



---

*The Australian  
Academy of Science*

---

Annual Report  
2 0 0 1 – 2 0 0 2

# THE AUSTRALIAN ACADEMY OF SCIENCE

The Australian Academy of Science is a private organisation of almost 350 of Australia's leading scientists. It recognises research excellence, advises government, organises scientific conferences, publishes scientific books and journals, conducts international scientific relations, and fosters science education and public awareness of science and technology.

## Council members

Professor Brian Anderson – President

Professor Bruce McKellar – Secretary (Physical Sciences)

Professor John Young – Secretary (Biological Sciences)

Professor Michael Barber – Secretary (Science Policy)

Professor Kurt Lambeck – Foreign Secretary

Professor Ian McDougall – Treasurer

## Ordinary members

### Physical sciences

Professor David Boger  
Professor Lew Mander  
Dr Graeme Pearman  
Professor David Pegg  
Professor Cheryl Praeger

### Biological sciences

Professor James Angus  
Professor Elspeth McLachlan  
Professor Robert Porter  
Professor Marilyn Renfree  
Professor Joseph Wiskich

More information on Council members is available at  
[www.science.org.au/academy/council/officers.htm](http://www.science.org.au/academy/council/officers.htm).

GPO Box 783

Canberra ACT 2601

Telephone: +61 (0)2 6247 5777

Fax: +61 (0)2 6257 4620

Email: [aas@science.org.au](mailto:aas@science.org.au)

[www.science.org.au](http://www.science.org.au)

The secretariat is based at Ian Potter House, Gordon Street, Canberra.

*Cover:* A selection of the Academy's medals, awarded for distinguished research.

# Report of the Council

For the year

1 May 2001 – 30 April 2002



# Contents

President's foreword .....	2
The Fellowship .....	3
Council and administration .....	7
Science policy .....	7
National Committees .....	10
International Council for Science .....	14
Inter-Academy Panel on International Issues .....	14
Bilateral activities .....	15
Support for international collaborations .....	19
Lectures and medals .....	25
Research support and lectureships .....	27
Research conferences .....	28
Australian Journals of Scientific Research .....	29
Science education and public awareness .....	30
The Shine Dome .....	33
Adolph Basser Library .....	33
Finance .....	34





## President's foreword

It is with a feeling of accomplishment that I write the foreword for this year's Annual Report, the first that the Academy has produced in this new format and the last that I shall contribute to as President. While I, as President, may be the public face of the Academy, credit for its many achievements must go to the team that I have worked with, and led. This includes Officers of the Academy, Council members, Fellows and secretariat staff.

Twelve months ago the Prime Minister opened the refurbished Shine Dome. To have completed this project on time and on budget is a significant achievement for the Academy and I congratulate those personally involved, especially among them John Shine. Events being held in the Shine Dome are taking full advantage of the upgraded facilities, especially the audiovisual equipment in the Wark Theatre.

Like many aspects of our lives, the publishing world is changing with the advent of new technologies. The Academy has again kept pace with the changes this year as evidenced by the transition of education material from hard copy to web-based, with a parallel transition from publication sales to increased sponsorship.

Our very successful International Exchange Programs will continue. We have recently negotiated another four-year agreement with the Federal Government.

The area of science policy continues to be vitally important and the past year has been both interesting and challenging on the political front. *Backing Australia's Ability* is having a major impact on research and development in this country, in part because of the injection of funds, but also because it has placed science, engineering and technology at the forefront in the national debate. Immediate issues include the higher education review and the setting of national research priorities.

During this past year the Academy has been proactive in developing a regional presence. Meetings of the Executive Committee have been held in both Melbourne and Sydney and Officers of the Academy have met with regional Fellows and state government officers.

I would like to thank the outgoing Councillors, especially the outgoing Secretary, Biological Sciences, John Young. John has served a second term on Council, and I have much appreciated his wit, perceptive commentaries and dedicated hard work.

I warmly welcome our incoming Fellows, Councillors and our two new Officers – Bob Porter and John McKenzie. With the creation of the position of Secretary, Education and Public Awareness, the Academy is formalising the very significant contribution it has made to this area over many years. It is fitting that John should be the first person to hold this Office.

After four years, it is indeed gratifying to hand over the reigns of President to Jim Peacock. The Academy will gain much from having as its next President someone with Jim's vision and drive, who has contributed so much to the advancement of science in Australia.

**Brian D O Anderson**  
AO PresAA FRS FTSE

April 2002

# The Fellowship

The Academy Fellowship is made up of almost 350 of Australia's leading research scientists, elected for their personal contributions to science. Fellows occupy senior positions in universities, the CSIRO and industry. (A full listing of the Fellowship is available at [www.science.org.au/academy/fellows/fellow.htm](http://www.science.org.au/academy/fellows/fellow.htm).)

## New Fellows

We congratulate the following scientists who were elected to Fellowship on 28 March 2002.

### **Professor Michael Archer**

Director, Australian Museum, Sydney; Professor of Biological Science, University of New South Wales

### **Professor Murray Esler**

Associate Director, Baker Medical Research Institute; Professor of Medicine, Monash University, Melbourne

### **Professor Robin Evans**

Professor of Electrical Engineering, Department of Electrical and Electronic Engineering, University of Melbourne

### **Professor Christopher Goodnow**

Director, Medical Genome Centre, John Curtin School of Medical Research, Australian National University, Canberra

### **Professor Robert Graham**

Executive Director, Victor Chang Cardiac Research Institute; Professor of Medicine and Conjoint Professor of Biochemistry and Molecular Genetics, University of New South Wales

### **Professor Anthony Guttmann**

Professor of Mathematics (Personal Chair), Department of Mathematics and Statistics, University of Melbourne

### **Professor John Hutchinson**

Professor and Head of Department of Mathematics, School of Mathematical Sciences, Australian National University, Canberra

### **Dr John Jacobsen**

Honorary Research Fellow, CSIRO Plant Industry, Canberra

### **Professor Yuri Kivshar**

Professor and Head of the Nonlinear Physics Group, Director's Unit, Research School of Physical Sciences and Engineering, Australian National University, Canberra

### **Professor Pauline Ladiges**

Professor (Personal Chair) and Head, School of Botany, University of Melbourne

### **Professor Eugenie Lumbers**

Scientia Professor, Department of Physiology and Pharmacology, School of Medical Sciences, University of New South Wales

More information on each of the sixteen new Fellows is available at [www.science.org.au/academy/fellows/2002.htm](http://www.science.org.au/academy/fellows/2002.htm).

**Professor Suzanne O'Reilly**

Professor (Personal Chair), Department of Earth and Planetary Sciences, Macquarie University; Director, ARC National Key Centre for the Geochemical Evolution and Metallogeny of Continents (GEMOC), Sydney

**Dr Ezio Rizzardo**

CSIRO Fellow, CSIRO Molecular Science, Melbourne

**Professor Tamarapu Sridhar**

Head, Department of Chemical Engineering, Monash University, Melbourne

**Professor Fiona Stanley**

Director, TVW Telethon Institute for Child Health Research; Professor of Paediatrics, University of Western Australia

**Professor Robert Sutherland**

Director, Cancer Research Program, Garvan Institute of Medical Research, Sydney; Senior Principal Research Fellow of the NHMRC; Professor, School of Medicine, University of New South Wales

## New Corresponding Members

**Emeritus Professor Joseph H Connell**

Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara, USA

**Professor Charles J Krebs**

Department of Zoology, University of British Columbia, Vancouver, Canada

## Honours awarded to Fellows during the year

**Professor Gordon Ada**

- Election to The Johns Hopkins Society of Scholars

**Professor Brian Anderson**

- Election to the US National Academy of Engineering as a Foreign Associate
- The IEEE James H Mulligan Jnr Education Medal
- University of New South Wales doctor of science, *honoris causa*

**Professor Max Bennett**

- Officer of the Order of Australia (AO)

**Professor Graeme Clark**

- Senior Australian of the Year 2001

**Professor Robert Clark**

- Federation Fellowship

**Professor Max Coltheart**

- Federation Fellowship



**Professor Suzanne Cory**

- L'Oreal-UNESCO Women in Science Awards for 2001

**Professor Michael Dopita**

- Federation Fellowship

**Professor Frank Fenner**

- 2001 Clunies Ross National Science and Technology Lifetime Achievement Award

**Professor Graham Goodwin**

- Federation Fellowship

**Professor Martin Green**

- Federation Fellowship

**Professor Kurt Lambeck**

- The Georges Lemâitre Foundation at the Catholic University of Louvain in Belgium 2001 Prix International Lemâitre

