



## Gene technology and the troubles with food

Academy President, Dr Jim Peacock, used a recent talk on gene technology and food to deliver a message to the nation's decision-makers who are applying moratoria and freezes to the technology.

'Genetically modified crops present big opportunities for biotechnology in Australia. By getting the facts straight about transgenic crops, I believe our political masters will see that as far as biotechnology is concerned, we can have our cake, and we can safely eat it too.'

Dr Peacock, the Chief of CSIRO Plant Industry, was addressing the National Press Club in Canberra on 16 July 2003. He said, 'Transgenic cotton has been a part of Australian agribusiness for the past six years and has been a major success.' It had reduced insecticide use and transformed the industry into one that is sustainable and high-earning for Australia.

'Why aren't we repeating this success story with other crops?' he asked. 'What has gone wrong? Six years after the introduction of GM cotton, we now have moratoria or freezes in five states and one territory against commercial genetically modified canola.

'The major issue that has driven governments to apply a moratorium seems to have been concern over market access, both for transgenic and non-transgenic canola crops. This concern is without factual basis.

'Canada grows 85 per cent of its crop as transgenic canola and has absolutely no difficulty in marketing the crop, most of it going to Japan, a country that accepts both transgenic and non-transgenic canola. Canada, our principal competitor, is enjoying the increased yields of hybrid canola associated with the transgenic trait. Australia could find itself in great difficulty in maintaining a future position in the global market if we don't soon introduce the new technology.'



*Jim Peacock delivering the Telstra Address at the National Press Club.*

Dr Peacock said that 58 million hectares of transgenic crops – including cotton, canola, soybean and maize – were grown in the past year and all of them found ready markets.

'I have calculated that at least 30 billion meals involving the products of these crops have been eaten in the last six years. This is a lot of food consumed by a lot of people and there is not a single report of adverse health effects. Nor is there a single case of negative effects on biodiversity or on other aspects of the environment in which these crops were grown.

'The claims that are often made which argue that genetically modified foods are potentially harmful to our health and to the environment simply have no factual basis. They are mischievous and misleading.

'I would go further – they can be cruel in their effects, as in the recent case of the refusal of food aid in Zambia. Corn from the United States was refused because it contained some genetically modified seed. Food so badly needed was rejected and many people starved.'

Dr Peacock said that 800 million people didn't have enough food to eat in the past year and six million children under five died because of malnourishment. 'Crop yields per capita have levelled off around the world and in Africa they have dropped. Gene technology could increase yields and reduce losses to insect pests.'

'One-third of the world's population suffers from iron deficiency or vitamin A deficiency – massive diseases of poor nutrition. These are the people who have rice as their staple diet.' Dr Peacock said that research into the addition of genes to rice promised to help those people suffering from these deficiencies.

'We need to accelerate these research programs and others like them. We need to accelerate publicly funded research programs concerning food production, particularly in Australia where we have a competitive advantage.'

The complete address is available on the Academy's website at [www.science.org.au/academy/media/16july03.htm](http://www.science.org.au/academy/media/16july03.htm).

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For information see  
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### Gifts to the Academy

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Executive Secretary,  
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on (02) 6247 5777 or  
[es@science.org.au](mailto:es@science.org.au).

## Population and environment online conference

The Academy, through its Population and Environment Research Fund, recently commissioned a report into the position of the key research disciplines on the issue of population and the environment in Australia. The report will be used as the basis for an online conference on the topic in September, October and November of this year.

The National Academies Forum is supporting the conference, the results of which will feed into the Fenner Conference on the Environment to be held at the Shine Dome in Canberra in March 2004. Information about the online conference and how to participate is available at [www.conference.science.org.au](http://www.conference.science.org.au).

## Australian Foundation for Science to change its structure

The Australian Foundation for Science was established in 1990 as a fundraising arm of the Academy. Despite a number of applications, it has never been granted deductible gift recipient status by the Australian Taxation Office. In order to be eligible for tax deductions, donations to the Foundation must be processed through the Academy.

The Academy's Council has now determined that to overcome this complexity, administration of the Australian Foundation for Science should be streamlined by a solvent voluntary winding up of the company and its re-establishment as a recognisable entity under the Academy.

The re-established entity would continue to be called the Australian Foundation for Science. Most of the visible features of the Foundation would continue, including an annual function for interested individuals both within and outside the Fellowship. Foundation projects such as *Nova: Science in the news* and *Video Biographies of Australian Scientists* would continue to operate in the same way as they currently do.

The proposed changes will be discussed at the Foundation's Board meeting on 21 August 2003 and at the Annual General Meeting on 18 September 2003.

## Collaborations with Italy

Dr Massimo Gasparon, an Australian researcher from the Department of Earth Sciences at the University of Queensland, visited Italy as part of the Academy's Scientific Visits to Europe Program from January to February this year. His visit was supported by the Embassy of Italy in Canberra and was a result of the excellent relationship that the Academy and the Embassy have had for a number of years.

