

# R&D

REVIEW

## AUSTRALIAN

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*Linking Australian Science,  
Technology and Business*

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# Government claims tax boost to R&D

By Jenifer North

Australian businesses are investing a record \$8.4 billion in R&D since changes to the R&D Tax Concession were introduced in 2001, according to Industry Minister **Ian Macfarlane** following release of an evaluation report (at [www.industry.gov.au/RandDtax](http://www.industry.gov.au/RandDtax)) on business expenditure on R&D (BERD).

"This represents a \$2.5 billion increase since the introduction of the **Howard Government's** 175% Premium and Tax Offset," Mr Macfarlane says. "The Premium has proven to be extremely popular, with more than 900 firms benefiting from the concession and R&D expenditure soaring to about \$379 million a year."

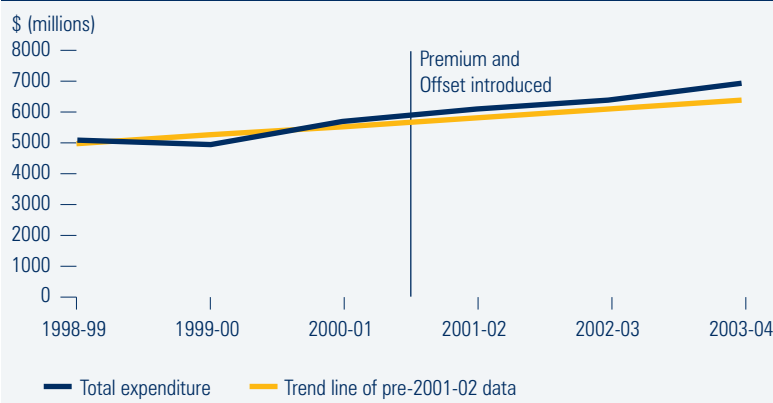
The 175% Premium provides a tax concession for additional R&D expenditure above a three-year average to encourage firms to increase their spending on innovation R&D. Mr Macfarlane says further changes to the beneficial ownership test for the premium, announced in the Industry Statement, are expected to increase R&D expenditure by an extra \$1 billion over the next four to five years.

Some focus group participants said the Premium is valuable in retaining R&D activity in Australia for firms with global operations. However, many felt that planning to access the Premium was difficult because of a number of constraints, including entitlement restrictions based on grouping provisions and the uncertainty of expenditure timing of multiple projects. Firms treat it as a bonus if other factors lead them to increase R&D. Compliance costs were not seen as an important issue.

An earlier study of Concession firms conducted in 2005 found the Premium resulted in greater commitment to speculative high-risk R&D projects. It also underpinned an expansion of the business and research strategies of firms. The evaluation recommends that the Premium be re-evaluated again in 2009-10.

The evaluation also found the Tax Offset was proving to be a great incentive to innovate, with an extra 1000 small Australian firms investing in R&D. The Tax Offset has boosted

## TOTAL R&D EXPENDITURE



R&D expenditure by about \$310 million a year, representing a doubling of R&D expenditure by start-up firms. However, the report warns that these results should be interpreted with caution since they assume new firms would not have conducted R&D before the Offset. Results could therefore overestimate the additional R&D generated.

Focus groups commented favourably on the impact and effectiveness of the Offset but identified the \$1 million expenditure limit as a big deterrent to spending more on R&D. Both the evaluation's consultations and the data analysis indicate that firms are not expanding their R&D expenditure beyond \$1 million because they will lose access to the Offset. The report therefore recommends that the government consider the appropriateness of the current R&D expenditure threshold for the Offset and its impact on incentives.

The requirement for an R&D Plan has posed some problems. The focus groups said initial compliance was an issue and once processes were in place they experienced some compliance burden. Some participants, however, said the plan helped them manage R&D so it was more systematic and closely aligned to their priorities. However, overall the evaluation reports the requirement for an R&D Plan appears to be effective in achieving

*Continued page 2*

greater management focus on planning and decision-making.

Labor science spokesman **Kim Carr** criticises the conclusions of the evaluation. By having limited terms of reference, he says, the report only focused on the six years between 1998-99 and 2003-04, ignoring the impact of the government's 1996 decision to halve the R&D tax concession. He says the 1996 decision saw the number of companies registered for the concession drop from 3733 in 1995-96 to 3295 the following year and R&D expenditure fall from \$4.5 billion to \$4.2 billion. For the manufacturing sector, R&D as a share of output plummeted from about 3.3% in 1995-96 to only 2.8% in 1999-2000.

Mr Carr added that the evaluation's findings on the Premium concession also support Labor's concerns. The report finds, for example, that many firms receiving the Premium tax concession "view it as an additional bonus for which they may be eligible at the end a year, not a strategic incentive they can rely on to undertake more R&D". This confirms the finding of an earlier **Department of Industry, Tourism and Resources** survey, which found "the 175% Premium rate appears to have little influence on underlying levels of R&D expenditure, with 21 of the 26 claimants indicating that they would have undertaken the R&D in the absence of the 175% Premium".

► **More information:** Lisa Chalk, 0409 476 619; Kim Carr, 0419 563 922

## Deans warn of science decline

The proportion of students studying physics for any reason, not just to become physicists, has dropped to only about 33% of what it was about 20 years ago, says a report released by the **Australian Council of Deans of Science (ACDS)**. *Sustaining science: university science in the 21st century* is the third in a series commissioned from the nation's expert on Department of Education, Science and Training statistics **Ian Dobson**, in which the decline in science enrolments since 1989 has been charted.

"What matters here is the 'for any reason,'" says **Professor John Rice**, chair of ACDS. "For a society participating in global economic transformation, whose competitiveness depends on riding huge waves of technological change, and whose survival depends on innovative responses to water crises, climate change, drug-resistant infection and terrorism, you'd think that a greater, not smaller, proportion of its talent needed a good understanding of basic science.

"Of most concern is the secondary school system, which harbours the skills crisis within the skills crisis. As other ACDS reports have shown, a disturbing proportion of secondary school teachers have only limited qualifications in science and mathematics. The bulk of those with the

skills to give our children skills gained their qualifications years ago, and a huge proportion are not far off retirement. No education authority has a public workforce plan that addresses this crisis. No government has done anything to give the public confidence that it is on top of this problem.

"Then there is the university system which, despite being increasingly privatised and hence, in theory, more market-responsive is still unable, in the sciences especially, to respond to the fact that 90% of its clients will not in any way follow in the footsteps of the academics who teach them. The government's Research Quality Framework hasn't helped this a bit. Rather it has focused institutions on a conservative preoccupation with research and an unbecoming obsession with size and competitiveness."

► **More information:** John Rice, 0438 438 097, john.rice@uts.edu.au

## Nuclear medicine facility

The **Australian Nuclear Science and Technology Organisation (ANSTO)** and **Siemens Medical Solutions** are to build a \$10 million nuclear medicine production facility with two state-of-the-art cyclotrons, that promises to substantially increase the availability of the latest in disease diagnosis and treatment to Australians.

Under the deal, PET facilities could potentially increase, as hospitals will no longer require an on-site cyclotron to supply a PET facility with radiopharmaceuticals, which they do now, but will be able to get the necessary products from the new facility. The deal also gives ANSTO access to Siemens' international PET radiopharmaceuticals network (PETNET) of 46 centres. Siemens will also contribute to a joint radiopharmaceutical research program with ANSTO.

► **More information:** Sharon Kelly, 02 9717 9575, 0400 394 085

## Molecular Eurolinks

The Minister for Education Science and Training, **Julie Bishop**, has announced that, from January 2008, Australia will be an associate member of the **European Molecular Biology Laboratory (EMBL)**, an international molecular biology research institution. It is supported by 19 European member states, has laboratories in Germany, France, Italy and the UK, and a staff of more than 1400 researchers from 60 nations.

"EMBL is a central hub for molecular biology in Europe," Ms Bishop says. "Australia is the first country to be granted associate membership, which demonstrates the high regard that the international research community holds for Australian life scientists. Associate membership will provide Australian researchers with access to faculty positions and research infrastructure within EMBL laboratories in Europe.

Funding for Australia's associate membership will be provided through the National Collaborative Research Infrastructure Strategy and **Monash University**, the **University of Western Australia**, the **University of Queensland**, the **University of Sydney** and **CSIRO**.

► **More information:** 02 6240 7300, www.embl.org

## Frontierspeople

More than \$2.3 million over three years has been awarded to seven of Australia's leading health and medical researchers under the international **Human Frontier Science Program (HFSP)**. Announcing the results of the latest HFSP round, **National Health and Medical Research Council CEO Professor Warwick Anderson** said that the awards provide valuable opportunities for Australian researchers to work in multidisciplinary teams at the forefront of international research. Since HFSP began in 1989, 12 of its scientists have been awarded Nobel Prizes.

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The awards have been made as follows:

- \$163,000 for **Dr Madeleine Beekman, University of Sydney**, to explore how natural systems adapt to changing conditions by studying colonies of ants and honeybees, and slime moulds;
  - \$408,800 for **Professor Paul Curmi, University of NSW**, to be part of a team studying the operation of ‘molecular motors’ – proteins that use chemical energy to carry out functions within cells such as transport, pumping, DNA replication and protein synthesis;
  - \$408,800 for **Professor Min Gu, Swinburne University of Technology**, to use new imaging devices to explore cancers in the early stage to help understand their genetic origin;
  - \$163,000 for **Dr Nicholas Huntington, Walter and Eliza Hall Institute (WEHI)**, who has been offered a long-term fellowship for research on a type of immune system cell, thought to participate in protecting humans from cancer and disease throughout life;
  - \$408,800 for **Professor Robert Parton, the University of Queensland**, to study endocytosis to better understand how healthy cells work and what goes wrong in disease conditions;
  - \$423,000 for **Dr Sarah Russell, Peter MacCallum Cancer Centre**, for research into immune system responses that may lead to new immune-system-manipulating therapies, to either damp down immune responses in autoimmune disorders and after organ transplant, or to increase immune responses; and
  - \$163,000 to **Dr Mark Shackleton, WEHI**, for research that aims to determine whether cancer stem cells exist in human melanomas, which may lead to better treatments.
- **More information:** [www.hfsp.org/awardees/AwardsLatest.php](http://www.hfsp.org/awardees/AwardsLatest.php)

## Scientific defence

In a speech to the recent **Joint Strike Force (JSF) Technology and Innovation Conference**, the Minister assisting the Minister for Defence, **Bruce Billson**, summarised some initiatives in defence R&D. Australia is investing about \$12 billion in the JSF, a program designed to deliver a fleet of 100 elite fighters for the **Royal Australian Air Force**.

One of the nine ‘planks’ of the government’s new Defence and Industry Policy is to “drive innovation in defence technology via increased pooling of the expertise and resources of defence, industry and universities or other research organisations on joint defence R&D ventures”. The government has committed about \$97 million over the next five years to support research and innovation. The government is also committed to establishing research clusters on defence priority areas to expand the relationship between the **Defence Science and Technology Organisation**, universities and industry.

One of the requirements of the new innovation program will be to have SMEs supported, and their proposals and initiatives thoroughly assessed, as a part of developing further innovation. In focusing Australia’s R&D, the Australian JSF Industry and Technology Facilitation Program, which is still in its formative stages, has already identified some 150 proposals from Australian R&D organisations with the potential to contribute to JSF follow-on development or improve JSF manufacturing processes. The proposals are currently being evaluated and prioritised.

► **More information:** **Cameron Hill, 03 9781 2333, 0408 239 521**

## Maritime moves

The **Australian Government** has provided an additional \$3 million in funding for the **Australian Maritime College** to further develop its marine research work at its Launceston Campus. The funding boost

will allow the college to enhance its maritime education and research facilities by expanding its Cavitation Tunnel and Ship Simulator program. The Cavitation Tunnel is a purpose-built facility that helps in the study of wave action and impacts and is regarded as one of the best in the world. The Ship Simulator program provides a range of maritime and shipping training environments, which teach students how to tackle real-life shipping situations in a safe environment.

► **More information:** **Matthew Magin, 07 4942 6011, 0417 882 385**

## Gene for autoimmunity?

Two Australian researchers will join forces with an EU research team with the aim of developing new treatments for autoimmune diseases such as diabetes and Addison’s disease. **Dr Hamish Scott**, from the **Walter and Eliza Hall Institute**, and **Professor Chris Goodnow**, director of the **Australian Phenomics Facility** at the **Australian National University**, will receive \$807,435 under the **National Health and Medical Research Council’s** Australian–European Union Collaborative Grants Program. The team will investigate processes controlled by a recently discovered rare gene, which may prove to be crucial in preventing autoimmune diseases.

► **More information:** **Nigel Harding, 0409 307 671**

## Climate storm

The July screening of the program ‘The Great Global Warming Swindle’ by **ABC TV** unleashed a storm of protest by Australian scientists. Not only are they concerned about its inaccurate claims, but they are also disturbed that the ABC chose to broadcast such material at all.

The **Australian Academy of Science** maintains the view that recent global warming is caused by unprecedented CO<sub>2</sub> levels in the atmosphere, despite claims made in the documentary. “Those who deny human-induced global warming are in the same camp as those that deny smoking causes lung cancer and that CFCs deplete the ozone layer,” says Academy President **Professor Kurt Lambeck**. “There is too much at stake to be side-tracked by discredited theories and outdated data.”

Scientists from the **ARC Centre of Excellence for Coral Reef Studies** have given the ABC a rap over the knuckles for its decision to broadcast scientifically misleading information. **Professor Malcolm McCulloch** and **Professor Ove Hoegh-Guldberg** warn that broadcasting such material could lead to dangerous delays in dealing with a potentially catastrophic situation affecting Australia’s coral reefs and other ecosystems. “One wonders whether the ABC has now resorted to sensationalism in the pretence of airing the ‘other point of view?’” says Professor Hoegh-Guldberg. “If so, then perhaps the ABC should consider airing documentaries on UFO and Elvis sightings? They are just as credible and should assist with ratings in a similar way.”