**Dr Phillip Law**

- Ian Clunies Ross Memorial Foundation Lifetime Contribution Award

**Professor Yiu-Wing Mai**

- Federation Fellowship

**Professor Barry Marshall**

- 2001 Clunies Ross National Science and Technology Award

**Emeritus Professor Donald Metcalf**

- Prime Minister's Prize for Science

**Professor Jacques Miller**

- The Royal Society Copley Medal

**Professor Bernhard Neumann**

- Australian National University doctor of science, *honoris causa*

**Sir Gustav Nossal**

- Oxford University doctor of science, *honoris causa*

**Professor Keith Nugent**

- Federation Fellowship

**Professor Geoffrey Opat (deceased)**

- Officer of the Order of Australia (AO)

**Professor Ralph Slatyer**

- Ian Clunies Ross Memorial Foundation Lifetime Contribution Award

#### Professor Allan Snyder

- 2001 Marconi International prize (shared with Dr Herwig Kogelruk)
- Royal Society's 2001 Clifford Paterson Lecturer

#### Professor Mandyam Srinivasan

- Australasian Science Prize (with ANU colleagues)
- Election to the Royal Society of London Fellowship
- Federation Fellowship

#### Professor Ray Stalker

- Election to the American Institute of Aeronautics and Astronautics Fellowship

#### Professor Grant Sutherland

- The Clive and Vera Ramaciotti Foundation for Biomedical Research Medal for Biomedical Research

#### Emeritus Professor John Swan

- Officer of the Order of Australia (AO)

#### Professor Roger Tanner

- Election to the Royal Society of London Fellowship

#### Emeritus Professor Ross Taylor

- The American Geophysical Union 2002 Walter H Bucher Medal

#### Dr Wes Whitten

- The Memorial University of Newfoundland degree of doctor of science, *honoris causa*

## Deaths

We regret to record the following deaths:

Professor R Hanbury Brown AC FRS, 16 January 2002

Professor Samuel W Carey AO, 20 March 2002

Professor Louis W Davies AO FTSE, 28 September 2001

Dr Kenneth H L Key, 11 January 2002

Professor H Oliver Lancaster AO, 2 December 2001

Professor Geoffrey I Opat AO, 7 March 2002

Extended memoirs of deceased Fellows are published in *Historical Records of Australian Science* and are available at [www.science.org.au/academy/memoirs](http://www.science.org.au/academy/memoirs).

## Council and administration

The Academy's affairs are conducted by a Council of sixteen Fellows who are elected at the Annual General Meeting. Council meetings are held five times a year. Between these meetings the Executive Committee, comprising the six Officers, has delegated authority to ensure that Academy business is managed effectively.

Council members are listed on the inside front cover of this report.



A meeting of the Executive Committee

## Science policy

During the past 12 months Professor Michael Barber, Secretary, Science Policy, has organised submissions on behalf of the Academy to various government and parliamentary inquiries. The Academy has also released reports, statements and media releases on a range of subjects. A common theme running through the Academy's public statements is the importance of basic research and its contribution to the innovation process, along with the need for greater support for research infrastructure in universities and publicly funded laboratories.

### Submissions

**August:** In its submission to the Federal Government on *National research priorities: Setting research priorities for government research agencies* and research funding agencies, the Academy cautioned that 'in putting forward thematic areas of priority, basic research should not be over-looked. Indeed, thematic areas of greatest priority are those where there are rapid advances in basic research, because this is where the greatest benefits from investment in Research and Development are likely to be realised. The Academy sees a need for better links between basic and applied research than is currently the case in Australia, especially as the Cooperative Research Centres (CRCs) are becoming increasingly more applied in orientation and need to be better networked with Australian Research Council (ARC) programs. Joint development of high priority thematic areas by the CRC and ARC Programs may help address this issue.'

**August:** Professor John White, the Academy's former Secretary (Science Policy), and Professor Athel Beckwith, the former Treasurer, appeared before the Joint Standing Committee on Foreign Affairs, Defence and Trade Inquiry into *Enterprising Australia – planning, preparing and profiting from trade and investment*. The submission canvassed some of the confusion arising from the array of State and Commonwealth funded programs, and delays in decision making, which has had the effect of discouraging international investors. (The submission is available at [www.aph.gov.au/house/committee/jfadt/Enterprise/subs/EASub06.pdf](http://www.aph.gov.au/house/committee/jfadt/Enterprise/subs/EASub06.pdf).)

- August:** The Academy's submission to the National Health and Medical Research Council on the *Draft Guidelines under Section 95A of the Privacy Act 1988* pointed out the dangers of basing regulations on 'worst case scenarios'. By grouping all health data together, the Act does a disservice to medical and public health research. The submission made the point that if Australia's laws on discrimination in insurance and employment were stronger and were seen to be effective, there would be fewer obsessions about privacy.
- September:** The Academy's submission to the Senate Economics Committee Inquiry into *Taxation Laws, Amendment (Research and Development) Bill 2001* supported the provision in the legislation to assist small companies, through the introduction of a refundable tax offset. This will help redress a long-standing problem for small companies not able to access research and development concessions. Professor Sue Serjeantson, Executive Secretary, Dr Bob Frater FAA and Professor Martin Green FAA appeared before the Senate Committee in September.
- December:** The Academy made a submission to the *Review of the External Targets Policy applying to the science authorities (CSIRO, AIMS and ANSTO)*. The policy of requiring science agencies to earn a certain percentage of their total annual income from external sources has been in place for over ten years. The targets currently set are 30 per cent for CSIRO, and 20 per cent for ANSTO and AIMS. The Academy believes that the policy has had a significant and generally positive influence. However, such a strong focus on meeting a short term revenue target can distort the balance of research effort. Implicit in the 30 per cent target is an assumption that the main purpose of the science agencies is to assist the growth of business through the solution of problems. Such a narrow but strong focus may be perceived to compromise the independence of CSIRO's tax-payer funded strategic research. (The submission is available at [www.science.org.au/academy/media/earnings.htm](http://www.science.org.au/academy/media/earnings.htm).)
- January:** The Academy provided a submission to the Australian Law Reform Commission and Australian Health Ethics Committee *Issues Paper on Protection of Human Genetic Information*. This document raised a number of important issues for those engaged in scientific and medical research in Australia, and for the wider community. (The submission is available at [www.science.org.au/academy/media/ahec.htm](http://www.science.org.au/academy/media/ahec.htm).)

## Statements and reports

- May:** Professor Michael Barber issued a statement on the Government's Budget announcement to fund the first stage of its commitment for *Backing Australia's Ability*. He commented that the Australian community has sent a strong message to the Federal Government that Australia's future prosperity depends on investment in research and development. The statement voiced the Academy's concern that only \$160 million of the \$3 billion expected over five years will be delivered in 2001-2002. (The statement is available at [www.science.org.au/academy/media/2001budget.htm](http://www.science.org.au/academy/media/2001budget.htm).)
- May:** The Academy released a report entitled *Human Stem Cell Research*, as part of its continuing efforts to contribute to public understanding of the therapeutic potential of stem cell research. The report reviews international developments and discusses the reasons for the Academy's on-going support for approved

Media releases issued by the Academy are available at [www.science.org.au/academy/media/contents.htm](http://www.science.org.au/academy/media/contents.htm).

research activities in cellular and developmental biology. (The report is available at [www.science.org.au/academy/media/stemcell.pdf](http://www.science.org.au/academy/media/stemcell.pdf).)

**August:** The Academy responded to the Senate Economics Committee review on the Patents Amendment Bill 2001. The Academy supported efforts to update the Act to bring it into alignment with international developments.

**October:** During the federal election campaign the Academy released *Priorities in Research and Innovation for the Next Australian Government*. The booklet contained twelve recommendations for the incoming Government to improve Australia's performance in science, technology and education. It was distributed to all federal politicians, the scientific community and government agencies. (The booklet is available at [www.science.org.au/academy/media/priorities.pdf](http://www.science.org.au/academy/media/priorities.pdf).)

**January:** The Government made an announcement that one-third of Australian Research Council (ARC) research funds would be directed to specific priority areas. The Academy issued a statement urging the Government to modify this directive to the ARC. While the Academy supports a role for government in articulating broad priorities for a whole-of-government approach to research and development in Australia, this decision will have a serious impact on Australian research. The Academy reinforced its earlier statements that basic research underpins thematic areas of national priority. (The statement is available at [www.science.org.au/academy/media/arcfunding2.htm](http://www.science.org.au/academy/media/arcfunding2.htm).)

## Public presentations and communication

Professor Brian Anderson delivered the Telstra Address at the National Press Club in Canberra on 25 July. The title of his address was *Australia and the information and communication technology revolution*. He sketched out the past and futures of these technologies and their social and economic consequences. While Australia is a leading user of information and communication technologies it is one of the lowest ranking producers in the OECD. (The address is available at [www.science.org.au/academy/media/npc.htm](http://www.science.org.au/academy/media/npc.htm).)