Dr Gasparon visited Professor Edoardo Mentasti at the Department of Analytical Chemistry in the University of Torino. The title of his research project was *Environmental modelling of trace elements in Antarctic soils and sediments*. The visit allowed Dr Gasparon to strengthen existing

links with Italian researchers and establish new links with world leaders in environmental geochemistry, palaeoclimatology and applied ecology. It also gave him access to state-of-the-art equipment and analytical facilities currently not available in Australia, while at the same time providing an opportunity to illustrate research activities and new analytical facilities in his home institution.

Outcomes of Dr Gasparon's visit included the submission of joint applications for research funding to the Australian Research Council and the Sixth European Union Framework Program. Two joint papers were also prepared and will be submitted shortly for publication.



The Academy's Secretary (Education and Public Awareness), John McKenzie (second from left), and Peter Russo from the Australian Science Teachers Association (third from right) with teachers attending Science at the Shine Dome.

## Teachers and young scientists at Science at the Shine Dome

Teachers and early-career researchers from around Australia attended special programs during the Academy's *Science at the Shine Dome* from 30 April to 2 May 2003. They joined Academy Fellows at the new Fellows seminar, awards presentation, annual dinner and the symposium on nanoscience. International keynote speaker at the symposium, Dr Angela Belcher, fascinated the audience with her presentation on using viruses to make high-tech materials. Proceedings from the symposium are available at [www.science.org.au/sats2003/contents.htm](http://www.science.org.au/sats2003/contents.htm).

During the education workshop, teachers listened to Dr Belcher explaining what had inspired her to pursue a career in science. They also shared ideas for including nanoscience in their teaching.

The young researchers discussed media and communication skills and writing grant proposals at a career development workshop. They also heard about developing a career in today's research environment from Dr Belcher.

Both the teachers and researchers responded positively to participating in the events.

## Climate change research inventory

As the organisation that provides links between Australian and international climate change science programs, the Academy has been asked by the Australian Greenhouse Office to assemble a comprehensive inventory of significant global climate change research programs. The study will identify programs that are most effective in their area of expertise, those with relevance to Australian climate change science priorities, current Australian engagement, potential engagement opportunities to leverage Australia's domestic research effort and resources, and mechanisms to facilitate that engagement.

The purpose of the study is to inform the setting of climate change research priorities for an ongoing Australian climate change science program and to identify viable opportunities for enhancing those efforts by engaging in international climate science activities. The setting of research priorities will be based on those areas of research – domestic and global – that best meet the Australian government's climate change policy commitments, and on the recommendations of an independent evaluation of the existing Australian Greenhouse Science Program.

The Academy's steering group to assist with the study is made up of the Academy's Foreign Secretary, Professor Kurt Lambeck (Chair); Dr John Zillman, President of the Academy of Technological Sciences and Engineering and recently retired Director of the Bureau of Meteorology Research Centre; Dr Michael Manton, Chief of Division, Bureau of Meteorology Research Centre and Chair of the National Committee for Earth Systems Science; Dr Michael Raupach, Science Leader, CSIRO Earth Observation Centre; and Professor Robert Wasson, Director, Centre for Resource and Environmental Studies at the Australian National University. Mr Martin Young, from the Australian National University, is the researcher for the project. The Academy will submit its report to the Australian Greenhouse Office in August 2003.

## Biographers

Memoirs of deceased Fellows are published in *Historical Records of Australian Science* and are also available on the Academy's website at [www.science.org.au/academy/memoirs](http://www.science.org.au/academy/memoirs).

The biographers for **Professor Dan Haneman** are Dr Marlene Read and Dr David Miller; the biographers for **Sir David Zeidler** are Professor Ian Rae, Dr Jan Kolm and Dr Keith Neill.

Information about *Historical Records of Australian Science* is available at [www.publish.csiro.au/journals/hras](http://www.publish.csiro.au/journals/hras).



The Minister for Science, Peter McGauran, was the after-dinner speaker at the Academy's annual dinner at the Great Hall, Parliament House on 1 May. He is pictured here (right) with newly elected Fellow Richard Shine, Professor in Evolutionary Biology (Personal Chair) at the University of Sydney.

## News from our National Committees

The **Geography Committee** held a teleconference on 17 April to discuss planning for the 2006 regional conference of the International Geographical Union, to be held in Cairns.

A meeting of the **Earth Sciences Committee**, which is currently developing a strategic plan for Australian Earth sciences, was held in Canberra on 5 May. The Australian Research Council has provided funding for the plan. Members of the Earth Sciences Committee and the **Space Science Committee** attended the 23rd International Union of Geodesy and Geophysics General Assembly in Japan from 30 June to 11 July. Several Australians were elected to senior positions within the organisation for the term 2003-2007. Dr Tom Beer, CSIRO Atmospheric Research, was elected to the position of Vice-President of the Bureau; Professor Brian Kennett FAA, Australian National University, was elected to the Finance Committee; and Dr Charles Barton, Geoscience Australia, was elected President of the International Association of Geomagnetism and Aeronomy (IAGA). Australia was also successful in its bid to host the Scientific Assembly of the International Association of Geodesy (IAG) in Cairns in 2005.