**Tom Lowe**, a social science researcher with the **Centre for Risk and Community Safety** at **RMIT University**, who has worked at the **Tyndall Centre for Climate Change Research (UK)**, says: “Given the current state of understanding, and global scientific consensus, on climate change, the ABC’s decision to show the program appears to have more to do with ratings and political appeasement than with free speech and journalistic balance. The ABC should consider the criticism that the documentary has already received from scientific groups around the world and the damaging effect that showing it may have upon the Australian public.”

► **More information:** **Professor Kurt Lambeck, 02 6125 5161; Professor Malcolm McCulloch, 02 6125 9969; Professor Ove Hoegh-Guldberg 07 3365 1156; [www.aussmc.org](http://www.aussmc.org)**

## Innovation warning

The **Committee for Economic Development of Australia** (CEDA) says there is increasing recognition around the world that innovation is a key driver of the competitiveness of firms and organisations in the global economy. But the **Australian Government's** strategy to encourage innovation (Backing Australia's Ability, 2001, 2004) has shortcomings that must be urgently addressed.

CEDA's latest collection of papers, published as *Competing From Australia*, unites a familiar theme in Australian economic history – the tyranny of distance – with a number of new ideas about global connectedness and innovation. It seeks to ensure Australia continues to engage more deeply with the rest of the world, and to stay at the leading edge of economic activity.

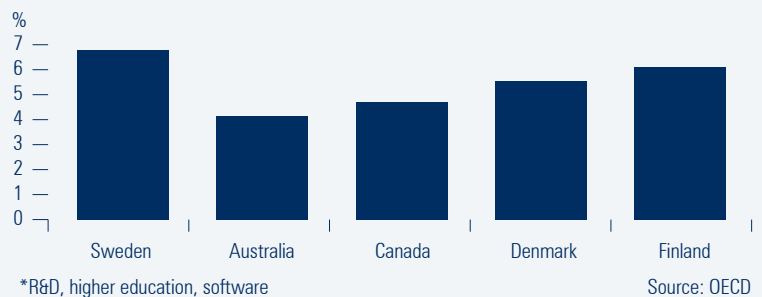
One section of the report explores the meaning and policy implications of innovation. Lead author, **Professor Roy Green**, Dean of the **Macquarie School of Graduate Management**, suggests Australia should learn from the experience of Norway and Finland, which have adopted processes that enhance longer-term economic sustainability. He says Australia has always compared well in scientific output, but declining research and education spending over many years threatens this achievement. There are also serious gaps and weaknesses in R&D performance and in the transfer of knowledge to markets by industry and public research organisations.

Professor Green says Australia's national innovation system has pockets of excellence, but its effectiveness is compromised by the lack of innovation policy focus and "joined-up thinking" in government, public agencies, business and universities, as much as by funding deficiencies. At the strategic level, there is little understanding of the long-term advantages conferred by a comprehensive innovation system, which promotes both the generation and systematic application of knowledge within and across sectors. At the operational level, innovation agencies in Australia have neither the support nor funding to emulate the role of their counterparts in other countries, such as the **Fraunhofer** institutes in Germany and the highly effective **Enterprise Ireland**.

He emphasises that innovation is naturally not a task for governments alone. But he notes the lamentable decline in public spending on higher and vocational education, despite political rhetoric vaunting individual skills and capabilities. More broadly, and at a strategic level, he laments the absence in Australia of any overarching commitment, conceptualisation or vision. Government has failed to lead the development of public or stakeholder opinion. Because implementation requires extensive new linkages and engagements between public and private-sector actors, he argues, government has an unavoidable and quite novel leadership role in the innovation field.

**Professor Keith Smith**, who holds the Chair in Innovation at the **University of Tasmania**, outlines the framework for a comparative study of approaches to innovation in a number of resource-intensive economies. These are countries which all resemble Australia in the importance of their resources sector, but which all have a high resource dependence

## INVESTMENT IN KNOWLEDGE\* AS PERCENTAGE OF GDP, 2002



associated with strong manufacturing and/or services activity. He suggests that innovation policy for resource-based economies cannot be simply based on high-tech sectors, but will have to have an extensive base in the resources and industries actually possessed by an economy.

Professor Smith focuses on how effects of initial resource developments ramified serially through three broad phases: initially, there was substantial investment in knowledge upgrading in resources-based industries, followed by other flow-on consequences as resource activities leveraged the development of downstream industry and services. In a third phase, a further round of opportunities developed from the extensive and deliberate use of knowledge infrastructures to drive knowledge creation in other sectors. He refers to the development of "vertical clusters" extending up out of the resources sectors into manufacturing and services. He concludes that if the detailed path by which the cited resource-rich countries progressively transformed their natural endowments into vibrant secondary and tertiary sectors remains obscure, so too is the path by which these outcomes might be preserved and magnified. These questions, and processes, have special salience for Australia.

The third paper in the segment on innovation is by **Dr Thomas Barlow**, former adviser to **Dr Brendan Nelson** when he was Minister for Science, Education and Training. Dr Barlow reviews recent changes in policy frameworks designed to aid innovation. Contrary to other contributors in this collection, he concludes that where innovation is concerned, current policy settings are about right and further effort is best left wholly to decisions made in the marketplace.

Dr Barlow contends that business expenditure on R&D is probably overrated as a measure of a society's levels of innovation – most innovation occurs outside of R&D. Nonetheless, the spread of business investments in R&D can give some indication of where concentrations of innovative activity are occurring. He says that over the past eight years there has been a substantial dip in the proportion of business R&D performed in core engineering and hardware disciplines, with a noteworthy rise in the proportion of business R&D performed in biosciences and in developing applications for information, computing and communications technologies. This is an extension of a 20-year trend and is a telling development. Engineering and hardware development are still the areas that contribute most to business R&D in Australia. But proportionally less engineering and less hardware development means less consistency with the old-fashioned conception of business innovation that is focused predominantly on the technological invention of high-tech manufactured goods.

► More information: [www.ceda.com.au](http://www.ceda.com.au)

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By Dr Rachel McFadyen  
CEO, CRC FOR AUSTRALIAN WEED MANAGEMENT (WEEDS CRC)

# Haunted by economic myopia

**D**istorted economics, coupled with ideologically driven decision making, are threatening Australia's best efforts to preserve its natural heritage. Although the 2007 Budget contained some good initiatives, the past decade has largely been one of neglect and lost opportunities for environmental research. In particular, the dominance of short-term commercial objectives in setting the national research agenda has been a disaster for environmental science, and has left many of the scientific groups focused on public good and the environment scabbling for support.

Within the Cooperative Research Centre (CRC) program, for instance, the Rainforest CRC, the Reef CRC, the Tropical Savannas CRC and the Weeds CRC have all been casualties, forced to shut down or find other ways to continue aspects of their work. Even the Bushfire CRC, possibly the world's leading research body in this area, and vital to Australia as the climate dries out, had considered not re-applying for funding, worried that its non-commercial focus could rule it out of consideration.

In *The Australian* Higher Education Supplement on 24 May, Julian Cribb pointed to the short-sightedness in the 1990s that wound back public investment in energy research and the geosciences in Australia, and led to their widespread decline. Mathematics was another casualty. To those I would add an inadequate investment in insect and plant taxonomy over the decade, as well as in weed science.

Despite the National Heritage Trust investment, research that underpins and benefits the environment has been largely sidelined. For example, the \$5.4 million over four years for R&D in the Federal Government's Defeating the Weed Menace program has been valuable, but pales into insignificance compared with the size of the problem. Weeds cost the agricultural sector alone more than \$4 billion per year – that is in the same league as the total national export income from refined gold (\$6 billion in 2004-05), or from exports of liquefied natural gas (\$4.4 billion in 2005-06). One in seven dollars of farm income is spent trying to control weeds.

The most frustrating thing for researchers in this field is the knowledge that the country could save billions of dollars in the long term by investing now in better ways of weed management. For example, more than 100 years of data show that investing in the biological control of weeds alone delivers a benefit of \$23 for every \$1 spent. This is data from a well-conducted economic analysis. The Weeds CRC also showed that the nation's farmers could save \$2 billion over 25 years by investing a further \$30 million in weed science over the next seven years.

However, governments seem to view the saving of money in this way as irrelevant. Costs avoided do not seem to count – rather it has to be cash made from products and services

marketed. This approach is made even less appropriate by the fact that returns from the biological control of weeds, for example, can take 10 years or more to be fully delivered, even though once delivered the benefits can be spectacular and permanent.

This kind of thinking fails to make common economic sense, let alone serve the interests of the country's long-term scientific and agricultural development. Savings attributed to better weed control should be counted as an outcome, and not dismissed as irrelevant.

If it is hard to get support for the agricultural sector in its struggle with weeds, it is even more difficult to secure investment for research into weed problems that affect the natural environment. New reports show that biodiversity is indeed threatened by the spread of invasive plants, both at the local and national scale. Indeed, we now know that invasive plants and animals together represent the principal immediate threat to Australia's biodiversity. Yet many concerned scientists are effectively being forced to ignore this evidence when applying for funds to support their work, as they know that only the commercial aspects will be considered relevant.

The Productivity Commission is correct to call for the original objectives of the CRC program to be reinstated: namely, the translation of research outputs into economic, social and environmental benefits.

We badly need new priorities to emerge. It is not good enough for bright young researchers to have to continually

*Dr Rachel McFadyen: "The most frustrating thing for researchers in this field is the knowledge that the country could save billions of dollars in the long term by investing now in better ways of weed management."*



set aside the environmental benefits of their research in order to work as scientists within the government system in this country. As they turn away from fields with shrinking career opportunities, we are creating a legacy of inadequate information and capacity that will return to haunt us.

*The Weeds CRC was advised in November 2006 that its funding will not be renewed, and that it will wind up in June 2008. A media statement and updates about the situation are available at [www.weeds.crc.org.au/main/weeds\\_crc\\_to\\_end.html](http://www.weeds.crc.org.au/main/weeds_crc_to_end.html).*

## Absorbing science

An international research team, including three CSIRO scientists, has thrown new light on the way that CO<sub>2</sub> produced by industrial activities in the northern hemisphere is absorbed by vegetation across the globe, particularly in tropical regions.

The research, published in *Science*, shows that plants in the mid to high latitudes of the northern hemisphere play a smaller role in the uptake of industrial CO<sub>2</sub> emissions, and that tropical plants play a larger role in that uptake than previously thought.

**Dr Paul Steele**, from CSIRO Marine and Atmospheric Research, says the research is different from earlier studies because it uses most of the available data on the vertical distribution of CO<sub>2</sub> in the atmosphere.

"The concentration of CO<sub>2</sub> in the atmosphere isn't uniform – it varies spatially and temporally throughout the whole depth of the atmosphere," he says. "When the vertical gradients from a range of different locations were properly included in model simulations, the carbon budget required a weaker uptake of CO<sub>2</sub> by land plants in northern temperate latitudes, and a weaker emission of CO<sub>2</sub> by plants in the tropics."

Dr Steele explains that previous model studies have almost exclusively used time series of CO<sub>2</sub> measurements from only two dimensions of the atmosphere, latitude and longitude, near to the Earth's surface. "By using the time series of measurements of the vertical distribution of CO<sub>2</sub> in the atmosphere at 12 sites around the world, we have arrived at this new result," he says.

► **More information: Dr Paul Steele, 03 9239 4578**

## Building impact

Deakin University researchers have developed a quick and easy method of predicting the environmental impact of Australian buildings. Using data from 30 Melbourne buildings, including hospitals, offices, schools and houses, a strong relationship between building costs and energy performance was discovered. From this information they produced an equation, or 'calculator', based on a building's budget, that predicts energy performance.

"Our research has shown that lower capital cost leads to lower energy use," says **Professor Craig Langston**, director of the Built Environment Research Group at Deakin's School of Architecture and Building. "Thus, cost-effective construction leads to better environmental performance: a fact that is not well understood."

During the three-year study, the researchers found that estimates of a building's embodied energy (the energy used to manufacture the building's materials) were directly tied to its capital cost budget. They also found that the same principles could be applied to determine a building's operational energy (heating, cooling, lighting and so on) over the next 100 years.

"What we have produced is a model that not only reduces time but also eliminates the complexity of energy, particularly embodied energy, calculations from a few weeks of expert effort to a few minutes by a relative novice," Professor Langston says.

► **More information: [www.deakin.edu.au/news/media.php](http://www.deakin.edu.au/news/media.php)**

## Flyash solution

Scientists at the University of Technology, Sydney, may have found a low-cost answer to Australia's acid soils – a problem that affects about 22 million hectares of grazing, cropping and horticultural land, more than half the nation's productive farm land and five times the area affected by dryland salinity. Soils often become progressively more acid as they are farmed, until they reach a point where crops and pastures will not grow. Acid soils require expensive treatment with lime to increase the pH.

The UTS solution may also solve a major environmental headache by creating a new use for the 14 million tonnes of waste flyash produced each year by the nation's coal-fired power stations, most of which now ends up in landfill.

"We tested flyash as a soil improver across a range of different soil types using canola as a test crop," says team leader **Dr Isa Yunusa**. "To our surprise – because earlier, more limited trials were inconclusive – we found flyash reduced soil acidity by up to one whole unit of pH in certain conditions. This is a remarkable improvement, and we are still trying to understand how it has come about."

"In the trials, flyash application also led to yield increases in canola of up to 25%." The flyash was applied by the same methods and with the same precautions as lime, at rates of up to 36 tonnes per hectare. Above that there was no extra improvement.