An article by the President on the development of university science and engineering in Australia, appeared in the 12-18 September 2001 edition of *Campus Review*. (Available at [www.science.org.au/academy/media/campus.htm](http://www.science.org.au/academy/media/campus.htm).)

Professor Michael Barber gave a paper entitled *Educational challenges for future Australia* at the Business/Higher Education Round Table Summit in October. (The paper is available at [www.science.org.au/academy/media/bhert3.htm](http://www.science.org.au/academy/media/bhert3.htm).)

The Academy's Cloning and Stem Cell Working Group, chaired by Professor John White, met in November. The group maintains a watching brief on the scientific developments and community concerns regarding stem cell research and it is continuing to monitor developments by state and federal legislative and regulatory authorities.

In March 2002 the Academy wrote to the Prime Minister, and to all Premiers and Chief Ministers of States and Territories, ahead of the Council of Australian Governments meeting which discussed human embryo stem cell research.



## National Committees

The Academy has had a system of National Committees since it was founded in 1954. Currently, there are thirty committees and they have two broad roles: to foster a designated branch of science in Australia; and to support the Academy's role as a link between Australian scientists and their overseas counterparts through the Academy's membership of the International Council for Science (ICSU) and its constituent organisations.

One of the responsibilities of National Committees is to nominate delegates to attend international meetings of ICSU bodies and to produce reports on Australian scientific activities in particular fields.

A special meeting of National Committee Chairs was held on 30 April, with the aim of improving the connection between the Academy and its National Committees. It also provided an opportunity to review present structures.

A full list of National Committees and members is available at [www.science.org.au/internat/natcomm/natcom.htm](http://www.science.org.au/internat/natcomm/natcom.htm).

### Committee reports

#### Antarctic Research

The committee met in May and reviewed both the participation of Australian scientists in the activities of the ICSU Scientific Committee on Antarctic Research, and the planned reorganisation and revitalisation of SCAR. It provided independent advice to the Government's Antarctic Science Advisory Committee (ASAC) on panel membership for a major review of the Australian Antarctic science program, and considered the future direction of Antarctic science. It is also investigating ways to strengthen multi-disciplinary science within the Antarctic program.

#### Atmospheric and Oceanic Sciences

In February the committee organised an open meeting to discuss the state of atmospheric and oceanic sciences in Australian universities. It covered issues such as trends in student and staff numbers and grant funding, and what could be done to foster collaboration between relevant groups.



Climate Modelling Workshop, 13-14 February.

#### Climate

A two-day workshop was held in February to develop a national approach to climate system modelling. This was the first workshop in a series of planned meetings designed to provide a national forum for assessing the state of climate systems modelling in Australia. It was also the first step in reaching a consensus on the key objectives and on the ways to maintain an effective network of scientists across government agencies and universities working on climate modelling.

## Crystallography

The past year has been a very busy one, with a meeting in February in conjunction with the Society for Crystallographers in Australia and New Zealand, and the Society Conference in July. In August, Professor John White (committee chair), met the Victorian delegation during its visit to the European Synchrotron Facility in Grenoble, France and discussed Australia's needs in synchrotron radiation.

In June, the Victorian Government announced it would build a \$157 million synchrotron at Monash University. The Academy, through the committee, wrote to the Victorian Government and Federal Government expressing reservations about the decision; namely, the need to address the structure of the operating budget and the question of ownership and governance.

The committee has a strong interest in the Australian Synchrotron Radiation Program, which was re-funded in the 2001 round of the Major National Facilities Program.

Through the committee, Australia continues to be an active contributor to the International Union of Crystallography and has helped to form the Asia-Oceania Neutron Scattering Association.

## Electron Microscopy

The committee works closely with the Australian Society for Electron Microscopy and represents the Australian view on electron microscopy and microanalysis at the international level. The membership of the committee recognises the broad disciplinary mix of Australian electron microscopists, and the importance of maintaining strong links between scientists working in many different disciplines.

## Environment

The committee met in July to review its role in relation to other National Committees that have an interest in the environment and proposed a more integrated structure. The chair of the National Committee for Geography (Dr Elspeth Young) joined in the discussions.

## Geography

The committee held an annual meeting in July which brought together representatives from a number of geographical societies, including the Institute of Australian Geographers, Mapping Sciences Institute of Australia, the Australian Geography Teachers Association, and the Geographical Societies of New South Wales, Queensland and South Australia.

The committee is responsible for linking together the International Geographical Union with the Australian community of geographers, and providing a forum for information exchange and discussion between geographical societies and practitioners in tertiary and secondary education.

## Nutrition

The committee, together with the Australian Nutrition Trust Fund, held a one-day workshop in December. Entitled *Lifting the profile of nutritional science*, the workshop was divided into the two themes of problems and solutions. A full report of the meeting will be published in the *Asia Pacific Journal of Clinical Nutrition*.

## Physics

The committee made a submission to the Senate Inquiry into Higher Education, with Professor Tony Thomas FAA (committee chair) appearing before the inquiry. The submission noted the international recognition of the importance of physics.

The committee is concerned that statistics in science and technology do not provide a sufficient breakdown into the discipline components, with the result that the decline in the enabling sciences is not highlighted.

## Plant Sciences

The committee is reviewing its links with Australian societies of plant sciences. It is keeping a watching brief on the Australian Research Council and other granting agencies, in so far as their policies and outcomes affect plant sciences, and it is reviewing the teaching of plant sciences within Australian universities.

## Psychology

The committee met in May and November and made a decision to update the Academy's 1996 discipline review of psychology. This will involve surveying the Australian Psychological Society and all heads of schools of psychology to evaluate the degree to which the 1996 review's recommendations have been implemented.

Professor Mike Innes (committee chair) has been nominated to act as delegate to the International Union of Psychological Science's General Assembly for a five-year period, to facilitate nomination to the Assembly's Executive Committee and to help raise Australia's profile in the International Union.

## Quaternary Science

The committee is the link between Australia and the International Union of Quaternary Research (INQUA). It is developing an Australian view on INQUA's restructured Commission and Working Groups. The interface between INQUA, the International Geosphere-Biosphere Program's Past Global Changes group and relevant National Committees is also being reviewed.

The committee is planning a bid to bring the INQUA meeting of 2007 to Australia. The bid will be formally presented at the next INQUA meeting, to be held in the USA in 2003.

## Radio Science

The committee has set up an electronic mailing list to enable people who are interested in radio science activities to contact others with similar interests.

The committee has also set up a website which contains contact details for the Committee and has a link to their regular series of workshops on applications of radio science (WARS).

The 2001 Asia-Pacific Radio Science Conference, held in Tokyo in August, was a Japanese initiative to launch a new International Union of Radio Science meeting in the Asia-Pacific region. Several members of the committee were involved in organising the conference. (The mailing list is available at [www.ips.gov.au/mailman/listinfo/ncrs-general](http://www.ips.gov.au/mailman/listinfo/ncrs-general) and the website at [www.ips.gov.au/ncrs/](http://www.ips.gov.au/ncrs/).)



## Solid Earth Sciences

The committee was restructured in November to undertake the task of developing a strategic plan for Australian Earth sciences. In January, the committee met to agree on outcomes, terms of reference, methodology and funding needed for the development of a strategic plan.

## Space Science

Members of the committee, together with other Australian scientists, have key positions in the International Council of Science bodies of the International Association of Geomagnetism and Aeronomy (IAGA), the Scientific Committee on Solar Terrestrial Physics (SCOSTEP) and the Committee on Space Research (COSPAR) and their committees and working groups. Major space science initiatives within Australia include FedSat, and a new Space Weather Plan being developed by the Ionospheric Prediction Service (Radio and Space Services) to monitor space weather for forecasting purposes. FedSat is undergoing final testing and integration and this will continue until May 2002. The National Space Development Agency of Japan (NASDA) has notified the Cooperative Research Centre for Satellite Systems of an official delay to the launch schedule so that FedSat is now due for launch in late 2002 or early 2003.

A new contact this year was with the Japanese Institute of Space and Astronautical Science (ISAS) in regard to their MUSES-C program. The aim of this program is to rendezvous with an asteroid and return a sample of primordial material to the selected landing site – the Woomera Prohibited Area in South Australia. The Academy has established a sub-committee, chaired by Professor Ross Taylor FAA, to be the contact point for Australian scientists interested in participating in the analysis of the sample material.

The Federal Government has set up the International Space Advisory Group (ISAG) to develop a strategy for Australia's engagement in key international space programs. Three members of the committee are members of ISAG.

In 2000, the committee prepared a report for COSPAR entitled *Australian Space Research, 1998-2000*. This report is being updated by the committee, at ISAG's request, to provide an overview of space research in Australia. ISAG will present its report to the Prime Minister's Science, Engineering and Innovation Council in the first half of 2002. (The 2000 report to COSPAR is available at [www.science.org.au/academy/media/cospar2000.pdf](http://www.science.org.au/academy/media/cospar2000.pdf).)