A meeting of the **Biomedical Sciences Committee** was held on 8 May. This was the first meeting of the Committee since the amalgamation of the Committee for Biochemistry and Molecular Biology, the Committee for Biophysics, the Committee for Microbiology, the Committee for Pharmacology and the Committee for Physiology.

The **Quaternary Research Committee** met in Canberra on 9 May to finalise Australia's bid for the 17th Conference of the International Union of Quaternary Research for Cairns in 2007.

The **Astronomy Committee** held a teleconference on 20 May, before a meeting of the working group on the Extremely Large Telescope in Canberra on 21 May. Committee members were represented at the 25th International Astronomical Union General Assembly held in Sydney from July 13-26.

At the 11 June meeting of the **Nutrition Committee** in Canberra,

it was agreed that the Academy would promote a joint Academy and Nutrition Committee Oration at the 2004 International Union of Nutritional Sciences, to be held in Brisbane in August 2004.

The **History and Philosophy of Science Committee** met in Melbourne on 3 July, where a report on Sino-Australian collaboration was given by committee member Dr H Chan. Members also discussed the recently announced international project 'World History of Science Online'.

Members of the **Mathematics Committee** and the **Theoretical and**

**Applied Mechanics Committee** attended the 5th International Congress on Industrial and Applied Mathematics in Sydney from 7-11 July.

Members of the **Spectroscopy Committee** attended the 16th International Conference on Laser Spectroscopy at Palm Cove, Queensland, from 13-16 July.

The **Antarctic Research Committee** met in Melbourne on 22 July.

The Committee for Climate, Atmospheric and Ocean Research and Global Change has changed its name to the **Committee for Earth System Science**.



Members of the Nutrition Committee at their recent meeting in Canberra. Clockwise (from top left): Chris Hudson, Nola Caffin, Craig Trenery, Tony Worsley, David Colquhoun, Graeme McIntosh, Mark Wahlquist (chair), Jenny Brand-Miller. (By phone hook-up: Sandra Capra.)



The Quaternary Research Committee demonstrating the westerly wind belts of the southern hemisphere (well, that's their story!). Clockwise (from top left): Simon Haberle, John Dodson (chair), Annie Ross, Jon Nott, Henk Heijnis, John Chappell, Peter Gell.

## International activities

The Academy's Foreign Secretary, Professor Kurt Lambeck, attended the InterAcademy Panel Executive Committee meeting held in Rome from 23 to 25 May 2003. The committee heard brief reports of the panel's four main programs – capacity building, science education, science and the media, and mother and child health. Major presentations will be made at the General Assembly in Mexico in December 2003.

A significant action item of the meeting was the panel's statement on human cloning, which had important input from Professor John White on behalf of the Academy.

While in Europe, Professor Lambeck visited the Finnish Academy of Science and Letters where he met the Secretary-General and discussed affairs concerning both academies.

He also visited the Academy of Finland, the equivalent of the Australian Research Council. The Academy of Finland's responsibilities include the establishment of centres for excellence, the evaluation of quality, and the development of collaboration between institutions within Finland and Europe. It keeps in touch with developments in Australia through the Forum for European-Australian Science and Technology Cooperation (FEAST).

# New members of Council



Julie Campbell

**Professor Julie Campbell** is a member in the biological sciences. She is Director of the Centre for Research in Vascular Biology at the School of Biomedical Sciences at the University of Queensland. Her research has focused on the cell biology of cardiovascular disease and arteriosclerosis. Julie is the current Chair of the Queensland Regional Fellows.



Bob Frater

**Dr Bob Frater** has been appointed by Council to fill a casual vacancy in the physical sciences. He is Vice-President for Innovation of Resmed. His research has concentrated on advanced electronic systems for observational radio astronomy and for innovative image-synthesis techniques. He has served on Council as a Vice-President and as a member on the National Committee for Astronomy and the National Committee for Radio Science.



Peter Hall

**Professor Peter Hall** is a member in the physical sciences. He is Professor of Statistics in the Centre for Mathematics and its Applications of the Mathematical Sciences Institute at the Australian National University. His research covers a wide range of probability and statistics. He developed the 'leading term approach' for his work on rates of convergence in weak limit theorems. Peter is currently Chair of the National Committee for Mathematics.

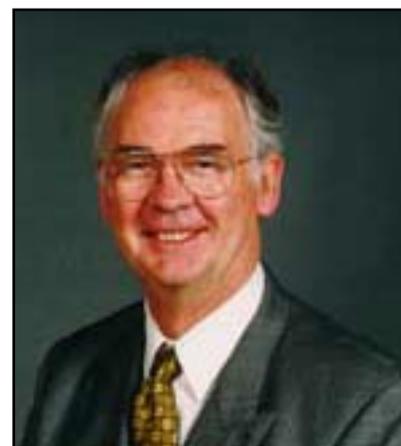
## Australia hosts international congresses

Australia hosted a number of international congresses in July, including the V International Congress of Industrial and Applied Mathematics (ICIAM), the XXV General Assembly of the International Astronomical Union (IAU), the XVI International Conference on Laser Spectroscopy (ICOLS) and the XIX International Congress of Genetics. Academy Fellows Professor Ian Sloan is President-Elect of ICIAM and Dr Ron Ekers is the incoming President of IAU. Dr Jim Peacock was President of the International Congress of Genetics.