► **More information: Dr Isa Yunusa, 0423 529 705**

## Rooting pollution

Australian native grasses offer an environmentally sound, low-cost and effective way to help clean up old mines and industrial sites: rhizoremediation (root remediation). The roots of certain native grasses give a boost to microbes in the soil that break down pollution caused by fuel oil and other hydrocarbon contaminants.

## WILL THE BOOM EVER END?

### Resources Boom: Opportunities and Consequences

The Australian Academy of Technological Sciences and Engineering (ATSE) 2007 Symposium – Duxton Hotel, Perth 19-20 November 2007

The current resources boom is unprecedented and sustained. There is an emerging view that it won't end in the foreseeable future.

Australia has to prepare prudently for the phenomenon to end, but it also has to plan for it to run on for 15-20 years, to meet the demand from the emerging giants of the world markets.

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Rhizoremediation is easy to implement and cheap compared with traditional clean-up methods such as removing soil and treating it.

“This is new work: until now there have been no published reports of rhizoremediation using native species being applied as a technology for organic contamination in Australia,” says doctoral researcher *Sharyn Gaskin* of **Flinders University**.

Ms Gaskin tested nine grass species in various kinds of contaminated soil and measured their growth rates. She found three to be promising for use in mine rehabilitation. Studies overseas have identified a range of grasses – particularly ryegrass and other perennials – as able to degrade organic pollution, but this is the first time Australian grasses have been put to the test.

► **More information: Dr Richard Bentham, 0408 829 840**

## Dry tides

Australian researchers have studied and documented the effect of the ‘dry tide’: a force of nature that can silently wipe out coral reefs. Their analyses have revealed that these are highly predictable events that can seriously affect the state of coral reefs at a time when they are preparing for the stresses of summer.

In *Marine Biology*, *Dr Ken Anthony* and *Dr Ailsa Kerswell*, of the **ARC Centre of Excellence for Coral Reef Studies (CoECRS)** at **James Cook University** and the **University of Queensland**, reveal that extreme low tides on clear sunny days can lead to widespread damage of coastal coral colonies.

“Really low tides, where the local sea level gets to its extreme low for the year, can occur at different times of the day,” Dr Anthony says. “In years where this occurs during the middle of the day when the sunlight is at its most intense and the reefs are almost fully exposed, there is a real risk of severe coral stress and death in the shallow reef zone.”

Like cyclones and other natural disasters, these severe ‘sun-dry tides’ rarely occur, since they rely on the alignment of numerous natural extremes (sun, moon and weather). When these factors all align, an extreme event occurs that can leave coral colonies bleached and devastated. However, the ‘sun-dry tides’ can also be anticipated. The high-risk time is July to October, the time of year when corals are building up resources for spawning and preparing for summer stressors such as thermal bleaching.

“If we better understand the timing and severity of natural stressors on reefs, we will be able to better predict the risks of human-induced stressors, and hopefully better manage for healthy reefs,” Dr Anthony says.

► **More information: [www.coralcoe.org.au](http://www.coralcoe.org.au)**

## Trash into treasure

**Ensis** is collaborating with Sydney-based environmental business development company **Warnken ISE** to help turn one person’s trash into another’s treasure by quantifying the volume and types of wood waste being dumped at waste facilities across Australia.

“This project aims to put an end to speculation about the volumes of wood waste available across the country by providing scientific data on volumes and quality,” says Ensis’s *Dr Joely Taylor*.

*Matthew Warnken* from Warnken ISE, says there are many potentially valuable uses for wood waste currently being disposed of in landfills: “Much of what is now being thrown away can, for example, be used as a renewable energy source or as raw material for engineered products such as particleboard. The study will

be of interest to the timber industry, renewable energy project developers and also wood waste recyclers.”

► **More information: [www.csiro.au/news/mediacentre/whatsnew.html](http://www.csiro.au/news/mediacentre/whatsnew.html)**

## Tracking the Tiger

**University of Adelaide** zoologist *Dr Jeremy Austin* is investigating whether the Tasmanian Tiger may have survived beyond its reported extinction in the late 1930s. The Tasmanian Tiger (thylacine) was the world’s largest marsupial carnivore at the time of its extinction in 1936, when the last creature in captivity died in Hobart Zoo; 1918 was when the last thylacine was killed in the wild.

Dr Austin, from the **Australian Centre for Ancient DNA**, is extracting DNA from preserved animal droppings found in Tasmania in the late 1950s. “The scats were found by Eric Guiler, Australia’s last real thylacine expert, who said he thought it more probable they came from the Tasmanian Tiger rather than a dog, Tasmanian Devil or quoll,” he says. “It’s a long shot that they were still around in the 1950s, but we can’t rule it out at this stage.”

► **More information: [www.adelaide.edu.au/news/archive/?cat=mediarel](http://www.adelaide.edu.au/news/archive/?cat=mediarel)**

## Koala vaccine

The first trials of a vaccine, developed by **Queensland University of Technology**, that could prevent koalas from contracting chlamydia are planned to begin later this year. Chlamydia is a major threat to the survival of koalas, causing infertility, urinary tract infections, and inflammation in the lining of the eye, often leading to blindness. Almost all populations are affected by the disease.

“We’ve been able to develop the vaccine for koalas as a result of our studies on the development of human chlamydial vaccines done in the mouse model,” says *Professor Peter Timms*, from QUT’s **Institute of Health and Biomedical Innovation**. “We have identified several novel vaccine proteins that we hope will protect koalas as well.

“The trial will test the vaccine’s ability to induce a good immune response in the koala against chlamydia. If this first trial is successful, then future trials can determine if this immune response is able to protect the koalas against chlamydial disease.

“As many as 40 to 50% of koalas coming into care in both Queensland and NSW are showing clinical signs of the disease and it seems to be getting worse.”

► **More information: [www.news.qut.edu.au/cgi-bin/WebObjects/News](http://www.news.qut.edu.au/cgi-bin/WebObjects/News)**

## Bat attack

Scientists have discovered that bats are the likely host of a new virus that can cause a serious, but apparently non-fatal, respiratory tract illness in humans. As reported in the *Proceedings of the National Academy of Sciences*, the discovery was made by a team from **CSIRO Livestock Industries’ Australian Animal Health Laboratory (AAHL)** in Geelong, Victoria, and the **National Public Health Laboratory** in Selangor, Malaysia.

The new virus was named ‘Melaka’ after the location in Malaysia where it was isolated in early 2006 from a human patient who showed signs of fever and acute respiratory illness. This is the only recorded case of the Melaka virus infecting a human. According to the leader of the CSIRO team, *Dr Linfa Wang*,

although the symptoms were severe and persisted for four days, there is no evidence to suggest Melaka virus is fatal.

Melaka virus is a type of reovirus (Respiratory Enteric Orphan viruses), which were first isolated in humans in the early 1950s, and so named because they were not associated with any known disease.

The leader of the Malaysian team, *Dr Kaw Bing Chua*, says bats were examined as a host, not only because previous unknown viruses have been found to have originated in bats, but because epidemiological tracing revealed the patient's family was exposed to a bat in the house one week prior to the patient showing clinical symptoms of the virus.

► **More information:** [www.csiro.au/multimedia/MelakaVirusQA.html](http://www.csiro.au/multimedia/MelakaVirusQA.html)

## D-deficient

There is an urgent need for high-dose vitamin D supplements to be available in Australia to address the growing rate of vitamin D deficiency, say a group of experts convened by **Deakin University**.

"The elderly who are housebound, live in residential facilities or spend most of their time indoors, those with dark skin, and women who wear concealing clothing for cultural reasons are unlikely to obtain enough vitamin D from their diet or casual sun exposure to correct a deficiency," says *Dr Robin Daly* of Deakin's **Centre for Physical Activity and Nutrition Research**.

Supplements are recommended for people with low vitamin D levels, but the supplements available in Australia are low dose. The highest dose supplements are 1000 International Units (IU), which must be taken daily for an extended period, but may still not be adequate to correct a deficiency.

"Higher-dose supplements, for example 50,000 IU tablets, similar to what is available in New Zealand and other countries, should be available in Australia to more effectively treat the growing number of people with vitamin D deficiency," Dr Daly says. "The main reasons why high-dose vitamin D supplements are currently not available in Australia relate to the high cost associated with registering vitamin D as a prescribed medicine, the unpatentable nature of vitamin D, and the low final retail cost (about \$25 per year)."

► **More information:** [www.deakin.edu.au/news/media.php](http://www.deakin.edu.au/news/media.php)

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## Impatient patients

A violence assessment tool to help nurses and doctors in hospital emergency departments avoid violent attacks from irate patients or visitors has been developed for a recently completed doctoral study at the **University of Western Sydney**. UWS PhD candidate *Lauretta Luck* says STAMP provides an easy-to-remember checklist that can help staff to defuse escalating situations before they result in a violent episode.

"STAMP stands for Staring and eye contact, Tone and voice volume, Anxiety, Mumbling and Pacing, and could be applied in any situation where violent attacks are frequent, such as in hospitals, law enforcement or other community and social services," Ms Luck says.

The study involved nearly 300 hours of close observation and in-depth interviews at a busy 33-bed emergency department in a large hospital. Ms Luck found that excessive staring or lack of eye contact were predictors of potential violence, and nurses felt that staring was used to intimidate them into faster action. Tone and volume of voice, sarcasm or mumbling indicate mounting frustration and were also found to be cues for violence.

"Unfortunately violence towards healthcare staff and other professionals such as police officers and social security staff is an increasing part of daily life and an occupational hazard," Ms Luck says. STAMP gives professionals who face hostility in their daily work a basic framework to predict violent behaviour.

► **More information:** [apps.uws.edu.au/media/news](http://apps.uws.edu.au/media/news)

## Leukaemia prospect

Scientists investigating drug therapies for children with Acute Lymphoblastic Leukaemia (ALL) have presented new data demonstrating for the first time that a small molecule called ABT-737 can increase the effectiveness of standard therapies. *Dr Richard Lock* of the **Children's Cancer Institute Australia** and collaborators from the **Childrens Hospital Los Angeles** and **University of Southern California**, recently published their findings in the journal *Blood*.

ALL is the most common form of childhood cancer. Improvements in primary therapy have increased the cure rate to approximately 80%, but of the 20% of patients who relapse, the majority die.

"There is a critical need for new drugs with novel mechanisms of action that might improve the outcome for relapsed ALL patients," Dr Lock says. "When used in combination with common drugs administered in ALL therapy, ABT-737 has the ability to enhance the combined toxicity of these drugs against the leukaemia cells with minimal effects on the normal cells of the body," Dr Lock says.

Resistance to common therapeutic drugs is associated with poor long-term outcomes in leukaemia patients. In the study, the effects of ABT-737 in combination with three common chemotherapeutic agents – L-Asparaginase, vincristine and dexamethasone – were tested on a number of ALL cell lines.

ABT-737, developed by **Abbott Laboratories**, acts by inhibiting the Bcl-2 family of proteins. These proteins are expressed in ALL and inhibit the mechanisms responsible for destroying leukaemia cells. High levels of expression of Bcl-2 is linked with chemoresistance in a variety of cancers.

► **More information:** [www.ccia.org.au](http://www.ccia.org.au)

By Stevan Green  
CEO, CRC FOR SUSTAINABLE RESOURCE PROCESSING

## Getting the most from minerals

Saving money and impacting less on the environment by using less energy and water receive nearly daily international media coverage. In Australia there is increasing pressure to mandate low-energy design, installation of water tanks, low-flow plumbing and grey-water processing systems in domestic housing. Likewise, in industry there is increased pressure to lower energy and water use, increase resource efficiency and reduce greenhouse gas emissions.

Simply put, sustainability implies that a process is capable of being sustained or kept in existence. But there is more to sustainability than just existing for the long-term. Sustainable development, in terms of the mining and minerals processing industry, needs to include meeting the needs of today's society without compromising future generations' ability to do the same. It is about quality of life now and into the future.

By improving the eco-efficiency of processes used in the resources sector we improve our ability to deliver competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts.

In the minerals and mining industry, a first step towards sustainability is to be able to measure how much energy and water are being used in any process and then identify what can be recovered or re-used from these processes. The Centre for Sustainable Resource Processing (CSRP), which was established to help reduce mineral processing's demand for energy, water and other inputs, is developing a toolkit to help industry translate sustainability principles into practical outcomes in five key research programs: sustainable development, energy efficiency, lower greenhouse gas, zero waste and water resources.

An early practical application of this toolkit that turns sustainable development principles into reality is 'comminution', or crushing rocks. It has been estimated by CSIRO that Australia uses about 14 per cent of its electricity to crush ore – and that much of this energy is wasted.

More efficient rock crushing, when combined with better physical separation and identification of minerals in the early stages of extracting minerals from ore, has the potential to make big savings in Australian energy use.

To practically apply this process, the CSRP and its partners at the University of Queensland have developed a new rock breakage tester. It is being commissioned in South Africa to examine ways of crushing ore in a more energy-efficient way to give the same, or greater, yields from an ore body.

Digging fewer holes in the ground in the first place can be achieved by making more use of what comes out of the ground now. For example, ReSand™ utilises unused byproduct material from mineral processing as a substitute for newly quarried material. ReSand™ has properties that make it suitable for use in engineering applications such as road building, road base, and for mixing in concrete. The material has a smaller ecological footprint than mining virgin sand and allows for large amounts of processing byproduct to be re-used in a constructive and meaningful way that is environmentally sustainable.

Another innovation is the use of geopolymer concrete as an alternative to ordinary Portland cement (OPC), which is estimated to contribute more than five per cent of the world's total greenhouse gas emissions. Geopolymer concrete can offer an alternative that provides a use for large volumes of waste byproduct streams from the minerals industry and produces far fewer greenhouse emissions than OPC-based concrete. A number of demonstration projects are currently under development at CSRP that will showcase road building, concrete structures, mine backfill and precast concrete products such as drainage pipes.