## International Council for Science

The Academy adheres, on Australia's behalf, to the International Council for Science (ICSU), its 25 discipline-based unions, nine program committees and two associates. The Academy appoints delegations to the business meetings of these bodies, after advice from the National Committees, and these are listed here:

International Union of Pure and Applied Chemistry (IUPAC) 1-8 July 2001, Brisbane	Professor John White FAA Professor Robert Gilbert FAA Professor David Black
Division of History of Science, International Union of the History and Philosophy of Science July 2001, Mexico City	Professor Rod Home
International Association of Geomagnetism and Aeronomy (IAGA) 18-30 August 2001, Hanoi	Professor Brian Fraser
International Association of Seismology and Physics of the Earth's Interior (IASPEI) 18-30 August 2001, Hanoi	Professor Brian Kennett FAA
International Congress of Physiological Sciences (IUPS) 26-31 August 2001, Christchurch	Professor Colin Gibbs
International Union of Nutrition Science (IUNS) 27-31 August 2001, Vienna	Professor Stewart Truswell Professor David Roberts Dr Katrine Baghurst

## Inter-Academy Panel on International Issues

The Academy is a Council member of the Inter-Academy Panel (IAP), a global network of the world's national science academies. Launched in 1993, its primary goal is to help member academies work together to advise citizens and public officials on the scientific aspects of critical global issues. It is particularly interested in assisting young and small academies achieve these goals. The major current initiative concerns global sustainability. The Academy, along with sixteen other national academies, has endorsed a statement about the science of climate change. This statement appeared in the journal *Science* on 18 May 2001.

Professor Kurt Lambeck, Foreign Secretary, represented the Academy at the IAP Executive Committee in Paris in September. The IAP has requested information on the activities that governments plan to pursue for the United Nations World Summit on Sustainable Development, scheduled to take place in Johannesburg in September 2002. The Academy has forwarded briefings prepared by the Australian Government.

Following the 11 September 2001 acts of terrorism, the IAP issued a statement on the urgent need for new initiatives on scientific aspects of international security.

In 2000 an Inter-Academy Medical Panel was established in collaboration with the IAP. The first global meeting of this Panel took place in Paris from 20-22 March 2002. The theme of the meeting was *Confronting infection and antibiotic resistance around the world – the role of academies of medicine*.

## Bilateral activities

**B**ilateral activities provide opportunities for Australian researchers, Academy officials - especially Professor Kurt Lambeck, Foreign Secretary - and government officials to meet with senior international researchers and research funders, to discuss international science and technology policy and practices, and to promote Australian research and technology. Meetings between the Academy and the international programs counterpart agencies provide an opportunity to discuss the operation of the program and make necessary modifications to ensure it is meeting its objective. The Academy's bilateral activities are funded as part of the Commonwealth Department of Education, Science and Training's International Science and Technology Networks.

### Europe

#### German Research Council

On 2 May, Professor Hans Walter Heldt of the German Research Council (Deutsche Forschungsgemeinschaft) visited the Academy and met with Professor Kurt Lambeck, to discuss the workshop entitled *Aspects of plant biochemistry and plant physiology*. The workshop, organised by Australian and German researchers, was held in August, and explored the prospects for future collaborations between younger Australian and German plant scientists. It was organised to coincide with the 12th International Congress on Photosynthesis, and was partly sponsored by the Academy.

#### French Academy of Sciences

On 7 May, Professor Kurt Lambeck met with Professor Gérard Siclet, Chargé de Mission, and Mr Alain Moulet, Science and Technology Counsellor, French Academy of Sciences, to discuss the possibility of organising a workshop between Australia and France in 2002. Both Academies have enjoyed a long and fruitful relationship for a number of years.

#### Forum for European-Australian Science and Technology Cooperation (FEAST)

The Academy, together with diplomatic missions representing members of the EU in Australia, and in association with major Australian science and technology organisations, was involved in the establishment of the Forum for European-Australian Science and Technology Cooperation (FEAST). The aim of the FEAST initiative is to highlight and improve bilateral and multilateral cooperation between Europe and Australia.

The Academy managed the first FEAST conference, *Enhancing research through collaboration and linkages*, which was held on 30 and 31 May in the Shine Dome. The 220 invited delegates represented one of the largest gatherings of European and Australian researchers and research managers ever held in Australia.

The Academy's Vice President, Professor Bruce McKellar, welcomed the delegates to the conference and chaired the sessions on the opening day. The Chief Scientist, Dr Robin Batterham FAA, spoke about Australia's innovation system and international capabilities. Professor Vicki Sara FAA, Chair of the Australia Research Council, delivered a paper entitled *Strengths of the European/Australian research relationship*.

The Academy's Executive Secretary, Professor Sue Serjeantson, chaired the workshop *Developing international exchanges of researchers*. Professor Frank Larkins FAA chaired the sessions on the second day of the conference.

More information on the Academy's international activities is available at [www.science.org.au/internat](http://www.science.org.au/internat).

## Sixth Australia-European Union Joint Science and Technology Cooperation Committee Meeting

Professor Andrew Smith FAA represented the Academy at the Sixth Australia-European Union Joint Science and Technology Cooperation Committee Meeting, held immediately after the conclusion of the FEAST conference on 31 May 2001. Discussions were held about the implementation of the recommendations from the FEAST conference and the joint priorities for the next twelve months.



Lord May of Oxford and Professor Brian Anderson

## The Royal Society

Lord May of Oxford, the Australian-born President of the Royal Society of London and Corresponding Member of the Academy, visited on 3 October and had lunch with the Academy Council. Lord May and the President of the Academy exchanged gifts on behalf of their societies. The Academy gave the Royal Society a folio box, handmade by a young Australian craftsman, Daniel Gair, from jarrah inlaid with silver ash. The Royal Society presented the Academy with a limited edition print of a painting of *Banksia serrata* by renowned Australia botanical artist, Celia Rosser.

The incoming Foreign Secretary of the Royal Society, Dame Julia Higgins, visited the Academy on 6 November. Dame Julia is a polymer scientist at Imperial College, London. She visited Australia as Solomon Lecturer.



Dame Julia Higgins and Professor Kurt Lambeck

## Knowledge Foundation (Sweden)

Professor Kurt Lambeck met with members of the Knowledge Foundation at the Embassy of Sweden on 12 November. The Foundation was established in 1994 by the Swedish Parliament to promote the broad use of IT in society, and to support research in Sweden's university colleges and new universities.

## Asia

### Fourth Australia-China Joint Science and Technology Cooperation Committee

The Academy's International Programs Officer, Ms Nancy Pritchard, attended the Fourth Australia-China Joint Science and Technology Cooperation Committee Meeting at the Commonwealth Department of Industry Science and Resources on 12 May. Representatives from Australian and Chinese research organisations gave an overview of their respective activities. The exchange program between the Academy and the Chinese Academy of Sciences was discussed, as well as the future of research collaboration between the two countries.

## Chinese Academy of Sciences

A delegation of 42 officers from the Chinese Academy of Sciences visited the Academy on 17 July and met with Ms Nancy Pritchard to discuss the Academy's activities.



## China Natural Science Foundation

A delegation from the China Natural Science Foundation met with Professor Kurt Lambeck and the Chair of the Asia Exchange Committee, Professor Brian Kennett FAA, on 30 October. An officer of the Department of Industry, Science and Resources also attended. Professor Lambeck gave a presentation on the activities of the Academy, and the delegation toured the Shine Dome.

Officers from the Chinese Academy of Sciences, with Nancy Pritchard

## Beijing Association for Science and Technology

On 30 November Ms Nancy Pritchard gave a presentation on the activities of the Academy to a delegation from the Beijing Association for Science and Technology and the vice-chairwoman of the association gave an overview of the organisation's activities.

## Korea Science and Engineering Foundation (KOSEF)

The annual joint meeting between the Academy, the Australian Academy of Technological Sciences and Engineering (ATSE), and the Korea Science and Engineering Foundation (KOSEF), was held at the Academy on 27 November.



The meeting was chaired by Professor Kurt Lambeck (third from left) and was attended by the Foreign Secretary of ATSE, Dr Peter Cook (second from left). KOSEF was represented by Mr Byung Whan Ho, Head of International Programs (third from right), and Mr Pil Koo Kang, Chief Specialist of International Programs (right). Professor Brian Kennett, Chair of the Academy's Asian and Postdoctoral Committees (left) and Ms Nancy Pritchard also attended.

The Academies and KOSEF reported on their activities since the last joint meeting, which was held in Korea in May 2000, and discussions were held on future activities, including the possibility of organising a senior researcher exchange program.

