science (NCESS) and Dr Stafford Smith's appointment brings opportunities that mesh well with the NCESS strategic plan to develop Earth system science in Australia. To that end, discussions have begun to explore options for Australian community-building and engagement that interact with Future Earth through this key establishment phase.

Dr Stafford Smith is Director of CSIRO's Climate Adaptation Flagship. Professor Bai is a Professor of Urban Environment and Human Ecology at the Fenner School of Environment and Society, Australian National University. For more details go to www.futureearth.info

Caughley Fellowship boosted by donations



Graeme Caughley

The Graeme Caughley Travelling Fellowship commemorates the life and work of Graeme James Caughley *FAA*. Born and educated in New Zealand, Graeme gained an international reputation for his work on the population ecology of large mammals and their conservation and

management – tahr and deer in New Zealand, kangaroos in Australia, elephant in Africa, wild sheep in Afghanistan and musk ox in North America. Twenty years on he continues to influence thinking in this field.

After his untimely death in 1994 there was a move to honour this remarkable man and a fund was established with contributions from many colleagues and from the then CSIRO Division of Wildlife and Ecology (where Graeme worked), the Australasian Wildlife Management Society (of which he was President) and the New Zealand Crown Research Institute Manaaki Whenua-Landcare Research. In the 18 years since its inception there have been nine Caughley Fellows, four from New Zealand and five from Australia (see www.science.org.au/awards/awards/caughley.html).

In 2009 the Academy invited ecologists in the supporting institutions and in the fellowship to review the scope and purposes of the Award in order to keep it up to date. The outcome was to continue the Caughley Fellowship as it is with

minor alterations suggested by some of the respondents. Then in 2011 the capital fund was augmented by the incorporation of the dormant AJ Nicholson Fund with similar purposes. A clause was added to the Standing Orders explaining that Dr Nicholson was a Foundation Fellow of the Academy, a former Chief of the CSIRO Division of Entomology and a distinguished population ecologist. These two developments prompted the Australasian Wildlife Management Society and Manaaki Whenua-Landcare Research to each contribute an additional A\$10 000 to the fund, which monies were received by the Academy in July 2013. The capital fund now stands at A\$120 000 thereby enabling the fellowship to be raised to \$7 000 and to continue into the foreseeable future.

The original aim to commemorate Graeme Caughley has been achieved both in the way the nine fellows have used their opportunities and also in maintaining good and fruitful collaboration between the two countries that nurtured Graeme's career.

Hugh Tyndale-Biscoe

CSIRO and Academy to continue journals partnership

Earlier this year, the Academy signed a new five-year agreement with CSIRO (2013–18) to continue publishing 13 Australian journals of scientific research, ranging from plant and agricultural sciences, through to chemistry, and animal and aquatic sciences.

The Academy and CSIRO first joined forces in 1957 to jointly publish Australian journals of scientific research. Publishing had commenced in 1948 under the auspices of CSIRO and the National Research Council, beginning with seven journals in the biological and physical sciences.

The partnership recognises the importance of international scientific research in delivering innovative solutions to society, industry and the environment – and of publishing the peer-reviewed findings of that research.

As part of the Academy–CSIRO agreement, both organisations have a representative on the CSIRO Publishing Advisory Committee and the Board of

Standards, which meet regularly to develop editorial and publishing policy and ensure the journals' high standards are upheld. The Academy's representative is Foreign Secretary Professor Andrew Holmes AM FAA FRS FTSE and CSIRO is represented by its Publishing Director Mr Andrew Stammer.

Professor Holmes said the success of the agreement was based on CSIRO's high public esteem coupled with endorsement from the Australian Academy of Science.

Owned by CSIRO and published by CSIRO Publishing, the journals vary in subject matter and age:

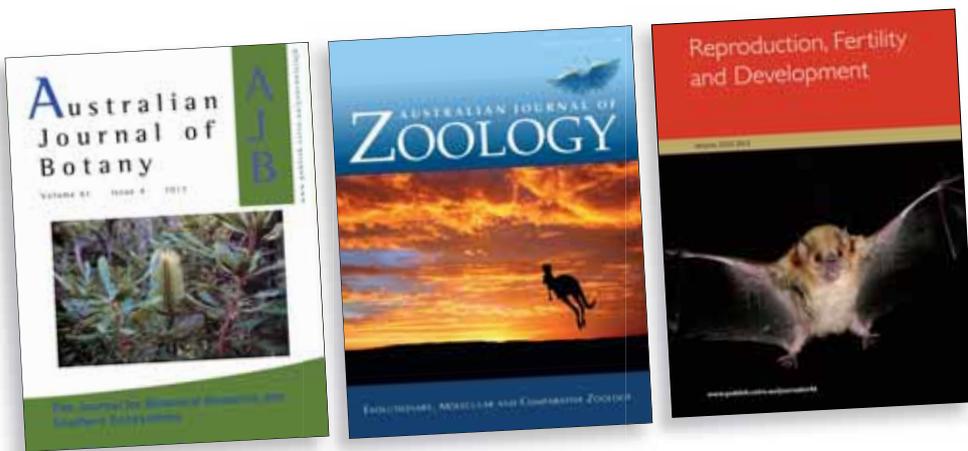
- In plant science, *Australian Journal of Botany* (since 1953), *Australian Systematic Botany* (1977) and *Functional Plant Biology* (1974)
- In agricultural science, *Crop and Pasture Science* (originally *Australian Journal of Agricultural Research*, 1950) and *Soil Research* (formerly *Australian Journal of Soil Research*, 1963)

- In chemistry, *Australian Journal of Chemistry* (1948) and *Environmental Chemistry* (2004)
- In animal science, *Animal Production Science* (formerly *Australian Journal of Experimental Agriculture*, 1961), *Australian Journal of Zoology* (1953), *Invertebrate Systematics* (*Invertebrate Taxonomy* from 1987 to 2001), *Reproduction, Fertility and Development* (1989) and *Wildlife Research* (*CSIRO Wildlife Research* from 1956 to 1973)
- In aquatic science, *Marine and Freshwater Research* (*Australian Journal of Marine and Freshwater Research* from 1950 to 1994).