Finally, carbon is required as a reductant and alloy in metal production, such as in steel-making. Looking to biomass as a low greenhouse gas carbon source is a focus of several CSRP projects. It is important to identify good matches between carbon sources and the uses of carbon. One such example is a study examining 'salt into steel': Mallee trees are grown in high-salinity areas to reduce surface salt water penetration and carbon dioxide in the atmosphere; at the same time the trees provide a source of carbon that can be used for the production of charcoal, which in turn is used in the steel industry.

Australia can enhance its sustainable development and play to its strengths by looking for opportunities to get more out of what we already process – and doing so with less energy and less water.

*Stevan Green: "By improving the eco-efficiency of processes in the resources sector we improve our ability to deliver competitively priced goods."*



It has been estimated by CSIRO that Australia uses about 14 per cent of its electricity to crush ore – and that much of this energy is wasted.

## Playful military

With the growing success of online games in attracting potential candidates, **Defence Force Recruiting** (DFR) is launching a dedicated games site, 'Defence Jobs Games'.

"Our games have proven remarkably successful in attracting people to look at a career in the Defence Force," says DFR's director-general **Brigadier Simon Gould**. "So we've built the site to act as a portal for the expanding suite of games we've produced."

"Our games have proven remarkably successful in attracting people to look at a career in the Defence Force."

The new site pulls together a range of games, including Extreme Battleships, Supreme Air Combat and a new army game, and will offer potential candidates as much of an experience as they want, without demanding a great investment of time. Users can also build avatars of themselves, to add a personalised touch to the experience.

"Putting all the games on the one site will also offer the user the ability to play a range of online games with others while earning points, awards and advancing through the ranks of the Navy, Army and Air Force."

► **More information:** [www.defencejobs.gov.au/games](http://www.defencejobs.gov.au/games)

## Electronic voting

Blind and vision-impaired people will be able to cast a secret and independent vote at the 2007 Federal Election, in the first federal trial of electronically assisted voting.

"Electronic voting will be available for two weeks in the lead-up to, and on election day, in 29 electorates," says Special Minister of State **Gary Nairn**. "The locations were selected by the **Australian Electoral Commission** after a careful process of consultation with relevant peak bodies and service organisations around Australia and an examination of potential locations."

The AEC will be demonstrating the electronic voting machines at each location before the election for people with vision impairment and local support groups. The electronic voting machines will not be available to people who are sighted.

Electors who are blind or vision impaired also have the option of casting an assisted vote at a polling place on election day, an early vote at a pre-poll voting centre, or voting by post.

► **More information:** [www.smos.gov.au/media/2007/mr\\_182007.html](http://www.smos.gov.au/media/2007/mr_182007.html)

## Mobile bill shock

A **Deakin University** academic has called for more research and action on the "very real issue" of teen mobile phone use and excessive mobile phone bills. **Dr Nina Weerakoddy**, from Deakin's Faculty of Arts examined the issues of how children in Australia get their phones, who pays for them and the problems faced by teenagers trying to pay their bills.

"Australia has one of the highest rates of ownership among children under 18," she says. "In 2005, 80,000 five to nine-year-olds owned mobile phones."

Dr Weerakoddy says the most problematic issue is that of unexpectedly high mobile phone bills. Previous research has shown that in extreme cases (for about 10% of users) these can be up to \$5000. "Parents end up paying, or teens themselves pay with a loan from a parent or other adult, which results in anxiety, depression and other problems," she says.

Other factors that cause mobile cost blowouts are inflexible and hard-to-understand contracts, confusing and aggressive marketing strategies aimed at teenagers, inadequate information provided to prospective subscribers, and a lack of education about the potential pitfalls of mobile phone use and expenditure.

► **More information:** [www.deakin.edu.au/news/media.php](http://www.deakin.edu.au/news/media.php)

## Offline polities

Australian politicians are overlooking technology as a key tool in the race to this year's Federal Election, according to the **Australian Information Industry Association** (AIIA).

"Our politicians are fighting for this election with one hand tied behind their backs," says AIIA's chief executive officer **Sheryle Moon**. "If we compare our country's leaders with their peers in the US, they really are dragging the chain. The American campaign has been dubbed 'The YouTube election'. We have the Clintons posting a Sopranos-style satire and Barack Obama TV on YouTube grabbing international headlines, but until this week the best Australia has to offer is a few very tame blogs."

"We reviewed the online presence of some of the key players in the Australian election race and found they're just not using common technologies to connect with their electorates." AIIA searched for the online presence of several politicians and used a rating system to indicate how tech-savvy they are, posting the results on their website.

► **More information:** [www.aiaa.com.au/i-cms.isp?page=2491](http://www.aiaa.com.au/i-cms.isp?page=2491)

## Citizencentricity

The **CSIRO ICT Centre** and the **Australian Government Information Management Office** (AGIMO) are collaborating to explore advanced delivery models for citizen-centric online services. Director of the CSIRO ICT Centre **Dr Alex Zelinsky** says that current service delivery models do not take into account the tasks a person is trying to accomplish or the context in which they are working.

"To deliver a service that meets a citizen's needs and expectations, the system has to capture and adapt to these important inputs, and that is what CSIRO will contribute to the Australian Government Online Service Point," Dr Zelinsky says. "Our expertise in search, information delivery, privacy and networked web services will allow us to make significant contributions to this complex project to imagine and build the future services that Australians will use to interact with their government."

"Australians are increasingly turning to online transactional services to conduct their day-to-day affairs. CSIRO's goal is to contribute to developing e-services for government that are easy to use, meet the real needs of people and ensure security and privacy."

► **More information:** [www.smos.gov.au/media/2007/mr\\_172007.html](http://www.smos.gov.au/media/2007/mr_172007.html)

By Professor Matt Warren  
HEAD, SCHOOL OF INFORMATION SYSTEMS, FACULTY OF BUSINESS AND LAW, DEAKIN UNIVERSITY



## Cyber war: time to get ready

The computer attack aimed recently at Estonia, possibly by Russian sources, is a sign that cyber warfare is now becoming a real problem internationally. A political issue – the relocation of a Soviet World War II memorial – has resulted in a physical cyber war. This is a disturbing trend, as we have seen the progression from a hypothetical situation to a new reality.

Cyber warfare is not usually defined as being a clear military attack, but a country's infrastructure and online resources can be attacked and economic damage caused: in essence, a low-level form of economic warfare is being conducted.

Australia needs to increase funding and expand initiatives aimed at protecting critical infrastructure if it is to avoid an Estonian-style cyber war. We can expect to see an increase in cyber warfare attacks when political disagreements between countries occur, as a form of harassment that falls short of actual conflict.

The Estonian attack took the form of vast numbers of 'botnets' used to undertake a DDOS (distributed denial of service) attack. Botnets, or groups of computers infected with malicious software, are remotely used to launch such attacks. A DDOS attack involves sending forged requests to a computer

system that will reply to the requests, with the intention of slowing or causing a system to crash through the sheer number of requests and volume of data. The DDOS attack was also augmented by a series of hacker attacks attempting to deface key Estonian websites. The overall aim of the attacks was to slow these sites down so that they ceased to function or crashed.

Among the websites affected by the DDOS attacks were those of the Estonian Parliament and Presidency, key Estonian Government departments, all political parties and leading Estonian banking and media organisations. The Estonian government estimated that over a million computers were involved in the cyber warfare attacks and the cost of damage inflicted will run into tens of millions of euros.

A feature of cyber warfare is that it can be launched by a country, sub-state group, or even an individual. A worry for Australia is that whenever we have a political disagreement with another country or group, the result could be a cyber attack against our extensive online infrastructure.

Australia needs to prepare for this future risk by expanding our critical infrastructure protection and increasing funding for cyber defence. We would not want a repetition of the Estonian situation within our own cyber borders.

*Professor Matt Warren: "We can expect to see an increase in cyber warfare attacks when political disagreements between countries occur."*

## Cancer cluster

The **University of NSW (UNSW)** is to build a major new cancer research facility. The \$100 million **Lowy Cancer Research Centre** will be one of the largest in the southern hemisphere, housing up to 400 cancer researchers from UNSW and the **Children's Cancer Institute Australia**, and will be Australia's only fully integrated childhood and adult cancer research centre. Prominent businessman and philanthropist **Frank Lowy** and family are donating \$10 million towards the new building, which is expected to be completed in late 2009. It will be the first centre in Australia with a dedicated cancer bioinformatics and data management facility to link research activities in the centre with cancer registries, clinical trials centres and overseas networks.

► **More information:** Judy Brookman 02 9385 3249, 0421 061 251

## Clean sweep

WA's first common-user-access research and commercialisation clean-room laboratory has opened at **Murdoch University**. The Good Manufacturing Practice pilot facility will give the biotechnology industry access to clean rooms to conduct research, clinical trials and commercialisation activities. The facility was developed by WA biotech company **OrthoCell**, with the support of the **WA Department of Industry and Resources** and the **Murdoch Westscheme Enterprise Partnership** investment fund. OrthoCell will use one of the clean rooms to produce tendon therapies for clinical trial development and the commercialisation of this research licensed from the **University of WA**.

► **More information:** 08 9222 8950

## Talent mine

**Mining Education Australia (MEA)** is a new national facility established by the **University of NSW, Curtin and Queensland Universities** to boost the supply of mining graduates for Australia's booming mining sector. Established with financial support from the **Minerals Council of Australia** and the **Australian Government**, MEA offers a common national curriculum to third and fourth-year mining students. MEA will also establish an 'Associate' program with other universities, enabling first and second-year students to transfer to MEA in their third year. Executive director of MEA is **Professor Bruce Hebblewhite**, head of the UNSW's School of Mining Engineering.

► **More information:** [www.unsw.edu.au](http://www.unsw.edu.au)

## Wet test

The **University of the Sunshine Coast (USC)** and **EcoNova Pty Ltd** have signed an agreement to establish a regional water-testing program, develop a business partnership to service industry and governments, and promote teaching and research into water conservation and quality. EcoNova and USC have already launched a pilot testing program in which EcoNova provides guidance in water analysis, and university staff and students conduct a range of water-quality tests. Senior lecturer in environmental chemistry **Dr Neil Tindale** says the pilot program is assessing what is required to provide ongoing water-quality testing for a broad range of markets, including providing testing of potable water plants, domestic and commercial effluent, water

quality in rivers, creeks and waterways, newly constructed sewage treatment system outflows and aerated water-treatment systems.

► **More information:** [www.usc.edu.au](http://www.usc.edu.au)

## Antibody robot

**Monash University** has joined forces with international life sciences supply company **Tecan** to develop a new state-of-the-art monoclonal antibody production system at the university's Clayton campus. The facility will be the largest of its type in the southern hemisphere, and will increase production of monoclonal antibodies from hundreds to potentially 5000 a year. Instalment of the robotic systems will begin in late 2007. The new system, partially funded by the **Victorian Government**, Monash University, the National Collaborative Research Infrastructure Strategy and the **Australian Stem Cell Centre**, is the first major step towards an extensive development program in 2008, which will strengthen Monash as an international centre of excellence for medical research.

► **More information:** Michael Spiegel, 0437 190 162

## Older but wiser

The **University of Newcastle** has launched the **Research Centre for Gender, Health and Ageing**. The centre's activities are built around the Australian Longitudinal Study on Women's Health, the largest study of its kind ever conducted in Australia, which is tracking more than 40,000 women in three age groups over a 20-year period in an effort to explore the factors that influence health. Director of the centre is **Professor Julie Byles**.

► **More information:** Julie Byles, 02 4923 6643

## Robomine

**Rio Tinto** has announced major funding for one of the world's largest civilian robotics research centres, the **Centre for Mine Automation**, to be based at the **University of Sydney**. Led by **Professor Hugh Durrant-Whyte**, the centre will be based at the university's **Australian Centre for Field Robotics**, with the aim of developing and implementing fully autonomous and remotely operated mining processes. The centre will support about 28 full-time staff and 10 research students, with funding of up to \$5 million a year. It is expected to operate for five to 10 years. A technical management group including representatives from Rio Tinto and the university will guide strategic direction and monitor research performance.

► **More information:** Jake O'Shaughnessy, 0421 617 861

## Soft centre

**La Trobe University** and **Microsoft** are establishing Australia's first campus-based Microsoft Centre, the first of three to be set up. Supported by the **Victorian Government** and other technology providers, the centre will provide hardware and software and lower infrastructure barriers to ensure students, academics and small to medium companies have access to start-up facilities for research and product development. **Professor Jugdutt (Jack) Singh**, director of La Trobe's **Centre for Technology Infusion**, will manage the new centre.

► **More information:** Jack Singh, 03 9479 5628

## Saving your bacon ...

Trials to evaluate **Imugene's** PRRS vaccine are under way at a special US trial facility. PRRS is one of the most economically damaging pig diseases worldwide, causing losses of up to \$1 billion each year. Initially recognised in the US in 1987, the disease spread to Europe in 1990 and subsequently across most of the rest of the world. Australia is one of three countries considered PRRS-free. There are no effective treatments for PRRS.

This US trial follows successful trials of the vaccine in Australia. Positive results in this trial will assist the company's licensing negotiations with interested major international animal health companies. Results are expected within three months.

"We are hoping the product optimisation will deliver higher levels of protection and possibly permit single-dose administration," says Imugene managing director **Dr Warwick Lamb**. "Our objective is to produce a vaccine administered in the drinking water or by injection."

The vaccine is based on Imugene's Porcine Adenoviral Delivery Vector, which delivers selected genetic material to the pig to stimulate the immune system to protect against the PRRS virus.

► **More information:** [www.imugene.com/investor\\_announcements.asp](http://www.imugene.com/investor_announcements.asp)

## ... and your liver

**Progen Pharmaceuticals Ltd** has announced key features of its phase III clinical trial design for its anti-cancer treatment for liver cancer, PI-88. The design will allow for a potentially faster and more cost-effective trial with a higher likelihood of success than previously reported.