## Tenth Meeting of the Australia-Japan Joint Consultative Committee on Science and Technology

Professor Brian Kennett represented the Academy at the Tenth Meeting of the Australia-Japan Joint Consultative Committee on Science and Technology at the Department of Industry Science and Resources on 26 and 27 June. Professor Kennett gave an overview of Academy activities with Japan, highlighting the long-standing relationship between the Academy and the Japan Society for the Promotion of Science (JSPS).

## Royal Society of New Zealand

Mr Eddie Davis, Executive Officer (International), Royal Society of New Zealand, visited the Academy on 19 October to discuss matters of mutual interest.

## Other activities

### Science, Engineering and Technology Network (SETnet)

The Academy is an ongoing supporter of SETnet, which aims to provide an informal network for foreign governments, Australian researchers and those involved in science policy, to exchange information and ideas. SETnet organised a series of lectures during the year with Australian scientists who are conducting leading-edge research. Officers from the French and Italian Embassies also gave talks on science and technology activities in their respective countries.

### The Sir Mark Oliphant International Frontiers of Science and Technology Conference Series

In October the Commonwealth Department of Industry, Science and Resources launched *The Sir Mark Oliphant International Frontiers of Science and Technology Conference Series*.

The objective of the conference series is to provide financial support to stage strategically significant international conferences in Australia on high priority, cutting edge, multi-disciplinary themes. The Australian Academy of Science, the Academy of Technological Sciences and Engineering, and the Institution of Engineers, Australia, organise the conferences.

The first inaugural conference, *Photonic crystals down under*, will be held in Canberra from 18-24 August.

### Review of the Academy's International Programs

Professor Sue Serjeantson conducted a review on behalf of the Academy to assess the impact of the Academy's program of international travel support on Australian science and technology. Part 1 of the review was presented to government officers in April 2001. It found that the Academy's international exchange programs play a critical role in assisting Australian scientists gain access to knowledge and innovative technologies developed in the international environment. Part 2 of the review was completed in March 2002.

## Support for international collaborations

The objectives of the Academy's program of international scientific and technological collaborations are to improve Australian access to science and technology, and to increase awareness of Australian research.

The Academy's program gives Australian researchers the opportunity to collaborate with foreign colleagues, widen research perspectives and experience, to exchange ideas, to be recognised in the international arena, to gain information and knowledge of techniques that will stimulate and advance Australian research, and to be involved in large international projects.

The Academy's international programs are structured into four sections: short-term visits to Europe, North America and Asia, and long-term postdoctoral fellowships. The programs support collaborative research between professional Australian scientists and technologists and their colleagues in Europe, Korea, China, Japan, Taiwan, United States of America, Canada and Mexico. The Academy also administers postdoctoral fellowships with Japan and Korea. The programs provide funds for living and travelling costs.

These schemes are funded as part of the International Science and Technology Networks (ISTN) element of the Department of Education, Science and Training's Technology Diffusion Program (TDP).

The following researchers were selected in 2001.

### Europe (ISTN)

RESEARCHER	PROJECT	HOST INSTITUTION
Associate Professor Andrej Atrens University of Queensland	Use of APFIM to measure carbon segregation of ferrite.	Chalmers University of Technology, Sweden
Dr Russell Boyce Australian Defence Force Academy University of New South Wales	Shock-induced hypersonic flow separation with real gas effects.	Institute of Aerodynamics and Flow Technology, German Aerospace Centre
Dr Stephen Catchpole Queensland Forestry Research Institute	Computer controlled heat treatment of timber.	CIRAD-FORÊT, France
Dr Jennifer Davoren Australian National University	Expressive power and complexity of temporal logics for model-checking.	Laboratoire Specification et Verification, France
Dr Jim Denier University of Adelaide	Control of boundary-layer separation using shear-thinning fluids.	University of Manchester, United Kingdom
Dr Rajeev Gore Australian National University	Expressive power and complexity of temporal logics for model-checking.	Laboratoire Specification et Verification, France
Professor Richard Hartley Australian National University	Localisation through machine learning.	INRIA, France
Dr Mark Hovenden University of Tasmania	Investigations of tree ecophysiology and growth using free air CO <sub>2</sub> enrichment (FACE).	Universita Degli Studi Della, Italy

Full details of all programs are available at [www.science.org.au/internat/exchange/contscix.htm](http://www.science.org.au/internat/exchange/contscix.htm).

Dr Brian Jefferies University of New South Wales	Functional calculi and stochastic partial differential equations.	University of Hull, United Kingdom
Dr Andrzej Kilian Centre for the Application of Molecular Biology to International Agriculture (CAMBIA), Canberra	Microarrays and traceability of cattle, sheep and goats.	Centre National de la Recherche Scientifique, Université Joseph Fourier, France
Dr Wieslaw Krolikowski Australian National University	Spatial solitons in non-local nonlinear media.	Riso National Laboratory, Denmark
Dr Sergey Kun Australian National University	Experimental test of quantum chaos and slow decoherence in finite many-body systems.	Institut de Recherches Subatomiques, France
Dr Victoria Lytle Antarctic CRC, Hobart	Sea-ice core analysis, synthesis of physical and biological properties.	Alfred Wegener Institute for Polar and Marine Research, Germany
Dr Bryant McAvaney Bureau of Meteorology	Systematic intercomparison of cloud feedbacks in climate models.	Laboratoire de Meteorologie Dynamique du CNRS, France
Associate Professor Andrew McMinn University of Tasmania	Effects of thinner ice on the Arctic marine ecosystem.	University of Tromso, Norway
Dr Myhuong Nguyen CSIRO Fluid and Thermal Engineering Group	Computational modelling and simulation of fluid flow behaviour and particle transport in a SPLITT fractionation channel.	Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI), France
Dr Murray Parkinson La Trobe University	Night-time auroral and sub-auroral processes.	British Antarctic Survey
Dr David Phillips Monash University	The role of activins and follistatins as critical regulators of pituitary gland function.	Institut National de la Recherche Agronomique (INRA), France
Dr Gerhard Reubel CSIRO Sustainable Ecosystems	Immunocontraceptive vaccine for foxes.	Agence française de sécurité sanitaire des aliments (AFSSA), France
Professor Curt Wentrup University of Queensland	Direct monitoring of reactive intermediates in chemical reactions.	Université de Provence, Centre de Saint Jérôme, France
Professor Ian White Australian National University	Conjunctive use of groundwater in small islands.	Centre de Cooperation Internationale en Recherche Agronomique pour le Développement (CIRAD), France
Dr Peter Wood Mount Stromlo Observatories	Highly evolved stars and their contribution to galactic spectra and mass recycling.	Observatoire Astronomique De Strasbourg, Switzerland
Dr Zhihong Xu Queensland Forestry Research Institute	Development of EU-Australia Collaborative Research Project: Genetic and environmental control of water- and nitrogen-use efficiency as well as drought tolerance with important tree species in Europe and Australia.	Swedish University of Agricultural Sciences



## Asia

### Japan Society for the Promotion of Science (JSPS) bilateral programs

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Moshi Geso RMIT University, Melbourne	Measurement of the helicity dependent photoabsorption cross section for the proton to test the Gerasimov-Drell-Hearn sum rule using the polarized gamma beam at the SPring8 synchrotron in Japan.	Nagoya University
Dr Simon Lawson Queensland Forestry Research Institute	Assessing the risk: are <i>Pinus caribbea</i> and its hybrids susceptible to pine wilt diseases?	Forestry and Forest Products Research Institute, Kumamoto
Dr Patsie Polly Children's Medical Research Institute, Wentworthville	Transcription and muscle development.	National Institute of Advanced Industrial Science and Technology (AIST)

### Japan Society for the Promotion of Science (JSPS) exchange – short term

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Graeme Allinson Deakin University	Effect of clay amelioration on heavy metal contamination in non-wetting soil.	National Institute for Environmental Studies
Dr Walter Dunlap Australian Institute of Marine Science	Biochemical adaptation in marine microbial UV-hyperoxophiles.	University of Tokyo
Dr Anatoli Kheifets Australian National University	Experimental and theoretical studies of multiple atomic photoionisation.	Institute of Materials Structure Science
Dr Victor Streltsov University of Western Australia	Synchrotron X-ray diffraction studies of structure and electron density in nonlinear optic materials.	Tokyo Institute of Technology
Dr Saravanamuthu Vigneswaran University of Technology, Sydney	Nanofiltration bioreactor as a compact wastewater treatment for reuse.	University of Tokyo
Professor John Webb Murdoch University	Biosynthesis of bacterial magnetic particles.	Tokyo University of Agriculture

### Japan Society for the Promotion of Science (JSPS) exchange – long term

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Mark Buntine University of Adelaide	Studies of chemical processes at liquid surfaces via liquid beam injection and laser ionisation.	Toyota Technological Institute