David Kemp

**Professor David Kemp** is a member in the biological sciences. He is Chair of the Infectious Diseases and Immunology Division and Head of the Malaria and Scabies Laboratory at the Queensland Institute of Medical Research. His research into the biology of malaria and other infectious diseases has led to the development of a number of techniques used in molecular biology. His research has also been central to the development of knowledge on the malaria genome.



Bob Watts

**Dr Bob Watts** is a member in the physical sciences. He is Chief Scientist and Vice-President, Technology, of BHP Billiton. He is recognised for his contributions to liquid state theory, energy transfers in collisions and sputtering dynamics. He has served as a member of the National Committee for Sustainability.

# Academy Awards

Each year at its annual general meeting the Academy present awards recognising research achievement. This year the awards for senior scientists were the Burnet and Craig Medals. The awards for younger scientists were the Dorothy Hill Award, the Frederick White Prize, and the Fenner, Gottschalk and Pawsey Medals

## Burnet Medal and Lecture

for research in the biological sciences

*Professor Barry Marshall FAA  
Burnet Fellow, Department of  
Microbiology, University of Western  
Australia*

Professor Marshall has done seminal work in the pathophysiology of gastrointestinal ulcer disease. He and colleague Robin Warren discovered that peptic ulcers were due to *Helicobacter pylori*, not stress as previously thought. He has pioneered the use of antibiotics as a cure for peptic ulcers and developed the urease breath test as a diagnostic method for *Helicobacter pylori* infection.

## Craig Medal

for research in chemistry

*Professor Michael Bruce FAA  
Angas Professor of Chemistry, University  
of Adelaide*

Professor Bruce is internationally known in the area of organometallic research, particularly for his work on cluster compounds. His trail-blazing work on molecular wires has opened new fields of great theoretical significance and practical potential.



Barry Marshall



Frank Fenner and David Curtis at the cocktail party held during Science at the Shine Dome to welcome award winners and their families.

The creativity and productivity of his work are very highly regarded and his papers have attracted one of the highest citation rates for any Australian chemist.

## Dorothy Hill Award

for research in the Earth sciences

*Dr Katherine Trinajstic  
Postdoctoral Research Assistant,  
Department of Geology and Geophysics,  
University of Western Australia*

Dr Trinajstic has made significant contributions to research in palaeontology. Her fieldwork, focusing on the Devonian microvertebrate fossils from the Gneudna Formation



Michael Bruce

in Western Australia, has led to the discovery and description of important new fossil fish specimens. She has participated actively in international research projects and contributed to the development of an international timescale.

## Fenner Medal

for research in biology, excluding the biomedical sciences

*Dr Andrew Young  
Senior Research Scientist, CSIRO Plant  
Industry*

Dr Young has made major contributions to our understanding of plant population genetics. Working



Katherine Trinajstic

with both rare and common species, he addresses issues that underlie the long-term viability of individual species and their communities. His work has implications for the conservation of endangered plant species and remnant patches of native vegetation in agricultural landscapes.

### **Frederick White Prize**

for research in the physical, terrestrial and planetary sciences

*Dr Leon Rotstajn  
Principal Research Scientist, CSIRO  
Atmospheric Research*

Dr Rotstajn has contributed significantly to the development and advancement of global climate models. His advanced representation of clouds and precipitation is recognised worldwide and has been adopted by climate scientists internationally. This representation is allowing a far more accurate understanding of the world's atmosphere and climate system and has been applied to a range of real-world problems.

### **Gottschalk Medal**

for research in the medical sciences

*Associate Professor Levon Khachigian  
NHMRC Principal Research Fellow,  
Centre for Thrombosis and Vascular  
Research, University of New South Wales*

Associate Professor Khachigian has an outstanding record of research in the medical sciences. His highly original work has revolutionised signalling and transcription research in the important area of vascular biology. His work has

resulted in novel DNA-based drugs that block the re-narrowing of arteries after balloon angioplasty and alter the process of blood vessel growth in tumours.

### **Pawsey Medal**

for research in physics

*Dr Howard Wiseman  
QEII Senior Research Fellow, School of  
Science, Griffith University*

Dr Wiseman is a world leader in theoretical quantum physics. His research focuses on the creation, manipulation and measurement of quantum systems, in particular the development of theories for controlling quantum devices by feedback. Recent ground-breaking experiments have successfully demonstrated the validity of his approach.