Progen has used key outcomes from its phase II trial and combined input from its phase III clinical advisory board, specialist advisers, and the **US Food and Drug Administration** to design a phase III trial with optimised probability of success. One key design feature of the phase III trial will be the use of disease-free survival (DFS) as a primary endpoint, which reduces the overall cost and timelines associated with the trial.

Recruitment for the phase III double-blind placebo-controlled study will begin later this year in 14 countries in North America, Europe and Asia. A maximum of 800 patients with hepatocellular carcinoma will be recruited to the trial. Progen is finalising the engagement of a leading contract research organisation to support the execution of this clinical trial program.

► **More information:** [www.progen-pharma.com](http://www.progen-pharma.com)

## HIV blocker

**Starpharma Holdings Ltd** has commenced a trial in the US to assess the safety and acceptability of SPL7013 Gel (VivaGel™) in sexually active young women. VivaGel™ is being developed as a vaginal microbicide for the prevention of HIV and genital herpes.

The **Microbicide Trials Network** (MTN) is leading the study, funded by the **US National Institutes of Health** (NIH), in which VivaGel™ will be tested for the first time in sexually active young women to determine its safety, acceptability and ease of use.

Nearly 50% of people infected with HIV/AIDS today are women and most of them become infected through sexual intercourse with male partners. Women under the age of 25 are particularly at risk of infection.

"We have already conducted clinical trials on the safety of

VivaGel™ in sexually inactive women and men, but this is the first time the product will be used in sexually active young women, one of our target populations," says **Dr Jackie Fairley**, CEO of Starpharma.

The study will enrol 40 sexually active, HIV-negative women aged 18 to 24 years. Participants will be randomly assigned to one of two study groups. One group will apply VivaGel™ twice a day for two weeks and the other will apply a placebo gel. The safety of VivaGel™ compared with the placebo will be assessed by laboratory tests and clinical examination of the participants.

Starpharma has also signed an agreement with a leading condom company in relation to the use of VivaGel™ as a condom coating. The agreement includes a program of evaluation and development and also commercialisation rights covering condoms with VivaGel™ coatings within a specified region.

► **More information:** [www.starpharma.com](http://www.starpharma.com)

## Beating MS

Drug discovery company **Bionomics Ltd** has presented the latest preclinical data for its drug development programs in multiple sclerosis (MS) and anxiety, at the 2007 IBRO World Congress of Neuroscience. **Dr Jorgen Mould**, the MS program leader, presented biological data for the most promising compound in the series, including demonstration in a model system that BNC245 is able to effectively suppress the activation and proliferation of specific cells responsible for the degradation of the myelin sheath which surrounds nerves cells and to inhibit MS-like symptoms in an animal model of MS.

BNC210 is a drug candidate for the treatment of anxiety. The project leader, Dr Sue O'Connor, presented the results from the preclinical evaluation of BNC210. The data shows that BNC210 is a very potent anxiolytic compound in rodent models with a large therapeutic window. In addition, the compound is well tolerated and has none of the side effects usually associated with drugs used for the treatment of anxiety, including sedation, loss of memory and impairment of motor co-ordination.

► **More information:** [www.bionomics.com.au](http://www.bionomics.com.au)

## Chance for a breather

**Biota Holdings Ltd** and **MedImmune Inc.** have started a phase Ia clinical trial for their respiratory syncytial virus (RSV) antiviral drug, BTA9881, with the goal of providing a treatment for RSV-infected infants and adults. BTA9881 is a small molecule fusion inhibitor, designed to specifically inhibit the process by which RSV infects a cell. The drug will be used to stop replication of RSV in an infected patient with the aim of clearing the infection or reducing the clinical impact of the disease.

The trial is an oral, single dose escalating, double-blind, placebo-controlled study in 72 healthy adult volunteers. The primary objective of the trial is to assess the safety and tolerability of BTA9881, with a secondary objective to determine its pharmacokinetic properties in adults. Results of the study are expected by the end of 2007.

Developed from original research by Biota, the drug was licensed to MedImmune in 2005. Under the terms of the licensing agreement, MedImmune is to provide Biota with a US\$3 million payment upon the initiation of the trial.

► **More information:** [www.biota.com.au](http://www.biota.com.au)

## Patently obvious

For the first time, the full text of Australian patents can be searched, viewed and printed at no cost, by anyone, thanks to a non-profit international organisation based in Canberra. **CAMBIA** has extended its worldwide patent resource, the Patent Lens ([www.patentlens.net](http://www.patentlens.net)), to include Australian patents. The full text of more than 115,000 Australian-granted patents and more than 580,000 patent applications have been added to the Patent Lens collection of almost seven million worldwide patent documents.

Patents are limited monopolies granted by governments over inventions and, when properly disclosed, can show new options for innovation but can also give warnings of possible pitfalls.

"Until now, the crucial information in Australian patents, such as what was invented and what is claimed, simply has not been searchable" says **CAMBIA** CEO *Richard Jefferson*. "If you don't know what's out there, you can't know whether you can deliver your own inventions and ideas. And you can't build on others' work. Worldwide innovation depends on clarity and transparency of patent rights."

The journal *Nature Biotechnology* agrees. In a recent editorial focusing on **CAMBIA**'s patent work it said: "It is estimated that under-exploitation of technical information ... costs European industry alone \$20 billion each year simply because the inability to access relevant patent information results in duplication of effort or the creation of products that overlap with prior art ... **CAMBIA**'s Patent Lens is a giant leap in the right direction."

Previous publicly available patent searches were limited to 'front page' information, such as titles, patent numbers and inventor's names.

► **More information:** [Richard Jefferson, 0419 499 753](http://www.patentlens.net)

"Until now, the crucial information in Australian patents, such as what was invented and what is claimed, simply has not been searchable."

## Coughin' cheater

**Pharmaxis** has announced that all 362 subjects have completed the efficacy phase of its global phase III clinical trial of Bronchitol in bronchiectasis. The placebo-controlled trial was conducted at 22 hospitals across Australia, New Zealand and the UK, and is designed to evaluate the impact of Bronchitol on mucus clearance, disease symptoms, cough severity, exercise capacity and lung function.

Bronchiectasis is an incurable, degenerative and chronic lung condition affecting more than half a million people in the western world alone. There have been no new therapeutic advances for this patient group in the past 20 years. **Pharmaxis** has the only product in phase III clinical trials for bronchiectasis

anywhere in the world and Bronchitol is expected to be the first targeted medication for this patient group, fulfilling an urgent medical need.

Participants received either Bronchitol or a placebo for three months, at which point the effect of treatment was assessed. An extension of the trial allows participants access to Bronchitol for a total of 12 months to determine the safety of long-term Bronchitol treatment. This second component of the trial is fully recruited and will end in 2008. The outcome from the trial will be available this quarter. A positive outcome from the study will enable **Pharmaxis** to seek approval to market Bronchitol.

► **More information:** [www.pharmaxis.com.au](http://www.pharmaxis.com.au)

## Indexing innovation

**IBM Australia** and the **Melbourne Institute of Applied Economic and Social Research** have released the most comprehensive and nuanced index yet of innovative activity in Australian industry. It is effectively a report card on the state of innovation in Australia over the past 15 years. The downloadable *Innovation Index of Australian Industry (1990-2005)* reflects multiple indices, including, for the first time, more subjective measures of innovation (such as organisational and managerial change), as well as productivity and more traditional intellectual property activity.

► **More information:** [scienceindustry.squarespace.com/sia-news](http://scienceindustry.squarespace.com/sia-news)

## HIV progress

Australian biotechnology company **Avexa** has completed apricitabine's controlled, double-blind phase representing the first 24-week segment of its phase IIB trial. Apricitabine is being developed as a treatment for HIV.

Patients have now progressed into the open-label section of the trial (weeks 24 to 48) and will continue to receive 800mg of apricitabine twice a day as part of their daily treatment regime. The company expects to release results later this quarter.

**Avexa** also reported that apricitabine continues to maintain its tolerability profile. To date, 14 patients have completed the full 48-week trial, and 13 have elected to continue treatment in an extension study. The longest-treated patient has successfully completed more than 18 months of apricitabine therapy.

"This data clearly demonstrates that apricitabine is well tolerated in HIV patients," says **Avexa** CEO *Dr Julian Chick*. "The number of patients requesting to enter the extension study after the 48-week trial to continue treatment with apricitabine is an indicator of the role it will play in the management of HIV."

► **More information:** [www.avexa.com.au](http://www.avexa.com.au)

## Only human

Australian biotech company **Apollo** is producing human proteins for stem-cell research. The human proteins help stem cells develop into specific cell types such as heart, nerve and muscle cells. Human proteins are used in research because they provide greater control over stem-cell growth and also work faster than non-human proteins.

"Stem cells are basic cells that are not fully developed, so getting them to mature into specific cell types and controlling their growth is a tricky business," says **Apollo** CEO *John Priest*.

“A percentage of stem cells will often develop in the wrong way, which is a problem when researchers want a large number of cells to grow in unison.”

A recent study by Apollo showed that two of its human proteins were more than 50% more effective than proteins produced from bacteria in stimulating the growth of haematopoietic (blood-producing) stem cells.

“Proteins from human cells are more likely to be recognised by developing human stem cells than proteins derived from other sources. Human proteins also offer the advantage that they will not cause cross-species contamination when used to culture human adult or embryonic stem cells.”

► **More information:** [www.apollolifesciences.com/NewsMedia.aspx](http://www.apollolifesciences.com/NewsMedia.aspx)

## The nose has it

Australian biotechnology company **Phylogica Ltd** will expand its drug pipeline following positive animal data which showed that a new Phylomer peptide, PYC38, protects acute lung distress. Acute lung distress – a major cause of death in hospital emergency departments – is a condition that can result from injury, or diseases such as acute asthma, pneumonia or SARS, and causes lung swelling and fluid build-up. Symptoms usually develop within 24 to 48 hours of the original injury or illness and are characterised by the development of sudden breathlessness and often result in multi-system organ failure.

In collaboration with the internationally renowned asthma and respiratory researchers at the **Telethon Institute for Child Health Research** in Perth, Phylogica demonstrated that several Phylomer peptides, when delivered intranasally, reduced lung inflammation in animals with acute respiratory distress.

Phylomers are a unique class of small peptide drugs that are being developed to have fewer side-effects, an easier mode of delivery and to be cheaper compared with the larger antibody drugs on the market.

► **More information:** [www.phylogica.com/webbox](http://www.phylogica.com/webbox)

## Hep C trial

A phase IIa clinical trial of **Giaconda Ltd's** Hepaconda® for the treatment of Hepatitis C virus (HCV) genotype 1 refractory to current therapy has commenced. The study is being carried out by the **Centre for Digestive Diseases** and the first patient has been enrolled in the trial and begun treatment.

The standard treatment for chronic HCV has limited efficacy, especially in genotype 1, and poor tolerability, with the result that many patients cease treatment. Genotype 1 HCV has the lowest response rate to standard treatment compared with other genotypes and carries a higher risk of post-treatment relapses and progression to liver cirrhosis and liver cancer.

Hepaconda® is a combination of bezafibrate and chenodeoxycholic acid, both of which have demonstrated activity against HCV as single compounds. Giaconda believes that the combination of bezafibrate, with chenodeoxycholic acid may offer a synergistic advantage over current treatment.

The clinical trial is a two-centre, open-label, prospective study of the efficacy and safety of the combination of chenodeoxycholic acid and bezafibrate in the treatment of subjects diagnosed with HCV genotype 1, who have failed standard therapy (peg-interferon and Ribavirin combination therapy). Subject to

recruitment, it is expected that the trial will finish by the end of 2007 and that results will be available in 2008.

► **More information:** [www.giacondalimited.com](http://www.giacondalimited.com)

## Bowel soother

**Incitive Ltd** has announced positive results from its first animal model of disease using its lead compound, ICV0019, in reducing the clinical symptoms of inflammatory bowel disease (IBD).

Incitive, a publicly-listed life science company, is developing several compounds isolated from bromelain, including ICV0019, as drugs to treat a variety of diseases. Bromelain is an enzyme extract derived from pineapple stems used since the 1950s as an anti-inflammatory agent to treat swelling after trauma or surgery and considered safe by the **US Food and Drug Administration**.

Incitive now plans to conduct further preclinical studies to determine ICV0019's optimum dose regime, dose timing and to identify the most effective route of administration. Further animal studies are planned to determine its clinical utility in diseases such as rheumatoid arthritis and graft versus host disease.

“Although much is known about the crude extract, bromelain, very little is known about its individual components,” says Incitive CEO **Donald Home**. “Since forming and listing a year ago, Incitive have focused on developing methods of analysis, producing recombinant material, scaling up our manufacturing and developing and testing our lead candidates in animal models. We are pleased to confirm that our drug candidates have the clinical potential to treat disease.”

ICV0019 is being developed at the **Queensland Institute of Medical Research**. Incitive has identified and patented several enzymes from bromelain such as ICV0019 and ICV0026 with clinical potential to treat autoimmune and inflammatory diseases.

► **More information:** [www.incitiveltd.com](http://www.incitiveltd.com)

## Raisin' health

**Bionomics Ltd** has successfully placed 28.6 million new ordinary shares at 35¢, raising \$10 million. The private placement to institutional and sophisticated investors in Australia and Europe was well supported. Cornerstone investors in the placement included two specialist biotech funds.

“The placement funds will allow Bionomics to continue to deliver on its milestones for its anti-cancer drug BNC105, which is poised to enter clinical trials later this year, and to undertake IND enabling studies on its anxiety drug candidate, BNC210,” says CEO and managing director **Dr Deborah Rathjen**.