The journals have a worldwide readership and authorship, with institutions in more than 100 countries subscribing. Readers in more than 100 developing nations enjoy free access through Research4Life, a collection of public-private partnerships that aim to deliver knowledge to the world's poorest countries.

Mr Stammer said the board meetings were an important opportunity for editors-in-chief of the journals to discuss publishing issues. 'The meetings are always very collegial affairs with much sharing of experience and ideas. Ultimately they help the editors ensure the conduct of rigorous and ethical peer review, which is a foundation stone of good science.'

Details of these and other journals published by CSIRO Publishing are available at www.publish.csiro.au/journals/



Of vaccines and implants ...

The Shine Dome in Canberra hosted two events as part of the 2013 *Australian Science: Global Impact* public lecture series.

In July, Professor Graeme Clark AC FAA FRS FTSE presented his research that resulted in the first clinically approved multiple-channel cochlear implant. The presentation included moving footage of patients assisted by this technology and after the lecture Professor Clark

met with cochlear implant recipients who attended, and their families. Professor Clark's talk is available on YouTube www.youtube.com/ScienceAcademyAu

In August, Professor Ian Frazer AC FAA FRS FTSE detailed the cervical cancer vaccine story. Professor Frazer took the audience through his journey to produce the vaccine, and spoke about its national and global impact. ▴



Graeme Clark talking to a member of the audience after his lecture

Awards and honours to fellows



Left to right: Xu-Jia Wang, Tanya Monro, James McCluskey and Ary Hoffman

ARC Australian Laureate Fellowships 2013

Professor Hugh O'Neill FAA FRS
Professor Hugh Possingham FAA
Professor Trevor Lithgow FAA
Professor Michelle Simmons FAA
Professor Xu-Jia Wang FAA

Georgina Sweet Australian Laureate Fellowship 2013

Professor Tanya Monro FAA FTSE

Eureka Prizes

CSIRO Eureka Prize for Leadership in Science – Professor Frank Caruso FAA

Outstanding Mentor of Young Researchers – Professor Rick Shine AM FAA

Scientific Research – Professor James McCluskey FAA was part of the team awarded this prize

Infectious Diseases Research – Professor Scott O'Neill FAA, Professor Ary Hoffman FAA and Professor Brian Kay AM FAA were part of a team awarded this prize.

Lasker Award (US)

For clinical medical research – Dr Graeme Clarke AC FAA FRS FTSE

Royal Medal of the Royal Society

Professor Rodney J Baxter FAA FRS, in recognition of his contributions to the field of statistical mechanics. ▲

Primary Connections

Teacher workshop in Brisbane

Primary Connections hosted a two-day continuing professional development workshop for teachers in Brisbane, 26–27 July. Professor Ian Frazer AC FAA FRS FTSE opened the event and delegates were delighted to learn that Ian's wife was a former primary school teacher. Ian showed a deep appreciation of the teachers' work, thanking them for their dedication and commitment in attending. He discussed the importance of inspiring students about science from a young age.

Tertiary educators gather in Sydney

A two-day workshop for tertiary trainers of pre-service teachers was conducted in Sydney 18–19 July, under a funding agreement with the Department of Education, Employment and Workplace Relations. Thirty-six university lecturers from higher education institutions from all states and territories attended and enjoyed the engaging activities presented by Ms Louise Rostron, Professional Learning Consultant to *Primary Connections*; Ms Sophia McLean, Professional Learning Manager; and guest presenter and expert in literacies of science, Professor Vaughan Prain from La Trobe University.



Ian Frazer with Shelley Peers, Director *Primary Connections* Development

63rd meeting of Nobel Laureates in Lindau

This year's meeting of Nobel Laureates in Lindau focussed on chemistry and took place from 30 June to 5 July 2013. The 63rd Lindau Meeting was attended by 34 Laureates and more than 600 young researchers from 78 countries around the globe.

Professor Mark von Itzstein FAA led a delegation of eight young Australian scientists under the auspices of the Science and Industry Endowment Fund's Australian Academy of Science Fellowships to the Lindau Nobel Laureate Meetings scheme. The Academy's Foreign Secretary Professor Andrew Holmes AM FAA FRS FTSE attended as a guest of the Lindau Council.

The meeting gave delegates the opportunity to interact with their scientific heroes, exchange ideas, gain exposure to areas in their chosen disciplines and establish new contacts and networks with their peers. Professors Holmes and von Itzstein organised four private lunches during the week, with Laureates and partners Professor Jean-Marie Lehn, Professor Sir Harry and Lady Margaret Kroto, Professor Sir John Walker, Professor Richard and Mrs Nancy Schrock, Professor Wally Gilbert, Professor Marty Chalfie and Professor Ada Yonath.

In their feedback delegates said these lunches were the highlight of the week, and an unparalleled opportunity to meet and talk with the Laureates in a casual and conversational setting.

The Australian delegation hosted an academic dinner sponsored by Bruker



Left to right: Jean-Marie Lehn, Lena Daumann, Vipal Agarwal, Anwen Krause-Heuer, Mandy Leung, Jack Clegg, Lara Malins and Paul Stevenson Photo: Aditya Chopra

The 2013 Australian delegation to the Meeting of Nobel Laureates in Lindau was:

- Vipal Agarwal, The University of Western Australia
- Aditya Chopra, Australian National University
- Lena Daumann, The University of Queensland
- Nicholas Green, Australian National University
- Anwen Krause-Heuer, Australian Nuclear Science and Technology Organisation
- Hei Man Leung, The University of Adelaide
- Lara Malins, The University of Sydney
- Dr Paul Stevenson, Deakin University

and Griffith University, attended by Laureates Professor Rudy Marcus, Professor Maria-Elisabeth Michel-Beyerle, Professor Robert and Mrs Helen Grubbs together with delegates from South Africa, Poland and the US nominated by the Lindau Council. Mr Thomas Roth,

charge d'affaires at the Australian Embassy in Berlin and a representative of the Lindau secretariat, also joined the delegation.

For more details go to: www.lindau-nobel.org

FARRER MEDAL GOES ON EXHIBIT

The Academy was pleased to lend the Farrer Memorial Medal to the Canberra Museum and Gallery for an exhibition on the links between Canberra and Queanbeyan, which opened in June and runs until 29 September.