Howard Wiseman

## **New Nova topics**

### *Coral bleaching – will global warming kill the reefs?*

With the proposed expansion of the protected zone around the Great Barrier Reef making headlines, the Academy's recent *Nova* website topic on coral bleaching is timely. It covers the biology and environmental status of coral reefs and how changes to global climate affect these important ecosystems.

This topic was developed with support from the Australian Institute of Marine Science.

### *Salinity – the awakening monster from the deep*

Salinity is making more and more of our land unusable and our water undrinkable. This topic explains why salt has become an environmental problem in Australia – contaminating land and water and threatening the health of native species.

This topic was developed with support from the Cooperative Research Centre for Landscape Environments and Mineral Exploration.

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



Andrew Young



Leon Rotstajn



Levon Khachigian

# New Fellows



Perry Bartlett

Sixteen of Australia's leading scientists were honoured by election to the Fellowship of the Academy in March. Election recognises a career that has significantly advanced the world's store of scientific knowledge. The new Fellows are listed below.

## Professor Perry Bartlett

*Foundation Chair of Molecular Neuroscience in the School of Biomedical Sciences at the University of Queensland*

Professor Bartlett's research has led to a fundamental change of view about the brain's capacity for repair and plasticity. His discovery, isolation and characterisation of stem cells in the developing and adult mammalian brain provided the first definitive evidence of the adult brain's capacity to produce new neurons. His other major discoveries include defining the regulatory actions of a number of different genetic factors in developmental neurobiology.

## Professor Robert Bilger

*Professor of Mechanical Engineering in the School of Aerospace Mechanical and Mechatronic Engineering at the University of Sydney*

Professor Bilger has made contributions to the study of turbulent reacting flows which are central to our current understanding of them. Turbulent reacting flows are classically intractable, but are important in engines, furnaces, fires and explosions and in the environment. His work is based on innovative experimentation and involves the use of novel approaches for the mathematical modelling of combustion systems.

## Professor Ross Crozier

*Professor of Evolutionary Genetics in the School of Tropical Biology at James Cook University, Queensland*

Professor Crozier is a broadly based evolutionary biologist who has made major contributions to sociobiology, phylogeny of birds and insects and to understanding the evolution of social behaviour. He developed the first quantitative genetic models for kin recognition and is a world leader in studies of the variation in numbers of mates among social insects.

## Professor Peter Drummond

*Professor of Theoretical Physics at the University of Queensland*

Professor Drummond has contributed to our understanding of a wide range of physical phenomena through his theoretical studies of solitons, the tests of quantum theory, computational physics, physics of communication, laser physics and Bose-Einstein condensation. He developed the first time-domain simulation methods in quantum field theory. His prediction of the first quantum effects in solitons was verified experimentally and featured on the front cover of *Nature*.

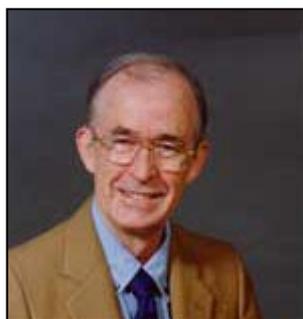
## Professor David Groves

*Professor of Geology and Director of the Centre for Global Metallogeny in the School of Earth and Environmental Sciences at the University of Western Australia*

Professor Groves is a widely acclaimed authority on the origin of mineral deposits. His work on the evolution of Archaean granite-greenstone belts has led to fundamental advances in



Robert Bilger



Ross Crozier



Peter Drummond



David Groves



Michael Hynes



Frederick Mendelsohn



Maria Orlowska

understanding their tectonic evolution and their metallogeny, providing a global framework in which to place ancient mineral deposits. He has developed original models for the genesis of mineral deposits and new methodologies for their exploration.

**Professor Michael Hynes**

*Professor in the Department of Genetics at the University of Melbourne*

Professor Hynes has made important contributions to our understanding of eukaryotic gene regulation. He was among the first to demonstrate multiple regulatory proteins controlling a single structural gene. His cloning of the *Aspergillus nidulans amdS* gene and his demonstration that this gene could be used to transform other fungal species has resulted in its widespread use in the genetic engineering of economically important fungi.

**Professor Frederick Mendelsohn**

*Director of the Howard Florey Institute of Experimental Physiology and Medicine at the University of Melbourne*

Professor Mendelsohn pioneered the concept that the physiologically important peptide angiotensin acts at the local tissue level. The modern investigation of the brain angiotensin system and its central functions started with his seminal mapping of the brain angiotensin receptors, AT<sub>1</sub> and AT<sub>2</sub>. His discoveries underlie contemporary concepts of the pathophysiology of hypertension, heart failure and renal disease and the treatment of these diseases.

**Professor Maria Orlowska**

*Professor of Information Systems, Head of*

*the Data and Knowledge Engineering Group and Deputy Head of the School of Information Technology and Electrical Engineering at the University of Queensland*

Professor Orlowska has a distinguished research record in the information technology area of database systems. She is a pioneer in the theoretical foundations of information storage and retrieval in systems with incomplete information. Her later work has concentrated on data management issues. She has made a significant impact with her studies on distributed database foundations.