## Korea Exchange

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Dennys Angove CSIRO Energy Technology	An investigation of secondary aerosol formation in the urban atmosphere of Seoul using fast fourier transform infrared spectroscopy.	Korea Advanced Institute of Science and Technology
Dr Mark Barnes University of South Australia	Interpreting the mechanism of thin film formation using the charged cluster model.	Seoul National University
Dr Phillip Diamond University of Queensland	Dynamical systems under numerical analysis (with applications to anisotropy-based methods for filtering and control).	Chungnam National University
Associate Professor Roger Lewis University of Wollongong	Optical studies of bulk and thin film oxide electronic materials.	Seoul National University
Associate Professor Golshah Naghdy University of Wollongong	Exploring the feasibility of the integration of the 'wavelet neuron' feature detectors into an artificial retina prosthesis.	College of Medicine Seoul National University
Dr Arcot Sowmya University of New South Wales	Developing a component library for design reuse.	Seoul National University
Dr Wojciech Szymanski University of Newcastle	The structure of graph algebras.	Korea Maritime University

## Taiwan Exchange

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Chris Glasby Museum and Art Gallery of the Northern Territory	Phylogeography of the Indo-Pacific polychaete worm, <i>Perinereis nuntia</i> species group.	Academia Sinica
Dr Dong Jeng Griffith University	Non-linear poro-elastic model for wave-induced seabed response and scientific visits of large-scale wave facilities in Taiwan.	National Taiwan Ocean University National Cheng Kung University Leader University National Chung Hsing University
Professor Yuri Kivshar Australian National University	Nonlinear Physics of Complex Systems: Coherence and Solitons.	National Cheng Kung University National Chiao Tung University National Central University Institute of Physics, Academia Sinica
Dr Helmut Thissen CSIRO Molecular Science	Development of novel biodegradable polymers for tissue engineering.	Industrial Technology Research Institute
Dr Sanming Zhou University of Melbourne	Labelling Cayley Graphs on Abelian Groups.	National Taiwan University

## China Exchange

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Alex Cook Queensland Museum	China-Australian gastropod faunal links in the mid Palaeozoic.	Nanjing Institute of Palaeontology and Geology
Dr Qi Cui University of Western Australia	Axon regeneration in the central nervous system.	The Fourth Military Medical University, Xi'an University of Science and Technology of China, Hefei
Dr Chao Deng University of New England	Interactions between the visual centres in the avian forebrain.	Institute of Biophysics, Beijing
Dr Mark Diesendorf Murdoch University	Reduction of air pollution and greenhouse gas emissions from motor transportation in Chinese cities.	Institute of Geography, Beijing
Dr Yihong Du University of New England	Critical point theory and nonlinear partial differential equations.	Institute of Mathematics, Beijing
Dr John Long Western Australian Museum	Resolving problems in basal osteichthyan evolution: Comparison of Early Devonian sarcopterygians from China with those from Gogo, Western Australia.	Institute of Vertebrate Palaeontology and Palaeoanthropology, Beijing

## North America (ISTN)

RESEARCHER	PROJECT	HOST INSTITUTION
Dr Habib Alehossein CSIRO Exploration and Mining	Coaborative research into methane drainage issues for coal and hard rock mines.	Laurentian University, Ontario
Dr Hugh Blackburn CSIRO Building, Construction and Engineering	Instability and nonlinear dynamics of rotating stratified shear flow.	Arizona State University
Dr Xavier Csar University of Melbourne	CSF-1 receptor-dependent differentiation pathways: proteomics and other strategies.	Samuel Lunenfeld Institute, Ontario
Dr Jane Elek Forestry Tasmania	Improvement of knowledge and skills for environmentally friendly management of Australian forest insect pests.	USDA Forest Service Canadian Forestry Institute
Dr Karen Firestone Australian Museum	Phylogeographical population structure of a declining carnivorous marsupial, <i>Dasyurus hallucatus</i> .	Smithsonian Institute

Professor Nicholas Fisher University of Sydney	Recursive partitioning methods in data mining.	Stanford University
Professor Min Gu Swinburne University of Technology	Multi-photon fluorescence microscopy through turbid skin tissue.	Massachusetts Institute of Technology
Associate Professor Margaret Harding University of Sydney	Design and synthesis of antifreeze proteins.	University of Houston
Dr Bo Jin University of Queensland	An integrated biotechnological production treatment process for food and agro-industrial wastewater.	Iowa State University Massachusetts Institute of Technology
Professor Tien Kieu Swinburne University of Technology	Quantum computation and quantum measurements.	Massachusetts Institute of Technology Princeton University
Dr Michael Kuchiev University of New South Wales	Enhancement of nuclear fusion by a condensed matter environment – ‘carambole’ collisions.	Princeton University
Dr Wayne Leifert CSIRO Health Sciences and Nutrition	Expression and purification of recombinant G-proteins and G-protein coupled receptors.	University of Michigan
Dr Surendran Mahalingam Australian National University	Mechanisms of immune parameters which leads to RSV mediated exacerbation of allergic airway disease.	Centers for Disease Control and Prevention, Atlanta
Dr Diane McDougald University of New South Wales	Testing of novel inhibitors of bacterial virulence in an animal model.	University of North Carolina at Charlotte
Dr Simon McKirdy Agriculture Western Australia	Development of a biosecurity strategy to manage the potential incursion of serious exotic plant diseases, based on the present USA plan for plum pox virus.	Pennsylvania State University
Dr Giacinta Parish University of Western Australia	Growth of AlGa <sub>N</sub> /Ga <sub>N</sub> structures for minority carrier measurements in p-Ga <sub>N</sub> .	University of California
Dr Xiaoming Wang CSIRO Infrastructure Systems Engineering	Reliability and management of bridge infrastructures.	University of Colorado

## Lectures and medals – 2002

Central to the purposes of the Academy is the encouragement of excellence in science. Awards for distinguished research are made to younger researchers, under 40 years, and to senior researchers for contributions made during their working lives.

More information on awards is available at [www.science.org.au/awards/awards.htm](http://www.science.org.au/awards/awards.htm).

### Senior awards

The **Flinders Medal and Lecture** recognises scientific research of the highest standing in the physical sciences.

Awarded to **Professor Alan Sargeson** FAA FRS, Research School of Chemistry, Australian National University, for his research on metal complexes, their synthesis, properties and reactivity, and their role in biology.



Professor Alan Sargeson

The **David Craig Medal** recognises distinguished research in chemistry. It honours the work of Professor David Craig FAA FRS.

Awarded to **Professor Lewis Mander** FAA FRS, Research School of Chemistry, Australian National University, for his contributions to synthetic organic chemistry, especially in the field of one of the major plant growth hormones, gibberellins. His work has led to many advances in the study and application of plant growth and development.



Professor Lewis Mander

The **Mawson Medal and Lecture** recognises contributions to research in the Earth sciences. The medal commemorates the work of the late Sir Douglas Mawson FAA FRS.

Awarded to **Professor Allan White**, Visiting Professor, Department of Earth Sciences, University of Melbourne, for his contributions to research in granites. He has a strong interest in the relationship between granites and mineral deposits and in the role of water in the evolution of granite magmas.



Professor Allan White

## Junior awards



Dr Annette George

The **Dorothy Hill Award** recognises female scientists in the Earth sciences. The award honours the contributions of Professor Dorothy Hill FAA to Australian science. Professor Hill was the first and, to date, only female President of the Academy.

The inaugural award was made to **Dr Annette George**, Senior Lecturer, Department of Geology and Geophysics, University of Western Australia, for her research on the Devonian reefs of the Canning and Bonaparte basins. Her research has led to an understanding of their evolution.

The **Fenner Medal** recognises research by younger scientists in the plant and animal sciences. The award was established with an endowment by Professor Frank Fenner AC CMG MBE FAA FRS who is an esteemed virologist, a former Director of the John Curtin School of Medical Research and the Foundation Director of the Centre for Resource and Environmental Studies at the Australian National University.

Awarded to **Dr Sandra Orgeig**, ARC Research Fellow, Department of Environmental Biology, Adelaide University, for her contributions to research into the role of cholesterol in vertebrate surfactants, the understanding of which is of major physiological importance.



Dr Sandra Orgeig

The **Frederick White Prize** recognises research in the physical, terrestrial and planetary sciences.

Awarded to **Dr Leon Rotstajn**, Senior Research Scientist, CSIRO Atmospheric Research, for his contributions to the development and advancement of global climate models. His research has led to a more accurate understanding of the world's atmosphere and climate system.

The **Gottschalk Medal** recognises distinguished research in the medical science by a younger scientist who is not a Fellow of this Academy. The award was established with an endowment by the late Dr Alfred Gottschalk FAA and was first awarded in 1979.