► **More information:** [www.bionomics.com.au](http://www.bionomics.com.au)

## Malaysian move

**IBA Health Ltd** has completed the acquisition of 51% of the joint-venture company established in Malaysia from its partner **Sharikat Permodalan Kebangsaan Berhad** (SPK) for a consideration of \$26.5 million, making it a wholly owned subsidiary of IBA. Under the arrangement, IBA, a health information technology company, will acquire the ongoing health IT business of SPK's subsidiary **Solutions Protocol**. Solutions Protocol will continue to remain responsible for the delivery of its current contract with the **Malaysian Ministry of**

Works on behalf of the **Malaysian Ministry of Health**. The acquisition will provide an annual contribution to earnings of more than \$5 million and strengthens IBA's commitment to South-East Asia.

"This acquisition builds on IBA's established presence in Malaysia, where the company has already based its regional headquarters," says executive chairman of IBA Health **Gary Cohen**. "It also makes us the largest health IT provider in Malaysia."

► **More information:** [www.ibatech.com/html](http://www.ibatech.com/html)

## Hot stock

**Peptech Ltd** has been awarded the 2007 Best Newcomer Award at the sixth annual London Stock Exchange Mediscience Awards. The event is held annually for UK-listed companies in recognition of excellence in the life sciences sector and the winner is selected on its performance in demonstrating exceptional investment and growth qualities.

Since Peptech's **AIM** listing in November last year, the company has made substantial progress, including the divestment of its interest in **Domantis** to **GSK** for \$136.1 million and the initiation of phase I clinical trials with its lead compound, PN0621, for the treatment of rheumatoid arthritis and other inflammatory diseases. Peptech is now focused on becoming a global antibody company and announced its plans to merge with antibody therapeutic company **EvoGenix** in May this year.

► **More information:** [www.peptech.com](http://www.peptech.com)

## MS sense

**Antisense Therapeutics Ltd (ATL)** has enrolled 40 patients in its phase IIa Multiple Sclerosis (MS) trial – half the quota of patients anticipated for the trial. ATL has also recently received approval in Poland to initiate new trial sites. The company is currently enrolling this 80-patient trial to assess the safety and efficacy of ATL1102 in relapsing-remitting MS patients in six countries (Poland, Czech Republic, Bulgaria, Romania, Slovak Republic and Germany).

ATL1102 is a second-generation antisense inhibitor of CD49d, a subunit of VLA-4 (Very Late Antigen-4). In inflammation, white blood cells (leukocytes) move out of the bloodstream into the inflamed tissue, for example, the CNS in MS, and the lung airways in asthma. The inhibition of VLA-4 may prevent white blood cells from entering sites of inflammation, thereby halting progression of the disease. VLA-4 is a clinically validated target in the treatment of MS. Antisense inhibition of VLA-4 has demonstrated positive effects in a number of animal models of inflammatory disease including MS.

► **More information:** [www.antisense.com.au](http://www.antisense.com.au)

## Buried hatchet

**Genetic Technologies Ltd** and US-based **Monsanto** have agreed to resolve recent disagreements, and Monsanto has been granted a licence to GTG's non-coding patents for its work in plants. The parties also agreed to explore further ways in which they may work together. Monsanto paid GTG a fee of US\$5 million as part of the overall transaction.

► **More information:** [www.gtg.com.au](http://www.gtg.com.au)

## Out, damned spot

**Peplin Ltd** has announced positive preliminary results for a clinical trial of its lead product, PEP005, a topical gel treatment for actinic keratosis, commonly known as sunspots. These are common pre-cancerous skin lesions caused by sun exposure, a portion of which develop into skin cancer.

The results demonstrate PEP005 Topical to be a potentially safe and effective new treatment for sunspots. Positive and statistically significant results were achieved with just two to three days of consecutive treatment. As current treatments take up to two or three months of dosing, the potential for PEP005 to work in just days is an exciting advance, particularly as Australia has the highest prevalence of sunspots worldwide.

Peplin will move ahead with the final stages of its clinical trial program, likely phase III trials, in Australia and the US.

► **More information:** **Michael Aldridge**, [michael.aldrige@peplin.com](mailto:michael.aldrige@peplin.com)

## Beating brain decay

**Neuren Pharmaceuticals** has formed a strategic alliance with **Cambridge University**, UK, to conduct research on the molecular mechanisms of its compounds. **Professor Stewart Gilmour**, formerly a consultant to Neuren, has moved to Cambridge and will manage the collaboration. The research will be undertaken by Professor Gilmour and **Professor Andrew Wylie FRS**, from the Mammalian Molecular Genetics Group in Cambridge's Department of Pathology, who is recognised for his research on mechanisms of cell death particularly in brain cells.

The alliance will further Neuren's understanding of the mechanisms involved in the protection of brain cells by its drugs, particularly the preclinical candidates, and may provide important leads to other indications for these compounds. Apoptosis, or cell death, is a key feature of both acute and chronic neurodegenerative disease and a critical target for drug development across a wide range of diseases and conditions.

Cambridge's Department of Pathology has taken the lead in developing molecular and cellular analytical systems (in particular, array-based biological systems) to which Neuren will have access, at no cost. Neuren will also be free to interact with scientists within the various departmental groups at Cambridge.

► **More information:** [www.neurenpharma.com](http://www.neurenpharma.com)

## Relenza injection

**Biota Holdings Ltd** and the **Victorian College of Pharmacy, Monash University**, have executed an agreement under which Biota will pre-pay the royalty rights to the anti-influenza drug Relenza currently held by the college. Relenza is an inhaled drug for the prevention and treatment of influenza, discovered in Australia by Biota-funded scientists. Under the terms of the agreement the Victorian College of Pharmacy receives a cash payment. A further payment will be triggered should future sales of Relenza meet an agreed target value.

"Biota's pre-payment provides the college certainty of income," says Victorian College of Pharmacy Dean, **Professor Bill Charman**. "The college remains extremely proud of its pioneering work which led to the development of Relenza."

► **More information:** [www.biota.com.au](http://www.biota.com.au)

## Hot hub

The **South Australian Government** has provided seed funding of \$250,000 to the **University of Adelaide** to help establish an international research facility on geothermal energy. Mineral Resources Minister **Paul Holloway** says the seed funding will allow the university to host Australia's first research cluster examining all aspects of hot rock enhanced geothermal systems. He says SA represents a hot-rock haven for renewable, emissions-free power: "The state could provide a very significant part of Australia's base-load power needs by 2030."

The geothermal research facility will be based within the university's **Australian School of Petroleum (ASP)** and will be a collaboration with the **Australian Geothermal Energy Group** and the **Department of Primary Industries and Resources, South Australia**.

► **More information: Candace Gibson, 08 8303 3173**

## Smart fellows

The **Queensland Government** has spent over \$2 million this year to support seven Smart State Fellowships, three Queensland Clinical Research Fellowships and internship programs at three Queensland universities. The Smart State Fellowships provide funding for early or mid-career researchers to undertake innovative research in Queensland and the current round provides researchers with \$150,000 each over three years. The Queensland Clinical Research Fellowships provide funding for outstanding clinical researchers to undertake innovative research in Queensland hospitals and health services.

Smart State Fellowship recipients include:

- **Dr Amanda Mabbett** of the **University of Queensland's (UQ's)** School of Molecular and Microbial Sciences for her research into defeating the hospital super-bug, golden staph. Dr Mabbett's work will concentrate on preventing the infection developing in the body and will involve a collaboration by three of Brisbane's major research centres;
- **Dr Line Bay** from **James Cook University** for her research into the adaptation of corals to global climate change;
- **Dr Timothy Dargaville** of **Queensland University of Technology (QUT)** who is developing a new approach to treating burn-related scars using a special polymer bandage;
- **Dr Wayde Martens** of **QUT** for his research into nanotechnology to purify water. Dr Martens' work aims to develop photocatalytic water treatment technologies to break down organic chemicals such as pesticides and herbicides, oil, food chemicals, pharmaceuticals and hormones in water, rendering it safe to drink or reuse;
- **Dr Christelle Capini** from **UQ's Diamantina Institute for Cancer, Immunology and Metabolic Medicine** for developing a new way to treat rheumatoid arthritis using a patient's own autoimmune system;
- **Dr Joanne Voisey** from **QUT's Institute of Health and Biomedical Innovation** for research that could lead to a genetic test and early-intervention program to better treat schizophrenia. Dr Voisey's program combines genetic screening with a demographic history profile to more accurately identify individuals at risk of developing schizophrenia and provide early intervention; and
- **Associate Professor Roslyn Boyd** of **UQ's School of Medicine** for research into the effectiveness of a range of cerebral palsy management practices.

The three Queensland Clinical Research Fellowship recipients are:

- **Professor John Upham, Princess Alexandra Hospital** – \$300,000 for research into new ways to treat asthma and allergies;

- **Dr Kerrod Hallett**, the **Children's Oral Health Service** at the **Royal Brisbane and Women's Hospital** – \$300,000 to trial a unique bacterial test and mouth rinse to prevent childhood tooth decay; and
- **Dr Robert Henderson, Royal Brisbane and Women's Hospital** – \$150,000 for research into the diagnosis and treatment of motor neurone disease.

The government is also providing the **Australian Catholic University, James Cook University** and the **University of Southern Queensland** with \$116,664 each under the government's Smart State University Internship Program, which aims to make university students work-ready in priority areas such as science, technology, commercialisation and engineering.

► **More information: Chris Brown, 07 3224 7349**

## WA medicare

More than 100 projects have received funds from the **Western Australian Government's** medical research fund.

Health Minister **Jim McGinty** says the **Telethon Institute of Child Health Research** project will receive \$103,000 to tailor treatment to individual children.

Premier's Science Award winner **Royal Perth Hospital's Professor Graeme Hankey** received almost \$36,000 from the government's Medical and Health Research Infrastructure Fund to continue his research into stroke prevention.

Research institutions that have received funding this year include:

- the **University of Western Australia** – \$1,103,554;
- **Lions Eye Institute** – \$676,801;
- **WA Institute for Medical Research** – \$658,882;
- **Curtin University of Technology** – \$277,912;
- **Lung Institute** – \$187,609;
- **Women and Infants Research Foundation** – \$120,808;
- **Australian Neuromuscular Research Institute** – \$91,565;
- **Murdoch University** – \$81,950;
- **Sir Charles Gairdner Hospital** – \$63,318; and
- **Edith Cowan University** – \$58,242.

► **More information: 08 9422 3000**

## Reef grief

South Australia's reef ecosystems close to urban developments have become degraded as a result of a range of impacts connected with human activity, such as coastal developments, discharges of wastewater and stormwater and fishing.

These are the results of a new survey of reefs along the Adelaide metropolitan coastline, Fleurieu and Yorke Peninsulas. The report is part of a collaborative initiative being led by the **South Australian Research and Development Institute (SARDI)** from its **Aquatic Sciences Centre** at West Beach, in association with other stakeholders and agencies with responsibility for management of aquatic habitats.

"It is concerning that significant degradation has been observed on reefs south of Adelaide, the worst affected being Noarlunga and Horseshoe Reefs," says principal investigator **Dr David Turner**. "The changes probably reflect environmental impacts associated with increasing urbanisation of the southern suburbs."

It is the first time that many of the regional reefs on the southern Fleurieu and Yorke Peninsulas have been surveyed and this will provide a valuable reference on which to gauge future changes.

► **More information: Dr David Turner, 0428 104 834**

## Wet call

Queensland climate scientists are working to provide better estimates of when North Queensland's wet season will begin and finish each year and how frequent and heavy rainfall will be. Premier **Peter Beattie** says a team of seven scientists from the new **Queensland Climate Change Centre of Excellence** are working on a two-year, \$1.2 million research project examining North Queensland's dominant weather pattern.

"Industries such as grazing, agriculture, tourism, infrastructure development and health will all benefit from more accurate predictions about the wet," Mr Beattie says. "The study also has international implications and once completed, the results could be adapted to other tropical areas of the Asia-Pacific region." The study will also look at how the wet season is likely to be affected by climate change."

The project is a joint initiative between the centre and the **Bureau of Meteorology**. It is partly funded by **Land and Water Australia** under its Managing Climate Variability Program.

► **More information: Queensland Premier's office, 07 3224 4500**

## Arboretum R&D

The **ACT Government** and the **Australian National University** (ANU) are negotiating a Memorandum of Understanding that will see the university conduct research and other educational activities at the **Canberra International Arboretum and Gardens**. An area of up to six hectares could be set aside for an ANU research facility on the Arboretum site. The Arboretum project is restoring an area of former pine forest destroyed by fire in 2001.

► **More information: Penelope Layland, 02 6205 9777, 0438 289 714**

## Green warning

Biodiversity, inland waterways and the effects of climate change top the list in the latest report on the state of Western Australia's environment. Released by the **WA Environmental Protection Authority** (EPA), *State of the environment (SoE) report: Western Australia 2007* summarises the condition of WA's environment, assesses the major environmental issues or problems, and makes recommendations for addressing these.

"The report shows that the biggest environmental challenges for WA are preventing the loss of biodiversity, halting the degradation of inland waters (such as wetlands and waterways), and addressing global pressures such as climate change and the growing consumption of natural resources," says **Dr Andrea Hinwood**, deputy EPA chairman.

Priority issues from the 34 identified in the report include: climate change, consumption of natural resources, greenhouse gas emissions, phytophthora dieback, introduced animals, weeds, land salinisation, and salinisation of inland waters.

The WA EPA has taken more than three and a half years to develop the report due to extensive community consultation, major stakeholder involvement and widespread information collection.

► **More information: [www.soe.wa.gov.au](http://www.soe.wa.gov.au)**

## Liver sliver

The **Queensland Government** is investing \$100,000 to support Australia's first national organisation dedicated to liver research and education. Health Minister **Stephen Robertson** says the one-off grant

will provide vital seed funding for the newly established, Brisbane-based **Australian Liver Foundation**.