The Farrer Memorial Medal commemorates the life and work of wheat breeder William James Farrer, and is presented annually to a person who has 'rendered distinguished service in agricultural science in Australia in the fields of research, education or

administration'. The winner also delivers an oration.

The first oration was by Tasmanian farmer and Australian Prime Minister Joseph Lyons at the Star Theatre Queanbeyan on 3 April 1936, the birthday of William Farrer. At the end of the oration children from the Queanbeyan Intermediate High School presented Lyons with a silver medallion.

Later versions of the medal were bronze, with a border text 'Farrer Memorial Medal

1845-1906' around a profile of Farrer. On the reverse were the words 'For distinguished Service in Agricultural Science' surrounding a sheaf of wheat, together with the name of the recipient and the year of presentation. The Museum is exhibiting the original medal and a specimen of the later medal, both of which are usually held in a display cabinet in the foyer of the Shine Dome.

International news

Japan fellowships for Australian researchers

The Japan Society for the Promotion of Science (JSPS) has now approved all 24 Academy nominations for Fellowships for Foreign Researchers for travel to Japan in 2013–14.

The Academy received a total of 65 applications. Detailed lists of the successful nominees for the JSPS Invitation and Postdoctoral Fellowships, including their research projects and hosts, can be found on the Academy's website at www.science.org.au/international/asia/index.html

The JSPS awards postdoctoral and invitation fellowships to Australian researchers annually. The number varies slightly each year but in some years JSPS has provided Fellowships worth up to \$2 million a year in total. The postdoctoral fellowships provide opportunities for researchers to conduct cooperative research with leading research groups in universities and other Japanese institutions, and the invitation fellowships are for senior Australian researchers invited to attend seminars and give lectures. These visits presuppose the existence of contacts between scientists in both countries, a condition considered favourable to the promotion of future scientific cooperation and exchange. The Academy and the JSPS have had a Memorandum of Understanding since 1977.

Japan–Australia marine science workshop

A Japan–Australia marine science workshop (JAMSTEC) was held in Tokyo

from 11–12 July, jointly organised by the Academy and the Japan Agency for Marine–Earth Science and Technology. The workshop was co-funded by the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCS RTE) and the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT).

Eighteen Australian experts, including five early- to mid-career researchers, participated in the workshop, which included keynote presentations and breakout discussions across three themes:

What are the biogeochemical processes that influence ocean acidification and the impacts of acidification on biodiversity?

What do we understand about the limits to the adaptability of tropical and subtropical marine ecosystems to climate change?

What new technologies are required to better explore and routinely observe tropical and subtropical marine systems?

The Academy worked closely with the Australian Institute of Marine Science (AIMS) and the Australian Embassy, Japan, in preparation for the workshop. The Australian delegation was led by AIMS CEO John Gunn.

As a result of the workshop it was agreed both countries would develop a work program to guide future collaborative research into tropical and subtropical marine science between Japan and Australia. A summary statement (www.innovation.gov.au/science/international/collaboration/Pages/CollaborationwiththeAsia-PacificandAfricaRegions.aspx) to this effect was signed by DIICCS RTE and MEXT.

The workshop was followed by a public forum on Saturday, 13 July 2013.

Meeting of the Joint Committee on Science and Technology – Korea

DIICCS RTE hosted a delegation from the Republic of Korea for a meeting of the Joint Committee on Science and Technology in Canberra on 20 May. The Academy was represented by Professor Jim Williams AM FAA FTSE, who also hosted a site visit from the delegation the following day at the ANU Research School of Physics and Engineering. The site visit included a round table discussion with the Korean delegation and representatives from the Academy, DIICCS RTE, CSIRO and the Australian Academy of Technological Sciences and Engineering (ATSE), followed by lunch hosted by the two Academies.

Speaker series in Indonesia

Academy President Professor Suzanne Cory was invited by the Australian Embassy in Jakarta and the Indonesian Academy of Sciences, to visit Indonesia to deliver lectures in Jogjakarta and Jakarta from 9–13 June. Professor Cory's lectures covered her recent research into cancer and the role of the Academy in Australia.

While in Indonesia, Professor Cory and the President of the Indonesian Academy of Sciences, Professor Sangkot Marzuki, signed a new Memorandum of Understanding (MOU) (see photo next page). The new MOU is expected to facilitate bilateral scientific cooperation through workshops, missions, lectures series, and other activities such as science education and science diplomacy. It was



Participants in the Japan–Australia marine science workshop in Tokyo

Photo: Australian Embassy



Suzanne Cory, Greg Moriarty and Sangkot Marzuki at the signing of a new MOU with the Indonesian Academy

Strengthening ties with Indonesia

The Australian Academy of Science and the Indonesian Academy of Sciences signed a new memorandum of understanding (MOU) on Scientific Cooperation in June. Academy President Professor Suzanne Cory visited Indonesia by invitation of the Australian Embassy in Jakarta and the President of the Indonesian Academy, Professor Sangkot Marzuki, to sign the MOU, which is aimed at strengthening scientific ties between the two countries. (See more about Professor Cory's Indonesia visit, previous page).

signed in Jakarta on 11 June 2013, witnessed by the Australian Ambassador to Indonesia, Mr Greg Moriarty, at his residence.

Professor Jenny Graves AO FAA, Secretary Education and Public Awareness, also visited Indonesia from 18–22 August to participate in the lecture series. Professor Graves talked about her research into kangaroo genomics, which has attracted global attention since her public lecture at the Shine Dome in April, and about the Academy's science education programs.

Annual meeting of the InterAcademy Council

The annual meeting of the board of the InterAcademy Council (IAC) was held in Amsterdam from 24–26 June. The Academy was represented at this meeting by Immediate Past President Professor Kurt Lambeck AO FAA FRS. Topics discussed included strengthening the global impact of Academy organisations, the IAC review of the African Science Academy Development Initiative funded by the Gates Foundation, and the IAC report on research integrity.

A new Board was elected at the meeting and the Australian Academy of Science was successful in being re-elected for a third term for 2013–17.