**Professor Hyam Rubinstein**

*Head of Department of Mathematics and Statistics at the University of Melbourne*

Professor Rubinstein is a mathematical topologist. His study is of the fundamental mathematical properties of space, both the three-dimensional physical space we live in and other spaces generated in mathematical theories. One of his breakthrough results showed how we could tell if one of these more abstract spaces was topologically identical to the one in which we live. His work has also contributed to the theory of minimal surfaces and to the design of the shortest networks in a plane, pure mathematical results which have practical application in industry.

**Professor Richard Shine**

*Professor in Evolutionary Biology at the University of Sydney*

Professor Shine led the way in the study of reptilian ecology and evolution. His work spans

evolutionary theory through to population ecology and reproductive biology. His conceptual syntheses, empirical reviews, and original studies in both laboratory and field, have used reptilian diversity to attack many questions of general importance. This work has substantially clarified the ways in which microevolutionary processes determine major changes in life history.

**Dr Andreas Strasser**

*Principal Research Fellow at the Walter and Eliza Hall Institute of Medical Research in Melbourne*

Dr Strasser is noted for his seminal studies on the control of apoptosis, the programmed cell death essential for development and homeostasis. By exploiting mouse genetics, he demonstrated that abnormalities in the control of apoptosis can cause autoimmune disease and cancer and render tumour cells refractory to anti-cancer therapy. His discoveries suggest novel therapeutic strategies for cancer, autoimmunity and degenerative diseases.

**Professor Stephen Tyerman**

*Head of Discipline of Wine and Horticulture at the University of Adelaide*

Professor Tyerman's contributions are in the field of plant membrane transport. He has discovered key transporters, including channels for release of nitrogenous solutes into legume roots and channels for sodium uptake in plant roots. His work on plant-water relations includes understanding the roles of water channels, or aquaporins. His contributions are essential to solving problems linked to the stress physiology of whole plants.



Hyam Rubinstein



Richard Shine



Andreas Strasser



Stephen Tyerman

## New Fellows

### Dr David Vaux

*Senior Principal Research Fellow at the Walter and Eliza Hall Institute of Medical Research in Melbourne*

Dr Vaux has made significant discoveries regarding programmed cell death. While studying a common blood cancer, he identified the Bcl-2 gene as a molecular regulator of apoptosis and thus forged the link between inhibition of cell death and cancer. He established that the underlying genetic program was of great antiquity by showing that the human Bcl-2 gene could prevent cell death even in the nematode.

### Professor Mark von Itzstein

*Director of the Centre for Biomolecular Science and Drug Discovery at Griffith University in Queensland*

Professor von Itzstein is a carbohydrate scientist whose career has been marked by groundbreaking work of great creativity. Most notable among his successes is the design and synthesis of the anti-influenza drug zanamivir, marketed under the name Relenza™. This work was carried out at a time when there were few examples of inhibitors whose design was based on the three-dimensional structure of an enzyme.

### Professor Bruce Wild

*Professor in the Research School of Chemistry at the Australian National University in Canberra*

Professor Wild has achieved recognition for his research in inorganic chemistry, especially for his major contribution to the design and syntheses of stereo-specific compounds. His work is widely recognised as being both innovative and extremely elegant. He has made important contributions to many areas, including the synthesis of new 3- and 4-membered phosphorus and arsenic heterocycles and the self-assembly of novel metal-containing double helices.

### Professor James Williams

*Director of the Research School of Physical Sciences and Engineering at the Australian National University in Canberra*

Professor Williams has made significant contributions in the area of the physics of materials that form the basis of the semiconductor industry.

His particular focus is on the use of ion-beam methods to characterise and modify the properties of those materials. He has established world-class facilities for this work and is active in pursuing the industrial applications of discoveries in this field.



David Vaux



Mark von Itzstein



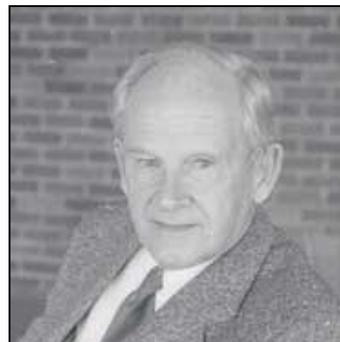
Bruce Wild



James Williams

## Deaths

### Alan Wardrop



Alan Wardrop

Alan Buchanan Wardrop was born in Hobart on 28 July 1921 and died in Melbourne on 20 May 2003. He was educated at Hobart State High School and the University of Tasmania, where he obtained an MSc in organic chemistry. He then spent 1944 and 1945 training RAAF air crews.