Awarded to **Dr Merlin Crossley**, Senior Lecturer, Department of Biochemistry, University of Sydney, for his research in determining the molecular mechanisms which govern gene regulation in mammalian cells. His work has significant potential in the treatment of diseases such as sickle cell anaemia and beta-thalassaemia.



Dr Merlin Crossley

The **Le Fèvre Prize** recognises contributions to research in basic chemistry.

Awarded to **Professor Max Lu**, Department of Chemical Engineering in Nanotechnology, University of Queensland, for his significant contributions to fundamental research, particularly in the areas of physical and surface chemistry of porous materials and their applications in clean energy and environmental technologies.

The **Pawsey Medal** recognises distinguished research in physics by a scientist not over 40 years of age. The award commemorates the work of the late Dr J L Pawsey FAA, a Foundation Fellow of this Academy. The first award was made in 1967.

Awarded to **Dr Sergey Vladimirov**, ARC Senior Research Fellow, School of Physics, University of Sydney, for his contributions to the study of 'dusty' plasmas – a rapidly growing area of research involving laboratory and industrial plasmas, astrophysics and space physics.



Dr Sergey Vladimirov

## Research support and lectureships

The Academy provides funding for the support of individual research projects and for lectureships. The purpose of the lectureships is to enable distinguished researchers to communicate with Australian researchers and, through public lectures, to a broader public.

The **Fund for the Conservation of Endangered Australian Vertebrate Species** supports work which helps in the understanding of the causes of species' decline, with a view to instituting, or improving, the management of conditions necessary for their recovery.

- **Dr Danielle Clode**, Department of Zoology, University of Melbourne, for research on the brush-tailed phascogale.
- **Mr Shaun Barclay**, University of New South Wales, for research on the stick-nest rat.
- **Dr Glen Shimmin**, Adelaide University, for research on the hairy-nosed wombat.
- **Dr Karen Firestone**, Australian Museum, for research on the northern quoll.

The **Maxwell Ralph Jacobs Awards** support forest research.

- **Ms Sue Baker**, School of Zoology, University of Tasmania, for travel expenses and project materials for field-based sampling of litter beetles.
- **Ms Marie Yee**, CRC for Sustainable Production Forestry, for registration costs to attend the 5th Invertebrate Biodiversity and Conservation Conference in Adelaide and a Beetle Identification Workshop in Canberra.

The **J G Russell Awards** support young researchers in basic science, with the aim of encouraging them to carry out their work in Australia. The awardees are drawn from the QEII Fellows.

- **Dr Bronwyn Gillanders**, Department of Environmental Biology, Adelaide University, whose work has considerable significance for fisheries management and the conservation of fish.
- **Dr Sally-Ann Poulsen**, School of Science, Griffith University, whose research will place Australia in a leading position, with technology that may ultimately change the manner in which the pharmaceutical industry pursues drug discovery.
- **Dr John Canning**, Optical Fibre Technology Centre, University of Sydney, whose research in glass photosensitivity has allowed the fabrication of a range of all-optical components.

The **Selby Fellowships** are awarded to overseas or Australian scientists of standing to visit scientific centres in Australia and to deliver lectures. The Fellow may be drawn from either the physical or biological sciences. These Fellowships are made possible through the generosity of the Selby Foundation.

- **Professor Keith Moffat**, Louis Block Professor of Biochemistry and Molecular Biology, University of Chicago, USA. Professor Moffat visited Sydney, Canberra, Melbourne, Perth, Adelaide, Hobart, Brisbane and Townsville from 7 May-6 June 2001 and gave public lectures on the topic *Big science and little science at synchrotron light sources in the twenty-first century*. Professor Moffat is distinguished both as an innovative researcher and as the proponent, organiser and director of major synchrotron research facilities.
- **Professor Jean Jouzel**, Director, Climate Group, Laboratoire des Sciences du Climat L'Environnement, France. Professor Jouzel visited Canberra, Hobart, Sydney, Wollongong and Townsville from July 17-1 August 2001 and gave public lectures on the topic *The Vostok ice core project in Antarctica – main achievements and*



Dr Karen Firestone



Dr Bronwyn Gillanders



Dr Sally-Ann Poulsen

*ongoing research.* Professor Jouzel is an international leader of scientists investigating past and present climatic change and is involved with modelling global climatic change.

The **Rudi Lemberg Fellowships** are awarded to overseas or Australian scientists of standing to visit scientific centres in Australia and to deliver lectures. The Fellow may be drawn from any field of biology.

- **Dr Petra Frome**, Max Volmer Institute, Technical University of Berlin. Dr Frome visited from 29 August-12 September 2001. She presented public and specialist scientific lectures in Brisbane, Canberra, Sydney and Wollongong. Her public lecture topic was From sunlight to electron transfer: structure and function of photosystems I and II. Dr Frome is an international authority on photosynthesis.
- **Professor Richard Perham**, University of Cambridge, UK. Professor Perham presented scientific lectures in Melbourne, Adelaide, Canberra and Brisbane from 8-22 February 2001 on the topic Multifunctional proteins and multienzyme complexes: from genes to catalytic machines. He also presented the Syd Leach Lecture at the Lorne Conference on Protein Structure and Function. Professor Perham has a distinguished record in the field of protein structure and function.

The **Graeme Caughley Travelling Fellowship** supports travel to countries other than Australia and New Zealand by ecologists resident in Australia or New Zealand with an interest in population ecology of wildlife and its scientific management.

- **Mr John Parkes**, Landcare Research, Canterbury, New Zealand. Mr Parkes will visit Europe and Northern America to share his expertise in the epidemiology of rabbit haemorrhagic disease and the optimal management of rabbits.

The **Kanagawa Museum of Natural History Award** supports research on the Precambrian history of life in Western Australia, under the Academy's Japan-Australia Research Awards Scheme. The Kanagawa Museum provided the funds for this award.

- **Dr Paul Hearty**, James Cook University, Queensland. His project, Chronostratigraphic development of the Shark Bay Region, will improve the understanding of the history of Shark Bay.

## Research conferences

**T**he Academy supports research conferences organised by scientific societies to bring together researchers at the forefront of particular subjects to discuss the future of their field.

The **Boden Research Conferences** are made possible by the generous support of the late Dr Alex Boden AO FAA.

- **Australian Society for Biochemistry and Molecular Biology**  
Applied functional genomics of insect pests and insect vectors for disease  
12-15 February, Bardon Centre, Brisbane.
- **Australian and New Zealand Society for Developmental Biology**  
Developmental cutaneous biology  
8-12 April, University of Queensland, Stradbroke Island.



The **Elizabeth and Frederick White Conferences** are made possible by the generous support of the late Lady (Elizabeth) White and the late Sir Frederick White FAA FRS.

- **Australia Telescope National Facility and the Anglo Australian Observatory**  
AGN variability across the electromagnetic spectrum  
25-29 June, Sydney.

The **Fenner Conferences on the Environment** are made possible by the generous support of Professor Frank Fenner AC CMG MBE FAA FRS and the late Mrs Bobbie Fenner.

- **Johnstone Centre, Charles Sturt University**  
Redesigning agriculture for the Australian environment  
31 July to 1 August 2002, Canberra.

## Australian Journals of Scientific Research

**A**t last year's annual general meeting of the Academy, Fellows were invited to consider whether they wished to renew the agreement with CSIRO to publish the Australian Journals of Scientific Research (AJSR). Several fellows responded and on 10 July Council resolved to begin negotiations for a new agreement, which will reflect the current situation in publication of journals of scientific research, to come into effect on 1 January 2003. Dr Geoff Garrett, chief executive officer of CSIRO, and Mr Paul Reekie, general manager of CSIRO Publishing, both welcomed the Academy's decision.

The proposal to renew the agreement was discussed at the annual meeting of the Board of Standards of the AJSR on 8 August 2001. The meeting reaffirmed the value of the Board of Standards and the annual meeting and agreed that the Academy's name added scholarly patronage and credibility to the journals, and supplied a final court of appeal in any cases of controversy. A new agreement is currently being drafted by CSIRO Publishing and Academy representatives. A first draft will be tabled at the meeting of the Board of Standards on 7 August and the final draft will be submitted to Council and to CSIRO for ratification and signature in December 2002.

Council also resolved to continue the practice of appointing a representative to sit on the Advisory Board of CSIRO Publishing. Professor Marilyn Renfree FAA will assume that role in 2003.

# Science education and public awareness

The Academy is committed to promoting science education, both as a contribution to informed citizenship and to encourage our young people to prepare themselves for careers based on science and technology. To this end, we have contributed to the formulation of policy for science education and prepared teaching resources for all levels of school science. The following is an overview of our current activities.

## Primary Investigations

It has been seven years since the Academy launched *Primary Investigations*, the science program for primary schools. The program is designed to stimulate hands-on, enquiry-based learning and consists of teacher resource books, student books, inservice training for teachers, a 'do-it-yourself' inservice video and workbook, and a website.