Visit by the US National Academy of Sciences

A committee on Globalisation of Science and Technology: Opportunities and Challenges from the US National Academy of Sciences (NAS) visited Australia during August, to meet with prominent Australian science and technology organisations. The Academy arranged a series of meetings for the

committee with various government and independent organisations such as CSIRO, the Australian National University, Science and Technology Australia, Defence Science and Technology Organisation, Group of Eight, Cooperative Research Centres Association, DIICSRTE, Australian Research Council, Australian Academy of Technological Sciences and Engineering, and the Academy.



From left: Martin Callinan, Jim Chang, Nancy Pritchard, Celia Merzbacher, Chennupati Jagadish, Ethan Chiang, Ruth David and Sue Meek during the visit by the US National Academy

The committee also attended the Academy's August public lecture delivered by Professor Ian Frazer and dined with Professor Frazer and Professor Brian Schmidt after the lecture.

The Association of Academies and Societies of Sciences in Asia Committee for Women in Science

Professor Jenny Graves has been nominated to represent the Academy on the newly constituted Association of Academies and Societies of Sciences in Asia (AASSA) Committee for Women in Science. Professor Graves has maintained a lifelong interest in supporting women as they develop their careers in science. She will attend a one-day workshop on Women in Science Education and Research in New Delhi in September, sponsored by AASSA.

EAPSI application deadline coming up

The East Asia and Pacific Summer Institutes (EAPSI) 2014 application submission deadline will fall in mid-November.

Former EAPSI participant Dr Suzanne D'Addio returned to Australia after taking part in the EAPSI program in 2010. Suzanne was the recipient of an Endeavour Postdoctoral Fellowship and contributed to research at the Australian Institute of Bioengineering



Andrew Holmes



Photo: Mike Dopita

Prajval Shastri and Michael Dopita at the Siding Spring Observatory

and Nanotechnology at The University of Queensland.

For more information on EAPSI 2014 go to the National Science Foundation website www.nsf.gov/funding/pgm_summ.jsp?pims_id=5284

Visit to the National Science Council of Taiwan

Academy Foreign Secretary Professor Andrew Holmes AM FAA FRS attended the 15th International Symposium on Novel Aromatic Compounds in Taipei, Taiwan, 28 July – 2 August. Professor Holmes met with Dr Willis T Lin, Director-General, and Mr Ke-Yen Kuo, Deputy Director, Department of International Cooperation, at the National Science Council (NSC).

The NSC is the Academy's counterpart organisation in Taiwan for the exchange program between Australia and Taiwan dating back to 1993. Although the Academy no longer has funding to support Australian participation in the exchange, the NSC continues to fund Taiwanese researchers to visit Australia to establish and strengthen international collaborations.

At the meeting Professor Holmes summarised the Academy's interest in international cooperation, and passed on the Academy's two position papers on international collaborations. The meeting concluded with a firm commitment to

continue to review opportunities for further collaboration, perhaps in the area of energy and nanotechnology.

Australia–India senior visiting fellowships

Professor Mike Dopita AM FAA from the Research School of Astronomy and Astrophysics at the Australian National University (ANU) was one of 33 Australian researchers awarded an Australia–India Senior Visiting Fellowship by the Academy in October last year – to visit Professor Prajval Shastri from the Indian Institute of Astrophysics.

In August, Professor Shastri travelled to Australia to continue to collaborate with Professor Dopita. They made observations at the ANU 2.3 m telescope at Siding Spring Observatory, and are using the Wide Field Spectrograph (WiFeS) to understand how the massive black holes in the centres of galaxies are growing, what causes their enormous light output, and what effects they have on their environment. In all, the Siding Spring Southern Seyfert Spectroscopic Snapshot Survey (S7) will target 100 such galaxies and follow-up data will be obtained at radio wavelengths in both Australia and India. The research program of Professors Dopita and Shastri is supported under the bilateral Australia–India Senior Fellowship program. 

Science by Doing – online curriculum units

On July 16, *Science by Doing* went live with its initial set of online curriculum units for years 7 to 10 science students. These units are part of a sophisticated package for improving science learning in Australian high schools through ‘inquiry pedagogy’ and building on teacher expertise using a team approach.

Through careful research an initial curriculum unit template was developed and extensively tested in schools throughout Australia. The refined template formed the basis of the comprehensive term-long units. There are four units for each year level. For example the year 7 units are ‘The circle of life’, ‘Enough water fit for drinking’, ‘The science of toys’ and ‘Earth and space’.

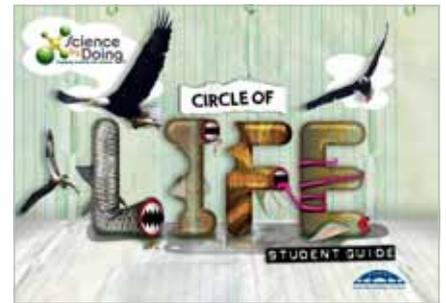
The units have been developed to assist teachers to implement the Australian science curriculum. Each unit consists of three parts: student guide, student digital and teacher guide. These parts work together to deliver a rich learning experience for students.

The student guide outlines five or six important questions for students to investigate, sequenced in parts to provide a meaningful pathway by which learning can be naturally developed. To answer the questions students undertake an integrated array of stimulating activities,

including hands-on experiments that are outlined in the student guide with colourful illustrations.

The web-based digital resource provides for each question part to include interactive digital activities and attention-grabbing film clips – the best that can be sourced from around the world. When suitable clips could not be found the *Science by Doing* team created them using top quality Australian film and animation teams. The digital component also uses a note-booking approach that allows students to reflect on their learning.

The teacher guide provides an overview of the unit and information about each core and optional lesson. There are thoughtfully constructed worksheets for lessons, where appropriate, and relevant



diagnostic, formative and summative assessment items. For each of the assessment item components teachers can obtain extensive answer keys from *Science by Doing*.

While each unit is comprehensive, there is sufficient flexibility for teachers to adapt the resources to the needs of their students. ▲

year 7	The circle of life	Enough water fit for drinking	The science of toys	Earth and space
year 8	From little things big things grow	Rock, paper, scissors	Energy	Rock your world
year 9	Ecosystems and change	Chemical reactions	Light, sound, actions	Plate tectonics
year 10	Evolution and heredity	Chemical patterns	Motion and energy transfer	Systems on the big scale

■ now online ■ available at the end of 2014

Did you know?