In 1945 he joined the CSIRO Section of Wood and Fibre Structure and in 1946 was awarded an overseas research scholarship which led to a PhD in botany from the University of Leeds. He then returned to CSIRO, where he rose to the level of Senior Principal Research Scientist and Officer in Charge. During this period he was awarded a DSc by the University of Melbourne. In 1964 he went back to Tasmania as Professor of Botany at the University of Tasmania and in 1967 became Foundation Professor of Botany at La Trobe University, a position he held until his retirement. He played an active role in the academic administration of the University, serving on the Academic Planning Board, several terms on both the Academic Board (including two as deputy chairman) and the Council and acting as Vice-Chancellor on a number of occasions.

He was a member of the Council of the Royal Society of Victoria from 1972 to 1982, the Victorian Institute of Marine Science from 1977 to 1982 and the Academy from 1988 to 1991.

Wardrop had an international reputation for his work on the structure and formation of the cell wall in plants, on the nature of lignification and on the structure and development of reaction wood in angiosperms and gymnosperms. His work was technically excellent and his skill with the electron microscope and

microspectrophotometry contributed greatly to our understanding of how plant cell walls form, elongate, thicken and differentiate, and of how these processes influence the technical properties of wood. Later he worked on cytological phenomena, such as the structure and arrangement of pores in the nuclear membrane.

Wardrop's work was recognised by the award of the Edgeworth David Medal of the Royal Society of New South Wales, Fellowship of the International Academy of Wood Science and election as a Corresponding Member of the Royal Botanical Society of the Netherlands. He was elected to the Fellowship of the Academy in 1976.

He is survived by his wife Beulah, his children Martin, Alison, Anne and Simon and six grandchildren.

## Dan Haneman



Dan Haneman

Dan Haneman was born in Berlin on 20 March 1931 and died in Sydney on 13 December 2002. He was educated at the University of Sydney, receiving his BSc and MSc and being awarded a DSc in 1973; and the University of Reading, where he obtained his PhD.

His career began as a research officer at the Radiophysics Division of CSIRO, then he moved to England in 1955 to do his PhD. On completing this he became a research associate at Brown University, Providence, Rhode Island (where he returned in 1967 as a visiting professor). In 1961 he was appointed to the University of New South Wales as a senior lecturer in physics, being appointed to a personal chair in 1983 and becoming Chairman of the Department of Condensed Matter Physics in 1984. On his retirement in 1998 he remained in the department as a visiting professor.

Haneman had an international reputation for his work on the structure and electronic properties of semiconductor surfaces. He pioneered photoemission and low energy electron diffraction measurements on surfaces cleaved in ultra high vacuum, and developed the well known 'buckled surface' model for the reconstructed atomic arrangement of germanium and silicon surfaces. He pioneered the application of electron paramagnetic resonance to surfaces of semiconductors; made the first experimental determination of the surface electron wave functions and hence determined the correct surface structure of AlSb and GaAs; made substantial contributions to the theory of the photo-electrochemical cell; and discovered the phenomenon of field-enhanced conductivity in amorphous silicon super lattices.

During 1970 and 1971 Haneman was a NASA Lunar Sample Principal Investigator. He was on the organising committees for a number of international conferences, including being chairman of the International Conference on Solid Films and Surfaces held in Sydney in 1984. This was a busy period for him as he was also chairman of the Solid State Division of the Royal Australian Chemical Institute from 1982 to 1984. He was elected to the Fellowship of the Academy in 1990 and was a Fellow of both the Australian Institute of Physics and the Royal Australian Chemical Institute.

He is survived by his first wife Rose, their children Andrew, Neil, Jeremy and Daphne; his second wife Tamara and their children Alice and Bernard; and his grandson Jason.

## Sir Bernard Katz

Sir Bernard Katz, Emeritus Professor of Biophysics at University College London, who was elected a Corresponding Member of the Academy in 1987, died in London on 23 April 2003. Born in Leipzig in 1911, he entered the Medical School of the University of Leipzig in 1929 where he became interested in neurophysiology. Following completion of his MD degree in 1934 he moved to London to carry out biophysical research with A V Hill at University College.

In 1939 he joined J C Eccles in Sydney at the Kanematsu Institute. In 1941 he became an Australian citizen

and joined the RAAF, serving as a radar officer in northern regions until the end of the Pacific war. He returned to University College in 1946, and his subsequent brilliant experimental investigations of synaptic transmission at the neuro-muscular junction led to his election to the Royal Society in 1952 and his sharing the Nobel Prize in Physiology or Medicine in 1970.

## Jack Deeble

Jack Deeble was born in Melbourne on 14 September 1924 and died in Canberra on 29 March 2003. He was educated at Melbourne High School and the University of Melbourne, where he received a BSc, majoring in chemistry.

During the years 1942 to 1946 he was on active service with the Royal Australian Naval Reserve, retaining his connections as a lieutenant in the Special Branch from 1951. From 1949 to 1956 he worked as an administrative assistant to the Scientific and Medical Branch of the Registrar's Office of the University of Melbourne. He was appointed to the position of Assistant Secretary (later renamed Executive Secretary) of the Academy in January 1956. In 1975 he became Director of Special Projects, a position he held until his retirement in March 1983.