The foundation is chaired by former Queensland Premier **Mike Ahern** and is the first national body dedicated to raising funds for liver research and education. The foundation will distribute funds to Australian research institutions, universities, hospitals and other appropriate organisations.

Mr Ahern says a priority for the foundation in the next few years will be to develop an Australian database on the nature, extent and impact of liver diseases, and on programs and methods of prevention, diagnosis and treatment. The foundation will work closely with the **Queensland Institute of Medical Research**, the **Royal Brisbane and Women's Hospital**, and the **Princess Alexandra Hospital**.

► **More information: Paul Lynch, 07 3234 1190**

## Colonial generosity

Victoria's Minister for Innovation **John Brumby** has announced one of Australia's largest ever corporate philanthropic donations to medical research. He says the **Colonial Foundation Trust** will donate \$17 million over the next five years to support the work of youth mental health research organisation, the **ORYGEN Research Centre** (ORC).

"The ORC conducts research into the understanding, treatment and care of young Australians with early psychosis and bipolar disorder, mood, anxiety and personality disorders, and substance abuse disorders," Mr Brumby says. "Combined with a \$13 million research grant in 2002, this \$17 million grant represents one of Australia's largest ever corporate philanthropic donations to medical research. It will help the ORC to continue its internationally recognised work to improve the treatment and care of young Australians facing potentially serious mental disorders."

The Colonial Foundation Trust was created in 1997 as part of the demutualisation of Colonial Mutual.

► **More information: [www.dpc.vic.gov.au](http://www.dpc.vic.gov.au)**

## GE or not GE?

The **NSW Government** has appointed an independent panel to review its moratorium on commercial planting of genetically modified (GM) food crops, which expires in March 2008. The government is keen to canvass all options and stakeholder opinions before making a decision on the future of GM crops in NSW. The panel will be chaired by former Nationals Minister for Agriculture **Ian Armstrong** and supported by agricultural scientist and lawyer **Kathryn Adams** and agricultural scientist **Professor Timothy Reeves**.

The **Tasmanian Government** has called for submissions to its review on the future of the state's GM moratorium, due to expire in late 2009. The Parliamentary Committee will report on the most effective policy to serve Tasmania's future market interests and consider the potential advantages and disadvantages of allowing or not allowing the use of GMOs in primary industries. It will investigate market sensitivities to GM produce, contamination of non-GM seeds and grains with GM material, management of former GM-canola trial sites in Tasmania, use of stockfeed that is GM or derived from GMOs and new developments in gene technology. The committee comprises **Ruth Forrest** MLC, **Kim Booth** MHA, **Greg Hall** MLC, **Lin Thorp** MLC, **Sue Napier** MHA and **David Llewellyn** MHA (chair). Submissions close on 19 October.

► **More information: (NSW) Brett Fifield, 0427 029 511; (Tas) 03 6233 6573**



*Professor Prasad Yarlagadda*



*Professor Paul Greenfield*



*Bill Scales*



*Professor Melissa Little*



*Dr John Stocker*

## Sheil be right

**Professor Margaret Sheil** has been appointed the new chief executive officer of the Australian Research Council. Professor Sheil is currently the Deputy Vice-Chancellor (Research) at the University of Wollongong, a director of the Cooperative Research Centre for Smart Internet Technology, and is a Fellow of the Royal Australian Chemical Institute. She is also a member of the Research Quality Framework Reference Committee, and the immediate past chair of the Australian Vice-Chancellors' Committee Deputy/Pro Vice-Chancellors' (Research) Group.

## Re-Stocker

Former CSIRO chief executive **Dr John Stocker** has made a return to the national science agency, this time in the role of chair of the CSIRO board. He is currently the chairman of Sigma Pharmaceuticals Ltd, was the chief executive of CSIRO from 1990 to 1995, and the Australian Government's Chief Scientist from 1996 to 1999. **Professor Suzanne Cory** and **Dr Terrence Cutler** have been reappointed to the CSIRO board.

## Nuclear energy

**Bill Scales** and **Professor Paul Greenfield** have been appointed members of the Australian Nuclear Science and Technology Organisation (ANSTO) board. Mr Scales is currently Chancellor of Swinburne University of Technology and serves on several boards, including as chairman of the Port of Melbourne Corporation. Professor Greenfield is currently the Senior Deputy Vice-Chancellor of the University of Queensland, and also a director of several companies including UniQuest Pty Ltd, National ICT Australia Ltd and the Australian Institute of Commercialisation.

## Thoughtful Graves

The 'mammal lady', who controversially claimed through her comparative genomics research that the male-determining Y chromosome will become extinct, has been named Australian Thinker of the Year, an award created by the School of Thinking, in partnership with the Melbourne Exhibition and Convention Centre, to recognise the contribution Australian thinkers make globally. This year's winner, **Professor Jenny Graves** of the Australian National University and the University of Melbourne, is renowned for her research into the function and evolution of human genes.

## Brazil back

**Roberta Brazil** has been reappointed chairman of Land and Water Australia for a further two years, until June 2009. As chairman of the Australian Landcare Council, Ms Brazil also provides advice on national issues, strategic directions and policy priorities for natural resource management.

## Synchrogong

**Professor John Boldeman** has been awarded the 2007 ANZAAS Medal. Professor Boldeman, a specialist in nuclear science and engineering, is currently principal scientific adviser to the Victorian Department of Industry, Innovation and Regional Development. He has been involved in developments at ANSTO and established the Australian Synchrotron Research Program.

## Owls of joy

A Queensland University of Technology (QUT) academic has become the first Australian to be recognised by the World Academy of Materials and Manufacturing Engineering. **Professor Prasad Yarlagadda** was made a fellow of the academy and received the honorary Professor Frydenyk Staub Golden Owl Award. Professor Yarlagadda is director of smart systems research at the School of Engineering Systems at QUT.

## Stem cell nucleus

**Professor Melissa Little** is being seconded to the Australian Stem Cell Centre as chief scientific officer until mid-2011. She will head the scientific program, developing strategy, scientific review and management. She will continue to lead a team of researchers at the Institute for Molecular Bioscience, University of Queensland, investigating the potential of stem cells in treating chronic kidney disease.

## Mueller for Majer

Curtin University of Technology's Head of Environmental Biology, **Professor Jonathan Majer**, has been recognised by the Australian and New Zealand Association for the Advancement of Science through the award of the Mueller Medal for 2006 for his pioneering research in entomology. Professor Majer's research is aimed at providing information for improving the conservation of invertebrates and those vertebrates that depend on them, and for the control of pests of arboreal crops in the tropics.

## Sterling work

The University of Melbourne has appointed **Professor Leon Sterling** as its inaugural Director of eResearch. He will work closely with the university's newly formed eScholarship Research Centre, taking responsibility for the development of the university's eResearch strategy and the development of successful consulting and research bids to assist in building the university's capability in e-research.

## RAE fellow

**Professor John Beynon**, Swinburne's Dean of Engineering and Industrial Sciences, has been elected a Fellow of the Royal Academy of Engineering. The academy is Britain's national society for engineering, bringing together the country's most eminent engineers from all disciplines to promote excellence in the science, art and practice of engineering. The fellowship recognises Professor Beynon's important contribution to the teaching of engineering and his world-class research.

## Cosmic

**Professor Brian Schmidt** of the Research School of Astronomy and Astrophysics and his team have been announced winners of the Gruber Prize for Cosmology by the US-based Gruber Foundation, alongside fellow astronomer **Saul Perlmutter** from the University of California, Berkeley. The researchers and their teams found that the expansion of the universe was accelerating, contrary to what astronomers had previously believed. Other Australian members of the team are **Dr Brian Boyle**, director of CSIRO's Australia Telescope National Facility and **Dr Warrick Couch** from Swinburne University.

## Commercial ready

**Dr Roger Aston**, executive chairman of Clinuvel Pharmaceuticals Ltd, has been appointed as a member of the Biological Committee of the Industry Research and Development Board. The Biological Committee assesses Commercial Ready applications, and variations to R&DStart and BIF grants, and makes recommendations for grant funding involving products, processes or services in the health, medical sciences, agriculture, fishing, forestry, environmental and food-processing industries.

## Aeroheads

RMIT University has announced the appointment of **Professor Chris Guy** as the new head and centre director of the Sir Lawrence Wackett Centre for Aerospace Design Technology. Professor Guy's previous positions include Chief of Air Vehicles Division and Chief of Air Operations Division at the Defence Science and Technology Organisation (DSTO). Until recently he was manager of engineering programs at the University of Liverpool. A restructure of the centre has also resulted in the appointment of **Associate Professor Arvind Sinha** as director of aerospace and aviation programs, and **Dr Robin Hill** as director of simulation and modelling programs.

## Grain future

The **Grains Research and Development Corporation** (GRDC) has launched its latest five-year strategic plan focused on helping growers adopt technologies and practices needed to remain globally competitive. The plan identifies the key drivers of change as water availability (especially in the context of climate change), productivity growth, grower terms of trade, grain market dynamics, customer expectations, and farm demographics. In response, the plan sets out a number of performance targets, including:

- a 10% increase in water-use efficiency in certain zones;
- a 10% increase in cropping land with retained stubble; and
- increases in annual yields of 1% for wheat and barley, 1.5% for canola, 2% for pulses, and 1.5% for sorghum as measured in the National Variety Trials (NVT).

“The GRDC’s primary objective in commercialising research outputs is to make new, improved technology and crop varieties available to Australian graingrowers as quickly and as cost-effectively as possible,” says GRDC board chairman *Terry Enright*.

► **More information:** [www.grdc.com.au](http://www.grdc.com.au)

## Unis back agriculture

According to the **Department of Education, Science and Training** (DEST), enrolments in undergraduate agriculture courses have fallen by 30%, from 4456 in 2001 to 3091 in 2005. As a result, DEST is forecasting a 35% shortfall in the number of skilled scientists available to agricultural and food industries in the next five to 10 years.

In response, university leaders have established the **Australian Council of Deans of Agriculture** (ACDA), headed by *Professor Les Copeland* of the **University of Sydney**, in a bid to prevent a skills shortage in rural Australia. The ACDA wants to counter negative perceptions of agriculture as an industry in decline. It plans to develop sector-wide strategies for strengthening student recruitment. Its first move will be to obtain a clearer picture from industry about future workforce needs for agricultural graduates.

► **More information:** [FarmOnline](http://FarmOnline), 19 July 2007

## Eucalypt genome

The eucalypt is about to become only the second tree in the world to have its entire genetic sequence mapped. The tree’s 600 million base genome is being decoded by an international consortium, **EUCAGEN** (the Eucalyptus Genome Network), which involves more than 130 scientists from 18 countries, including Australia. The genus *Eucalyptus* contains more than 700 different species and includes some of the fastest-growing woody plants in the world. Eucalypts are grown on more than 18 million hectares in 90 countries. The gene sequence is expected to boost the potential of using eucalypts as biofuel and as carbon sink plantations.

► **More information:** [Southern Cross University](http://Southern Cross University), 0439 132 095

## Native grasses

Native Australian grasses could provide an environmentally sustainable alternative to traditional food and fodder crops such as wheat and rice, says *Professor Robert Henry*, director of **Southern Cross University’s Centre for Plant Conservation**

**Genetics**. He is leading a new three-year, \$1 million research project, with **Native Seeds Pty Ltd**, that aims to accelerate the domestication of native grass species. Native species are being targeted because of their lower tillage and fertiliser requirements. They are also more tolerant to increased salt, shade, frost and drought. Advances in DNA technology are being applied to accelerate the domestication process.

“We would hope that within three years we will have small to moderate plantings of these native species, which could be used for pasture,” Professor Henry says. “That will be the first impact. The next step of the project will look at the use of these crops for food.”

About 10% of the world’s 10,000 species of grasses are native to Australia, and some of these are closely related to species such as rice and sorghum.

► **More information:** [Brigid Veale](http://Brigid Veale), 02 6659 3006

## Tea-tree oil boom

A nine-year breeding program has resulted in a new variety of tea-tree, which could affect the industry’s competitiveness by increasing production volumes of tea-tree oil. The breeding program forms part of an industry breeding strategy developed by **Ensis** scientist *Dr John Doran*, who says the improved seed gives rise to plants capable of producing 270kg of oil per hectare from paddocks that would otherwise yield 148kg if established with unimproved seed. This greater than 80% gain was made possible by the breeding program’s clonal seed orchard seedlot.

► **More information:** [Dr John Doran](http://Dr John Doran), 02 6281 8319

## Mitigating methane

A project to convert waste coal mine methane to electricity has come to a successful completion, with **Envirogen Pty Ltd** and its associated companies in NSW and Queensland increasing their capacity to generate electricity from waste methane by 20 megawatts. The project received \$13 million under the **Australian Government’s** Greenhouse Gas Abatement Program.

Waste coal mine gas contains substantial amounts of methane, a potent greenhouse gas with global warming potential 21 times greater than CO<sub>2</sub>. In many coal mines, this gas is lost or vented to the atmosphere. Methane from coal mining accounts for 3.4% of all greenhouse gas emissions in Australia. The project is expected to deliver abatement of more than 2.6 million tonnes of greenhouse gas emissions during the Kyoto period to 2012.

► **More information:** [Brad Burke](http://Brad Burke), 02 6277 7640

## Agribiz in China

Representatives from six Australian agribusinesses are to visit China as part of the **Australia–China Agricultural Cooperation Agreement** (ACACA) program. The visits will focus on export opportunities for Australian producers in aquaculture, horticulture, cereal hay, table grapes and wheat flour. The program will also explore ways to improve the economics of short-rotation eucalypt plantations in Australia and China. Each delegation will spend up to two weeks in China, developing their knowledge of the local market and establishing business contacts. The ACACA program is jointly managed and funded by Australia’s **Department of Agriculture, Fisheries and Forestry** (DAFF) and China’s **Ministry of**

**Agriculture** and almost 200 exchange projects have been undertaken since the program was established in 1984. The next funding round in 2009-10 will be advertised in late 2008.