HRH Charles, Prince of Wales, once had his own personal toilet at the Australian Academy of Science (now the Shine Dome).

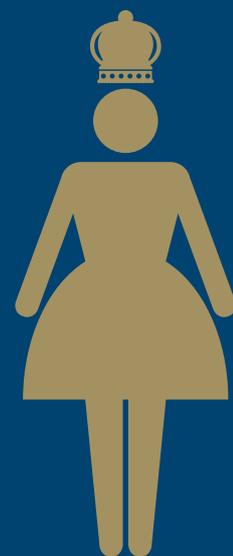
When the Prince became a Royal Fellow of the Academy on 26 March 1979 – the same day as the celebration of the 25th jubilee of the Academy – a toilet was built in the Dome especially for him.

The royal lavatory initiative was included in a request by the Academy

to the Department of the Capital Territory for extra seating in the Academy lecture hall for the 25th jubilee ceremony.

At the last moment, when building the toilet, the builders remembered that a connection between the external wall and the dome was required. Without this connection, the Dome would have been seriously damaged.

The prince’s toilet was eventually turned into a ladies’ toilet.



News from National Committees

Review of National Committees completed

In mid-2012 the Academy's Council established a Committee to Review the National Committees for Science. The committee was chaired by Professor Bruce McKellar *FAA* and comprised the Secretaries for Physical and Biological Sciences, the Foreign Secretary and Professors Graham Farquhar *AO FAA FRS*, Andrew Gleadow *FAA*, Peter Hall *AO FAA FRS*, and Sally Smith *FAA*. The National Committees are an important mechanism for linking the Academy with the broader science community, to work together to promote the development of the disciplines and ensure that Australian science has global influence.

The purpose of the review was to assess the appropriateness and effectiveness of the portfolio of the National Committees and the memberships of International Scientific Unions and interdisciplinary bodies that the Academy maintains, as Australia's adhering organisation to the International Council for Science (ICSU), and make recommendations for improvement. Particular consideration was given to the breadth of coverage of scientific disciplines, seeking a balance between the physical and biological sciences, and to strengthening the links between the committees and relevant national scientific bodies and societies.

In June 2013 Council endorsed the recommendations of the review committee's comprehensive report, which was informed by a comprehensive survey of the National Committees' membership, Fellows of the Academy and Australian scientific societies. These included reorganisation of the committee structure to better reflect the current spread of existing and emerging disciplines. While the total number of committees remains the same at 22, a broader range of fields will now be encompassed (for more information on the changes see www.science.org.au/natcoms).

The restructuring of the committees is underway, with each committee in the process of finalising its chairs, membership and terms of reference. In addition, the National Committee for ICSU Coordination has been reconstituted

GRANTS HELP EMCRS ATTEND CONGRESS

Travel grants funded by the Academy allowed two outstanding early- to mid-career researchers – Dr Amanda Craig (University of NSW) and Dr Claire Jessup, pictured right, (Flinders University) – to attend the 37th Congress of the International Union of Physiological Sciences (IUPS) in Birmingham, UK, 21–26 July.

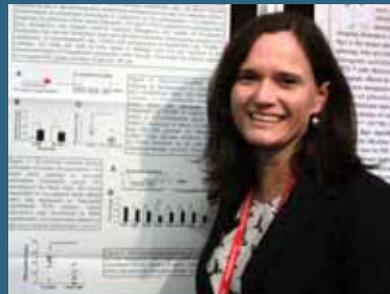


Photo: Claire Jessup

as the Advisory Committee on International Matters, to deal with matters relating to ICSU, the InterAcademy Panel, the InterAcademy Council, and the Association of Academies and Societies of Sciences in Asia (AASSA).

National Committees for Science

Antarctic research

Chair: Dr Dana Bergstrom

The National Committee for Antarctic Research (NCAR) has been undertaking a review of implementation plans for the Australian Antarctic science plan. The review was forwarded to the Antarctic Science Advisory Committee for consideration. It is understood the next biannual call for new Antarctic science projects with the Australian Antarctic Program will be in October 2013. NCAR Chair Dr Dana Bergstrom was appointed co-chair of the International Science Steering Committee for the Scientific Committee for Antarctic Research's (SCAR – ICSU) next *Open science conference* scheduled for Auckland on 22 August – 3 September 2014. Dr Bergstrom has selected 'Global messages from Antarctica' as the theme of the conference (www.scar2014.com).

Biomedical sciences

Chair: Professor Ian Dawes FAA

The National Committee for Biomedical Sciences is exploring ways to expand interactions with Australian biomedical scientific societies and the expanded National Committee for Medicine and Public Health.

The committee worked with the Australian Physiological Society to select two outstanding EMCRs with travel grants to attend the 37th Congress of the International Union of Physiological Sciences, held in Birmingham UK, 21–26 July (see above). Australia was represented at the Congress by Associate Professor David Saint (University of Adelaide) and Professor Stefan Broer (Australian National University).

The International Union of Toxicology's XIII International Congress of Toxicology was held in Korea, 30 June – 4 July. Professor Phil Burcham of the University of Western Australia was the official Australian delegate to the meeting.

A delegation of four Australian and New Zealand researchers attended the International Union of Immunological Societies' 15th International Congress of Immunology in Milan in August as the Australian voting delegation. The delegates were Associate Professor David Tarlinton (Walter and Eliza Hall Institute), Dr Su Heinzel (Walter and Eliza Hall Institute), Dr Margaret Jordan (James Cook University) and Professor Franca Ronchese (Victoria University of Wellington).

The committee is pleased to welcome current member Professor Edna Hardeman (UNSW) as incoming Chair for 2014.