During his 27 years at the Academy Jack was responsible for a number of initiatives, including managing all phases of the Academy building project and establishing and maintaining close contacts with the secretariats of the Royal Society and the US National Academy of Sciences as well as ICSU. He was involved with the *Web of Life*, the Academy's highly successful school biology textbook. After his retirement Jack continued to take an interest in Academy affairs and regularly attended the annual general meetings. He was interviewed a few years ago about the construction of the Academy building, now called the Shine Dome. A transcript of the interview is on the Academy's website at [www.science.org.au/dome/deeble.htm](http://www.science.org.au/dome/deeble.htm).

Jack was awarded the OAM in 1988. He also received the Volunteer Reserve Officers' Decoration (Naval).

He is survived by Morna, his daughter Jennifer and his sons Christopher and Timothy. His son Jonathan predeceased him.

## Honours to Fellows

**Professor David Boger** (Laureate Professor and Director of the University of Melbourne's Centre for Particulate Fluids Processing) and **Professor David Doddrell** (Director of the University of Queensland's Centre for Magnetic Resonance) have received Clunies Ross National Science and Technology Awards for excellence in the application of science and technology. Professor Boger has applied his knowledge of Boger fluids to deliver practical benefits for hundreds of companies across Australia and the world. Professor Doddrell has developed a scientific and commercial base for magnetic resonance in Australia.

**Professor Frank Fenner's** contribution to the Australian National University has been recognised with the naming of the Frank Fenner Building. The building will provide new facilities for the Faculty of Science and the Medical School.

**Professor Harry Poulos**, Senior Principal, Coffey Geosciences Pty Ltd, has been invited by the American

Society of Civil Engineers (ASCE) to present the 2004 Terzaghi Lecture. This is the highest honour bestowed by ASCE on an individual in the geotechnical field and is the first time that it has been awarded to an Australian.

**Professor Leon Simon**, Professor of Mathematics at Stanford University, USA, has been elected to the Fellowship of the Royal Society for his research in minimal surfaces and related geometric analysis.

### Queen's Birthday honours

**Professor Jacques Miller**, Walter and Eliza Hall Institute of Medical Research, was made a Companion of the Order of Australia 'for service to medical science in the area of immunology research, particularly in relation to seminal contributions to the understanding of the working of the immune system leading to wider research in tissue transplantation, immunological deficiency syndrome and control of cancer'.

**Professor Raymond Stalker**, Department of Mechanical Engineering, University of Queensland, was made an Officer of the Order of Australia 'for service to aerospace engineering, particularly through the research and development of scramjet-powered hypersonic vehicles and the Stalker tube'.

**Associate Professor Robert Hunter**, School of Chemistry, University of Sydney, was made a Member of the Order of Australia 'for service to science in the field of colloid and surface chemistry, as an educator and researcher, and to the community through the promotion of scientific social responsibility'.

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Former Executive Secretary of the Academy, **Mr Peter Vallee**, was made an Officer of the Order of Australia 'for service to science through the Australian Academy of Science, and to science education, particularly the development of innovative educational resources and outreach services'.

### SELBY FELLOWSHIP

## Award to Selby

The Academy congratulates Mr Benn Selby on his admission to the degree of MSc *honoris causa*, conferred upon him by the Council of the University of Melbourne on 5 April 2003. The award recognises his outstanding contribution to the promotion and development of science in Australia and beyond. Mr Selby attended the University of Sydney where he graduated in science with majors in chemistry and biochemistry in 1935.

The Academy has had links with Benn Selby for over 40 years. In 1961



Benn Selby

the Academy was invited to administer a fellowship for young overseas graduates on behalf of H B Selby Australia, which allowed graduates to work for a year in an Australian institution; this funding was transferred to senior scientists in 1970 when it was decided that there were other opportunities for junior scientists. The senior Selby Fellowship allows distinguished scientists to visit Australia for collaboration with their scientific colleagues and to present public lectures.

More information about the Selby Fellowship is available at [www.science.org.au/awards/selby.htm](http://www.science.org.au/awards/selby.htm).

## Visit from Japan

Mrs Yuko Furukawa, Head of the Research Cooperation Division of the Japan Society for the Promotion of Science (JSPS), visited Australia from 20 to 26 May 2003. She was in Australia at the invitation of the Commonwealth Department of Education, Science and Training to look at ways to develop closer links between younger researchers and to assess the range of developments taking place in

medical science and nanotechnology. The Academy and the Academy of Technological Sciences and Engineering assisted the Department in putting together a Canberra and Melbourne program for Mrs Furukawa.

The Academy and JSPS have had a long and fruitful relationship, particularly through the exchange programs. JSPS currently funds a Postdoctoral Exchange Program

for Australian researchers and two Invitation Programs for senior Australian researchers to work in institutes affiliated with JSPS. The Academy hosted a lunch for Mrs Furukawa on 21 May which was attended by Fellows of the Academy and Mr Yoshinori Horiuchi, First Secretary for Science and Technology of the Japanese Embassy.