The Australian Foundation for Science and the Commonwealth Department of Education, Training and Youth Affairs have provided funding for an evaluation of *Primary Investigations*. The evaluation will make recommendations concerning options to modify, enhance or extend the program. A progress report was completed in February, with the final report due at the end of May 2002.

Eight science workshops for senior citizens, funded by a grant from the ACT Office of Adult and Community Education, have been very well received. The workshops involved having a guest speaker and included handouts of relevant activities from *Primary Investigations*.

([www.science.org.au/pi](http://www.science.org.au/pi))

## Nova: Science in the news

*Nova: Science in the news* is about to celebrate its fifth year online. More than three million hits have been recorded on the site since 1997. There are now 65 topics available, under the categories of biology, environment, health, mathematics, physical sciences and technology.

([www.science.org.au/nova](http://www.science.org.au/nova))

The support of Telstra as *Nova's* major sponsor continues to ensure the high quality of the site.

More information on science education is available at [www.science.org.au/scied](http://www.science.org.au/scied).



## Video Histories of Australian Scientists

The Academy established this collection of interviews with outstanding Australian scientists in 1993. In the interviews scientists talk about their early life, the development of their interest in science, their research work, and other aspects of their careers.

Edited transcripts of the interviews, together with accompanying teachers notes, are being added progressively to the Academy's website ([www.science.org.au/scientists](http://www.science.org.au/scientists)).

The project has been supported by Professor Frank Fenner, the Commonwealth Government, the National Council for the Centenary of Federation, the Mazda Foundation, and most recently by the Australian Research Council. The funding from the Australian Research Council provides for interviews with 20 outstanding young researchers to be filmed and for edited transcripts of the interviews to be added to the Academy's website, together with accompanying teachers notes.

All interviews in the series are available for purchase from the Academy or for loan through the National Film and Video Lending Service ([www.acmi.net.au](http://www.acmi.net.au)).



Professor Anton Hales FAA being interviewed by Professor Kurt Lambeck

## Ethnomathematics project

The Academy has been contracted by the US-based Pacific Resources for Education and Learning (PREL) to assist in developing an ethnomathematics digital library (EDL). The EDL is part of a much larger National Science Foundation initiative to develop a web-accessible digital library covering science, mathematics, engineering and technology. The EDL will provide users with a premier and readily accessible source of documents and materials describing the mathematics created and used by indigenous cultures around the world.

## Population and Environment Research Fund

A committee has been established to oversee the Population and Environment Research Fund and a researcher has been contracted to conduct an initial survey into work being undertaken in this field in Australia. The fund totals more than \$50,000, with another \$110,000 pledged as donations and a bequest.

## Support for young researchers and science teachers



The Australian Research Council sponsored two awards and the Defence Science and Technology Organisation and the National Health and Medical Research Council each sponsored three awards enabling researchers aged 35 and under to participate in the Academy's *Science at the Shine Dome*, held on 2-4 May 2001 in Canberra.

For the fourth year, the State, Catholic and independent school systems in every State and Territory sponsored classroom science teachers to attend *Science at the Shine Dome*. The Foundation for Young Australians provided a grant for eight biology teachers aged 30 and younger to attend, and the Victorian Department of Education, Employment and Training provided a grant for five Victorian government science teachers to attend.



## Collaborative Australian Secondary Science Program

The Collaborative Australian Secondary Science Program, a joint project of the Curriculum Corporation, the State education departments, the Australian Science Teachers Association and the Academy, proposes to introduce to the lower secondary school a stimulating, enquiry-based approach to science education, as demonstrated for primary schools with *Primary Investigations*. The Commonwealth Department of Education, Training and Youth Affairs has provided funding

for this project, which is being managed by the Curriculum Corporation. The Academy is represented on the Reference Committee.

## Public events

An exhibition entitled *In the round – the design and construction of the Australian Academy of Science Dome* was held at the Canberra Museum and Gallery from 7 April to 27 May 2001. A special viewing was held on 2 May for both local and interstate people attending *Science at the Shine Dome*. The exhibition featured original entries in the 1956 design competition; Grounds, Romberg and Boyd drawings and blueprints; furniture and fittings; and more than 35 souvenirs of the Dome. Approximately 7500 people viewed the exhibition.

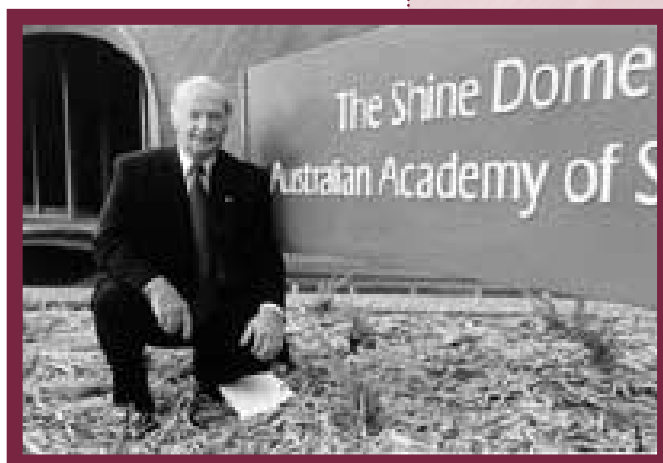
## The Shine Dome

The Shine Dome was officially reopened on 4 May by the Prime Minister, The Hon. John Howard MP, after extensive refurbishment made possible by a generous donation of \$1,000,000 from Professor John Shine FAA and a grant of \$525,000 from the National Council for the Centenary of Federation.

During 2001 the Academy joined with community organisations in joint ventures to celebrate the Centenary of Federation. This enabled groups who would not perhaps normally have access to the Dome and its facilities to stage events which gave them a much wider audience for their activities.

The Dome proved to be an ideal stage for art shows, architecture exhibitions, tours for students, and presentations from health professionals and voluntary care-givers. All were generous in their praise of the venue and its facilities, and commended the Academy on its support and assistance.

([www.science.org.au/dome](http://www.science.org.au/dome))



Professor John Shine

## Adolph Basser Library

With the Dome refurbishment complete, researchers are once again visiting the library. During the year these have included: Professor Richard Selleck, Professorial Fellow, University of Melbourne, who is working on a history of the University of Melbourne; Dr Annette Beasley, lecturer at the University of Wellington, who is writing a book on the scientific study of Kuru in PNG; Mr Geoff Hunt, Department of Archaeology and Natural History, Research School of Pacific and Asian Studies, Australian National University, who is working on a PhD on the history of geology early last century; and Ms Jenny Nancarrow, retired employee of the Australian Museum, Sydney, who is writing a book on Gerard Krefft.

The chief problem facing the library in recent years has been a lack of storage space. Thanks to the generosity of Professor Frank Fenner, 27 lockable metal cabinets have now been installed in the gallery area outside the library, providing about 100 metres of storage. Material has been transferred to the cabinets from the library and the basement, making room for expansion in both areas.

The Library Committee was saddened by the death in December of Professor Oliver Lancaster FAA, a long-time member of the committee and a very generous supporter of the library. We welcome Professor Joe Gani FAA, his replacement on the committee.

## Finance

The net result of the 2000-2001 financial year's activities was an increase in the Academy's assets of \$554,783 or 3 per cent from the previous year.

### Independent audit report to the Fellows of the Australian Academy of Science

#### Scope

We have audited the financial report of the Australian Academy of Science for the financial year ended 30 June 2001, as set out on the following pages, including the Statement by Council. The Council is responsible for the financial report. We have conducted an independent audit of the financial report in order to express an opinion on it to the Fellows of the Academy.

Our audit has been conducted in accordance with Australian Auditing Standards to provide reasonable assurance whether the financial report is free of material misstatement. Our procedures included examination, on a test basis, of evidence supporting the amounts and other disclosures in the financial report, and the evaluation of accounting policies and significant accounting estimates. These procedures have been undertaken to form an opinion whether, in all material respects, the financial report is presented fairly in accordance with Accounting Standards and other mandatory professional reporting requirements, in Australia, so as to present a view which is consistent with our understanding of the Academy's financial position and performance as represented by the results of its operations and its cash flows.

The audit opinion expressed in this report has been formed on the above basis.

#### Audit opinion

In our opinion, the financial report of the Australian Academy of Science is in accordance with Accounting Standards and other mandatory professional reporting requirements, and gives a true and fair view of the Academy's financial position as at 30 June 2001 and of its performance for the year ended on that date.

*Ernst & Young | G J Knuckey, Partner | Canberra | 26 September 2001*

### Statement by Council

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

- (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 2001;
- (b) the statement of financial position is drawn up to give a true and fair view of the financial position of the Academy as at 30 June 2001; 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.

*I McDougall, Treasurer | B D O Anderson, President | Canberra | 26 September 2001*