Chemistry

Chair: Professor Curt Wentrup FAA

The National Committee for Chemistry (NCC) continues to strengthen relations with the International Union of Pure and Applied Chemistry (IUPAC) within Australia, most recently assisting with an

application from Dr Jason Harper (UNSW) to host the 23rd IUPAC international conference on physical organic chemistry (ICPOC). The bid was approved, and ICPOC will be held in Sydney on 3–8 July, 2016. Although not directly under the aegis of the NCC, a satellite meeting, the 7th Heron Island conference on reactive intermediates and unusual molecules will take place immediately after from 9–15 July 2016. These meetings, organised by NCC Chair Professor Wentrup and Associate Professor Craig Williams, enjoy an excellent worldwide reputation. Together, the two conferences are certain to bring a large number of high profile chemists to Australia.

Professor Wentrup participated in the 15th Asian chemical congress in Singapore, 19–23 August, as an International Advisory Committee member, and member of the congress's Editors' Forum.

The NCC is also strengthening ties with the Royal Australian Chemical Institute (RACI). An agreement has been reached with the RACI Board and its President Professor Mark Buntine whereby RACI will assume part of the cost of the IUPAC subscription. Moreover, preparations for work on a Decadal plan for chemistry have started as a collaborative effort between the NCC and RACI. A RACI congress will be held in Adelaide 7–12 December 2014, and the centenary of RACI will be celebrated in Melbourne in 2017.

An Australian delegation including two NCC members (Professor Wentrup and Professor Brynn Hibbert), as well as Professors Robert Loss and Mary Garson represented Australia at the 47th IUPAC General Assembly and the associated 44th World Chemistry Congress (WCC) in Istanbul, 8–15 August.

Crystallography

Chair: Emeritus Professor Mitchell Guss

The National Committee for Crystallography met at the Academy on 13 June to discuss future membership, the possibility of creating a vision

document for the discipline and most importantly to put in place coordination for the International Year of Crystallography officially designated by the United Nations for 2014. Australia's celebrations commenced with the Bragg Symposium, celebrating our first Nobel Laureates, William and Henry Bragg, in Adelaide last December and will conclude with a focus on crystallography at *Science at the Shine Dome* in May 2015. The principal aims of the international year are to promote crystallography in developing nations and provide educational materials for all levels of teaching. These are to be freely available throughout the world in different languages.

Data in science

Chair: Dr Rhys Francis

The National Committee for Data in Science has submitted a proposal for a panel discussion on global data initiatives at the *eResearch Australasia* 2013 conference. Dr Mustapha Mokrane, Executive Director ICSU World Data System, co-authored the proposal and has agreed to be a keynote speaker. *eResearch Australasia* brings together practitioners and researchers annually to share ideas and exemplars on new information-centric research capabilities. *eResearch* is focused on how information and communications technologies help researchers collect, manage, share, process, analyse, store, find, and re-use information.

History and philosophy of science

Chair: Associate Professor Rachel Ankeny

The National Committee for History and Philosophy of Science (NCHPS) met at The University of Sydney on 25 June and is currently investigating ways to assist with promoting the Academy's oral histories and further developing existing archival resources.

The International Union for History and Philosophy of Science (IUHPS) held its 24th International Congress of History of Science, Technology and Medicine in Manchester 21–28 July. NCHPS member Professor Gavan McCarthy attended the meeting as the Australian representative.



National Committee for Crystallography

Mathematical sciences

Chair: Professor Nalini Joshi FAA

The Academy's nominee to the inaugural Heidelberg Laureate Forum, ANU PhD student Adrian Dudek, will be on the official blogger team for the forum. He is expected to give an 'English-speaking young researcher perspective' of the forum and will post online updates around the time of the forum, 22–27 September 2013. The National Committee for Mathematical Sciences (NCMS) is grateful for funding from the Science and Industry Endowment Fund, which will support Adrian's attendance this year. More information can be found at www.heidelberg-laureate-forum.org

The NCMS Chair Professor Nalini Joshi was the Academy's representative on the expert working group for the Australian



Photo: Adrian Dudek

Adrian Dudek

Council of Learned Academies (ACOLA) 'Securing Australia's future' STEM: country comparisons project. Based on the premise that Science, Technology, Engineering and Mathematics (STEM) are pivotal to increasing our nation's productivity, this group was charged with examining existing solutions to the STEM skills shortage in comparable countries and to ascertain which, if any, of those solutions could be usefully applied to the formation and maintenance of a STEM skills workforce, and propose a set of options for increasing Australia's productivity and international competitiveness. The final report was released in May and is available from the ACOLA website at www.acolasecretariat.org.au/ACOLA/index.php/projects/securing-australia-s-future/project-2

Mechanical sciences

Chair: Professor Ivan Marusic

The National Committee for Mechanical Sciences met by teleconference on 7 May. Establishment of an early career award was a major item for discussion. The committee also discussed increasing engagement with relevant societies. Advice was provided to the Academy

to vote in favour of a change to the International Federation for the Promotion of Mechanism and Machine Science membership rules regarding technical committees and permanent commissions.

Nutrition

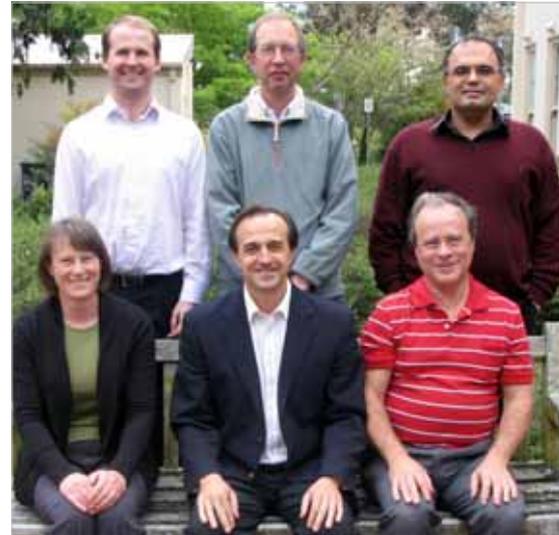
Chair: Professor Andrew Sinclair

The NCN held a teleconference in March where it was agreed that a priority for 2013 was to conduct an audit of the science and nutrition content of undergraduate nutrition courses in Australia. The basis of this initiative was the perception that there was a variable amount of science depth in some undergraduate nutrition offerings. The audit was started in May following funding approval from the Australian Nutrition Trust Fund and the first report was presented at the August 2013 NCN teleconference.

Physics

Chair: Professor Hans Bachor

The National Committee for Physics has been busy promoting the Physics decadal plan since its launch in December 2012.



National Committee for Mechanical Sciences

The Chair, Professor Hans Bachor, met with the Chief Scientist in July to advise him of the goals of the plan and seek advice on current and future opportunities in physics in Australia. The plan can be found at www.science.org.au/natcoms/nc-physics/decadal-plan.html



Photo: National Portrait Gallery

Academy Chief Executive Sue Meek teamed up with ABC's Bernie Hobbs to hold a National Science Week trivia night at the National Portrait Gallery in Canberra



PUBLIC LECTURE SERIES 2013

The 2013 public lecture series *Australian science: global impact* is chaired by Nobel Laureate Professor Brian Schmidt. The next lecture in the series is on Tuesday 1 October with Dr John O'Sullivan speaking about wi-fi.

Coming events

13th Australian space science conference (ASSC)

**University of NSW,
30 September – 2 October**

The ASSC is the primary annual meeting for Australian research relating to space science. It is jointly sponsored and organised by the National Committee for Space and Radio Science (NCSS) and the National Space Society of Australia (NSSA), with the support of the Australian Space Research Institute (ASRI). The conference covers fundamental and applied research subjects applied to space technologies such as: space science, space engineering and technology, space industry, space archaeology, education and outreach, and international relations. For more details go to: www.nssa.com.au/ocs/index.php?cf=15

2013 public lecture series – Australian science global impact 1 October, 5 November, 3 December

On the first Tuesday of every month the Academy is drawing upon its network of top Australian scientists to bring to the public an unprecedented celebration of the global impact of Australian science.

Dr John O'Sullivan FAA (1 October) led the team that invented wi-fi – a technology that changed the way we communicate and interface with technology. In 2009 Dr O'Sullivan was awarded Australia's highest scientific honour, the Prime Ministers Prize for Science, for his work.

Professor Thomas Maschmeyer FAA (5 November) leads a team of innovative chemists who are using heat and water to turn waste products into stable, environmentally friendly bio-oil for use as fuel and in industrial applications.

Professor Andrew Holmes AM FAA FTSE (3 December), Foreign Secretary of the Academy, is a lead researcher at the innovative Bio21 Institute and CSIRO. He's developing flexible polymer solar cells which can be printed and applied to any shape or surface, potentially turning whole buildings or vehicles into power generators.

For more details go to: www.science.org.au/events/publiclectures/gi/index.html

Fenner Conference 2013: Population, resources and climate change – implications for Australia's near future

**Shine Dome, Canberra,
10–11 October 2013**

This year's Fenner Conference on the environment will examine the environmental and social implications of population growth, including food and water resources, and the impact of climate change. For more details go to: www.population.org.au/articles/2013-03-19/fenner-conference-2013

Science pathways 2013: engaging with industry and innovation

**Melbourne, AMREP Education Centre,
17–18 October 2013**

This year's Early-Mid Career Researcher Forum will discuss how early- and mid-career researchers (EMCRs) can engage with industry and apply a more innovative approach to their research. The meeting will provide a great opportunity to share ideas, skills and knowledge and for EMCRs to extend their personal networks. The AMREP Education Centre's capacity is 150 delegates, so be sure to register early. For more details, go to: www.science.org.au/events/conferences-and-workshops/sciencepathways/sciencepathways2013/index.html

IAP: the global network of science academies executive committee meeting

**Shine Dome, Canberra
31 October – 1 November 2013**

The Academy will host the next IAP: the global network of science academies executive committee meeting. Up to 30 presidents, foreign secretaries, and executive directors of international scientific academies will visit Canberra to discuss IAP matters, and conduct a series of technical and cultural site visits. For more information contact: shannon.owen@science.org.au

Australia–Japan neutron science workshop: Sharing science with neutrons

**ANSTO, Lucas Heights NSW,
5–6 November 2013**

Funded by the Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (DIICCSRTE) and organised by the Academy, this workshop will examine research in neutron science. It is being held in partnership with the Australian Nuclear Science and Technology Organisation (ANSTO) and the Japan Proton Accelerator Research Complex (J-PARC). Thirty experts will convene to share their expertise in neutron science, which has been identified as a strategically important research area for both countries. For more details contact: shannon.owen@science.org.au

10th annual China–Australia symposium on astronomy and astrophysics: Science and technologies

**Nanjing, China, Purple Mountain
Observatory, 10–12 November 2013**

This symposium of 30 of the most senior experts in the fields of astronomy and astrophysics will showcase excellence, and encourage further research exchanges between Australia and China. The symposium is being held in partnership with the Australian Academy of Technological Sciences and Engineering (ATSE) and the Chinese Academy of Sciences (CAS) with funding from DIICCSRTE. For more information contact: shannon.owen@science.org.au

The 6th Asia & Oceania conference on photobiology: Life on a sun- drenched plant

**Novotel Sydney Central,
10–13 November**

This joint meeting between The Asia and Oceania Society for Photobiology and The Molecular and Experimental Pathology Society of Australasia has been organised in conjunction with the Academy's National Committee for Space Science. The theme of the conference is 'Life on a sun drenched planet'. For more details go to: www.aocp2013.org.au/

Obituary

Robert Street



Robert Street (b 16 December 1920, d 4 July 2013) was born in Wakefield, Yorkshire, UK into a mining family, with his father and grandfather having worked in the mines. At the age of 12, after becoming anxious to know what physics was meant to be about, his physics teacher asked 'How do you convert from centigrade to fahrenheit?' Robert worked out exactly how this was done, and couldn't wait to tell the teacher that he had discovered the transformation from fahrenheit to centigrade, and this was when he decided to become a professor of physics.

Entering Kings College London (as he didn't have the requisite Latin to enter

Oxford), Robert studied a Bachelor of Science in physics. Due to the bombings in the Second World War, Kings College relocated to Bristol, and although you could hear the shrapnel from the anti-aircraft shells tinkling away on the pavements, he never got hit. During an air raid, Robert met his wife to be, Joan, who was studying history at Kings College. Robert was awarded a BSc Special, completed within five terms, to enable students to either go into the forces or defence establishments to use their knowledge of physics. Robert was sent to work with the Air Defence Research and Development Establishment and was able to publish his work during this time on the absolute measurement of power, as his PhD from the University of London.

While undertaking magnetism studies as Assistant Lecturer in Physics at the University of Nottingham and Senior Lecturer at Sheffield University, in 1960 Robert accepted an invitation to come to Australia to become the foundation professor of physics at Monash University, during which time he was awarded a DSc from the University of London. Monash University at that stage was a fledgling university and he had a strong influence on its initial growth and success. He also worked on science policy issues at the national level and was a member of the Australian Science and Technology

Council. In 1974 he moved to Canberra, as director of the Research School of Physical Sciences at the Australian National University and in 1978 became vice-chancellor at The University of Western Australia, a position he held until his retirement in 1986.

After retiring, Robert once again became interested in working with magnetism, and during an experiment measuring for the first time the magnetisation of a rare-earth permanent magnet the magnetic field changed, just as he had predicted in 1949. He had several PhD students in retirement and continued to receive support from the Australian Research Council.

Elected to the Australian Academy of Science in 1973, Professor Street served on Council as Treasurer (1976–77), and Chairman of Finance (1976–78). He was also a member of the Board of Standards for the Australian Journals of Scientific Research, 1965–67. Professor Street was interviewed as part of the Academy's *Interviews with Australian Scientists*, and his interview is at the following link www.science.org.au/scientists/interviews/s/street.html

Robert is survived by his wife of 70 years, Joan, his son Nicholas and daughter Alison. ▽

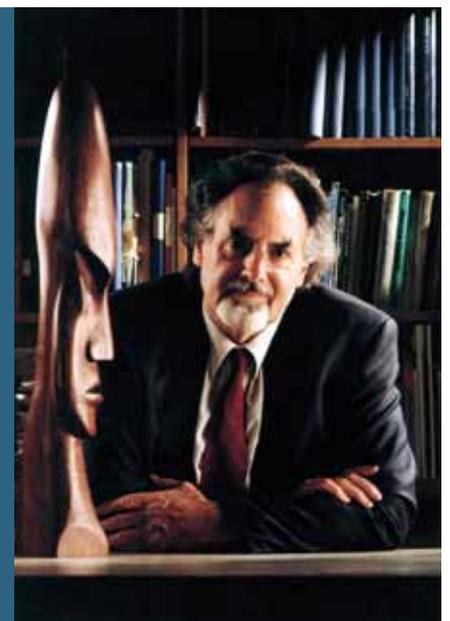
Interviews with Australian Scientists

An interview with Professor Geoffrey Burnstock in conversation with Robyn Williams was recently posted on the Academy website at www.science.org.au/scientists/

Professor Geoffrey Burnstock's personal philosophy of 'if you can't do it one way, you find another' saw him transition out of graveyard work to studying theology, maths, physics and biology at university. In his interview he reflects on a star-studded career in autonomic neuroscience and gastroenterology, the importance of a creative spirit, his love of guitar and carving wood, and his first ever *in vivo* motility publication, which involved the tricky business of putting condoms on fish.

His interview can be viewed at www.science.org.au/scientists/interviews/b/burnstock.html

Professor Burnstock in his office with one of his wood carvings in the department of anatomy and developmental biology, University College London, circa 1995



Regional news

Victorian symposium

The recently elected Victorian Fellows and medal winners participated in a well-attended symposium on 4 July and gave brief talks about their claims to fame to an audience of Fellows and guests, as well as younger researchers, high school teachers and a sprinkling of research students. The symposium, a popular annual event in Melbourne, is an interesting overview of a wide range of topics, similar to the all-day version held during *Science at the Shine Dome* in Canberra each year.



Bryan Gaensler

This year's speakers included all four new Victorian Fellows (for details see www.science.org.au/events/sats/sats2013/nfs.html), along with the winners of the Gottschalk Medal (see 2013 Honorary Awards www.science.org.au/awards/awardees/2013awards.html) and the David Syme Research Prize.

NSW Science Academy night

Our understanding of the world is advancing at an unprecedented pace. And as this happens, scientific research is responsible for exploring new frontiers, while exciting new discoveries provide the raw material for the latest inventions. Science creates a framework in which the brightest minds converge to learn, explore, discover and grow. Our future scientific leaders need to be equipped with the tools required to challenge existing knowledge, explore new frontiers and make mind-blowing discoveries.

The *Science Academy night*, hosted by the University of NSW and supported by the Australian Academy of Science and the Academy of Technological Sciences and Engineering, brings together some of the brightest minds working across a wide range of disciplines to speak with high school students about their research and professional work. The aim of the event, in its fourth year, is to raise awareness of tertiary science education and science related career paths.

The event was again chaired by Professor Merlin Crossley, Dean of the UNSW Faculty of Science, on Wednesday 14 August. Four

Fellows from both Academies provided short, entertaining presentations:

Professor Rose Amal FTSE, ARC Australian Professorial Fellow (APF) and Director of the ARC Centre of Excellence for Functional Nanomaterials – ‘Harnessing solar energy for clean water, fresh air, and renewable energy’

Professor Bryan Gaensler FAA, former Young Australian of the Year, NASA Hubble Fellow and Harvard professor; now an Australian Laureate Fellow at the University of Sydney and Director of the Centre of Excellence for All-sky Astrophysics – ‘The Dish, the desert and the dawn of the Universe’

Professor Nalini Joshi FAA, Professor of Applied Mathematics, The University of Sydney and Georgina Sweet Australian Laureate Fellow – ‘An iterated life’

Professor Peter Waterhouse FAA, ARC Federation Fellow at The University of Sydney – ‘The formerly secret life of small RNA’.

All talks were very well received by the audience of more than 100 high school students, their parents and some teachers, plus about 10 Fellows of the two Academies. Students from a wide range of Sydney metropolitan schools attended including Knox Grammar, Caringbah High School, Sydney Boys and Sydney Girls high schools, St Ignatius' College Riverview, St Catherine's School and Picnic Point High School. The presentations were followed by canapés and drinks, and the audience mingled with the guest presenters and Fellows of the Academies. 🌄

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