► **More information:** [www.daff.gov.au/acaca](http://www.daff.gov.au/acaca)

## Nuclear funds

The **Australian Nuclear Science and Technology Organisation** (ANSTO) has welcomed the Prime Minister's announcement that \$12.5 million has been earmarked to fund a five-year program focused on future nuclear power technologies. ANSTO's chief executive **Dr Ian Smith** says the program will help develop a core nuclear skills base by funding university staff and postgraduate students to work in specific nuclear-power-related areas, including 10 undergraduate research studentships worth \$5000 per annum commencing in 2009.

► **More information:** **Sharon Kelly, 02 9717 9575**

## Digging deeper

**CSIRO Minerals** has released a report that seeks to map the social landscape of the minerals industry and help inform a socially sustainable future. Report co-author **Dr Fiona Solomon** says that despite an increase in engagement with social issues over the past five years, 'the social' remains the least-understood aspect of sustainable development's 'triple bottom line' of economy, environment and society. The report identified a range of categories of interest including governance and regulation, Indigenous and developer perspectives, community engagement and development, labour relations, and interpretations of sustainable development and social licence to operate.

► **More information:** **Fiona Solomon, 03 9545 8893**

## Rain maker

After a three-year cloud-seeding trial, NSW alpine resorts have called on **Snowy Hydro** and the **NSW Government** to increase the frequency of seeding and the area available for cloud seeding. Winter cloud seeding involves increasing the concentration of ice crystals in clouds using minute amounts of silver iodide as the seeding agent, dispensed from ground-based generators. As the ice crystals grow in size, they form snowflakes. Once the snow melts in spring, additional water becomes available for the generation of renewable electricity, as well as providing additional water for the Murray River System.

► **More information:** **Andrew Ramsey, 0418 555 610**

## Mineral mapping

The application of advanced mineral mapping technologies has resulted in the release of more than 30 exploration maps by the **Queensland Department of Mines and Energy**. **CSIRO's** Minerals Down Under Flagship Next Generation Mineral Mapping project is developing the mapping technologies to empower the exploration industry with mineralogy.

Based on airborne hyperspectral Hymap data and satellite ASTER imagery, the series includes more than 20 mineral composition maps (covering 8250 square kilometres over mineralised structures in the Mount Isa region) and another 10 satellite mineral group maps (covering 150,000 square kilometres

around the greater Mount Isa region). The maps are supported by chemical analyses of samples collected during field validation. The project is part of a broader aim to develop a mineral map of Australia that combines the HyLogging™ of every drill core's mineralogy to deliver a 3D mineral map of the continent.

► **More information:** **Bob Chamberlaine, 07 3327 4469**

## New FSANZ faces

One new and two extended appointments to the board of **Food Standards Australia and New Zealand** (FSANZ) have been announced. New appointee **Dr Pamela Williams** has a broad knowledge of Australian consumer rights and affairs policy. She is honorary secretary and health adviser to the **National Council of Women of Victoria**, chairs the Community Advisory Committee of **Southern Health** and the Steering Committee for Consumer Recruitment, Development and Support at **Southern Integrated Cancer Service**. **Dr Laurence Eyres** and **Associate Professor Peter Williams** have been reappointed for three and four years respectively.

► **More information:** **Carolyn Martin, 02 6277 3756**

## Cloning facility

A tissue culture laboratory capable of cloning and mass producing plants for forestry and agriculture has opened in the town of Walkamin in Queensland's Atherton Tablelands. **Clonal Solutions Australia Pty Ltd** received \$583,000 in funding from the **Australian Government's** Sustainable Regions program towards the \$1.4 million purpose-built facility, enabling it to enter into full-scale commercial mass production of cloned eucalyptus and other commercially viable plant species.

► **More information:** **07 4051 7836**

## Horticulture centre

The **NSW Government** has set aside \$4 million for a new horticulture research centre at Somersby on the Central Coast. The allocation will pay for the first stage of a \$9 million project to transfer 75 staff from Narara, near Gosford, to the Somersby site, which is earmarked to become the **NSW Department of Primary Industries'** premier greenhouse horticulture centre.

► **More information:** **Joanne Finlay, 02 6391 3171**

## Action grant

Grants are being made available by the **Australian Government** to assist rural industries become more sustainable and profitable as part of its Agriculture – Advancing Australia package. Action Grants need to be completed within two years and the government will match the investment of successful applicants up to \$1 million.

Minister for Agriculture, Fisheries and Forestry **Peter McGauran** says that the grants will fund projects to strengthen farmers' ability to compete in domestic and international markets: "Agricultural industries at the national and regional levels will have an opportunity under this program to develop industry-driven strategies that respond to the challenges and opportunities of the future." Applications must be submitted by 10 August.

► **More information:** **1800 686 175**

Electrical – Electronic Engineer

**CSIRO Exploration and Mining, Sydney** 5 August

Rangeland Biodiversity Technical Officer

**CSIRO Sustainable Ecosystems, Townsville** 5 August

Senior Coastal Geomorphologist

**Geoscience Australia, Geospatial and Earth Monitoring Division** 5 August

Senior Lecturer/Lecturer

**University of Adelaide, Discipline of Physiology** 6 August

Senior Lecturer/Lecturer

**University of Adelaide, Discipline of Biochemistry** 6 August

Lecturer/Senior Lecturer/Associate Professor

**University of Adelaide, Australian School of Petroleum** 8 August

Professor of Environmental Microbial Genomics

**University of NSW, Faculty of Science** 10 August

Lecturer/Senior Lecturer/Associate Professor – Addictions

**Auckland Institute of Technology, Division of Public Health & Psychosocial Studies** 10 August

Professor of Injury Risk Management

**University of NSW, Faculty of Science** 10 August

Director – Centre for Ageing, Rehabilitation, Exercise and Sport

**Victoria University, Faculty of Arts, Education and Human Development** 10 August

Rock Mechanics Rock Physics Experimentalist

**CSIRO Petroleum Resources, Kensington, WA** 10 August

Senior Professional Clinician (part-time)

**Massey University, School of Health Sciences** 12 August

Dean

**ANU College of Arts and Social Sciences** 13 August

Support Scientist – Computing Ocean Biogeochemical Modelling

**CSIRO Marine and Atmospheric Research, Hobart** 13 August

Research Fellow (fixed-term)

**University of New England, The Australian Centre for Agriculture and Law** 13 August

Lecturer/Senior Lecturer

**University of Canterbury, Health Sciences Centre** 14 August

Lecturer/Senior Lecturer – Experimental Physics

**University of Sydney, School of Physics** 15 August

Lecturer/Senior Lecturer

**University of Adelaide, School of Mechanical Engineering** 15 August

Clifford Craig Postdoctoral Research Fellow/Senior Research Fellow

**University of Tasmania, Faculty of Health Science** 15 August

Lecturer in Molecular Genetics

**Griffith University, Molecular Genetics** 15 August

Lecturer in Biochemistry

**Griffith University, Biochemistry** 15 August

Director – National Centre in HIV Social Research

**University of NSW, Faculty of Arts & Social Sciences** 16 August

Petroleum Geologist – Postdoctoral Fellow

**CSIRO Petroleum Resources, Kensington, WA** 17 August

Vice-Chancellor's Innovation Fellowships 2008

**Macquarie University** 17 August

Senior Lecturer – Mechatronic Engineering

**Edith Cowan University,** 17 August

Senior Lecturer – Forensic Chemistry or Forensic Toxicology

**Griffith University** 17 August

Postdoctoral Research Fellow – Fetal and Neonatal Physiology

**University of Auckland, Liggins Institute** 17 August

Associate Professor/Professor

**Griffith University, Human Anatomy** 17 August

Senior Lecturer/Associate Professor

**Griffith University, Clinical Microbiology** 17 August

Senior Lecturer – Pathology

**University of Sydney, School of Medical Science** 19 August

Associate Professor – Food Microbiology

**Massey University, Institute of Food, Nutrition & Human Health** 19 August

Postdoctoral Fellow/Research Fellow

**ANU College of Arts & Social Sciences** 22 August

Postdoctoral Research Fellow – Reproductive and Developmental Biology

**University of Auckland, Liggins Institute** 24 August

Companion Animal Veterinarian (full-time or job sharing)

**Massey University, Institute of Veterinary, Animal & Biomedical Sciences** 26 August

Lecturer/Senior Lecturer – Ecology

**Massey University, Institute of Natural Resources** 26 August

Lecturer/Senior Lecturer – Equine Medicine

**Massey University, Institute of Veterinary, Animal & Biomedical Sciences** 31 August

Lecturer/Senior Lecturer – Small Animal Surgery

**Massey University, Institute of Veterinary, Animal & Biomedical Sciences** 31 August

Lecturer/Senior Lecturer

**Massey University, School of Arts, Development & Health Education** 31 August

Lectureships/Senior Lectureships – Psychology

**University of Auckland, Department of Psychology** 31 August

Postdoctoral Fellow – Ambient Computing and Intelligence

**Massey University, Institute of Information Sciences & Technology** 31 August

Senior Lecturer – Information Systems

**University of South Australia, School of Computer & Information Science** 31 August

Research Associate Professor

**Macquarie University, Macquarie Centre for Cognitive Science (MACCS), Division of Linguistics and Psychology** 31 August

Dean and Professor

**University of Sydney, Faculty of Agriculture, Food and Natural Resources** 31 August

Postdoctoral Fellow

**CSIRO Petroleum Resources, Clayton, VIC** 31 August

Lecturer in Marine Science

**University of Auckland, Leigh Marine Laboratory** 31 August

Senior Lecturer – Occupational Health and Safety

**Edith Cowan University, Exercise, Biomedical and Health Sciences** 31 August

Postdoctoral Fellow – Biomorphodynamic Modeller

**NIWA, Hamilton, New Zealand** 31 August

Lecturer/Senior Lecturer – Cognitive Psychology

**University of NSW, Faculty of Science** 7 September

Lecturer/Senior Lecturer – Developmental Psychology

**University of NSW, Faculty of Science** 7 September

Lecturer/Senior Lecturer – Social Psychology

**University of NSW, Faculty of Science** 7 September

Lecturer/Senior Lecturer – Neuroscience

**University of NSW, Faculty of Science** 7 September

Professor of Psychology

**University of NSW, Faculty of Science** 7 September

Professor of Pure Mathematics

**University of NSW, Faculty of Science** 7 September

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'The Great Global Warming Swindle'  
ABC TV, 12 JULY 2007

# A climate of disbelief

By Dr Gio Braidotti\*

Science's ability to establish causal links between seemingly unrelated stuff – like apes and humans – is a formidable skill that over time has proven surprisingly effective at annoying people. From a social perspective, scientific theories can behave like thugs, usurping cherished traditions or long-standing vested interests.

With nuclear winter, the hole in the ozone layer, but more importantly, anthropomorphic climate change, scientists have done it again. Indeed, the degree of disenfranchisement inspired by climate theory was made strikingly clear with the airing of Martin Durkin's film, *The Great Global Warming Swindle*.

The film claims that man-made climate change is a lie propagated by scientists to secure ever-fatter research budgets. By cashing in on the scientific method – the very means by which science validates its truth-claims – the film dares to insinuate that when it comes to climate, science is dead.

And more ... into the ensuing vacuum, environmentalists have set up shop, attracting all those Marxists left causeless by the fall of communism. They, in turn, have cloaked the environmental movement in anti-capitalist and anti-human garb thus fuelling interest in an otherwise "loony idea".

In the history of temper tantrums inspired by inconvenient scientific theories, Durkin's has a certain, alarming charm. Certainly, it invites the question of how scientists at the frontline cope whenever science's message inspires a desire to shoot the messenger.

Dr Penny Whetton, stream leader of Climate Impacts and Risks at CSIRO, is adamant that work on climate change is undertaken with no agenda other than to understand and communicate the risks as "best as we can understand them". She adds: "The film makes an accusation that could not be pinned to any scientists. There is no solid basis to it at all."

Beyond that, she is uncomfortable discussing social, economic or political upheavals unleashed by climate research. It is too broad an area and it is outside her range of expertise: "As a climate change scientist, I try to put forward the best assessment from a perspective that is as unbiased as possible. Some groups may use that information in ways that emphasise more extreme elements. But all of that is beyond my expertise."

She does grant, however, that climate change has very big implications for society. In turn, that places a growing demand on science to make its knowledge base relevant to decision-makers, a process that requires explaining the special role scepticism and uncertainty play in the discovery process.

Erwin Jackson, director of research and policy at the Climate Institute, picks up the theme, saying that many political leaders do not understand how science works, especially the way scientists are trained to be sceptics. "There is a role for educating political leaders about science," he says.

Overall, he found the film less entertaining than Harry Potter: "It is another example of not letting facts get in the way of a good story. Airing it allowed people to see just how weak the

arguments against man-made climate change are."

However, both Mr Jackson and Dr Whetton believe that without the additional material aired by the ABC, the film can have an altogether more malign effect: "Without the discussion, the film would have appeared a reasonable documentary with the ability to influence people but they would have been totally misled," says Dr Whetton.

As to science's peculiar social impacts, as far as Mr Jackson is concerned, "ideology" will become involved in any public discourse and the Climate Institute is more interested in moving the debate on: "The task now is to find practical solutions to reduce greenhouse gas emissions. Big business is already investing in finding solutions. Now it is the role of governments to drive solutions to the market."

Over at the Australia Institute, deputy director Andrew Macintosh seems far more at ease analysing science in its broader social context.

"I have to admit that Martin Durkin is a beguiling filmmaker but the film is a piece of propaganda," he says. "Claims that man-made climate change is just a big conspiracy can appeal to people.

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... if the response to the theory of evolution is anything to go by, we may yet have to endure a long, drawn-out period of science-bashing.

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If the science is correct, the ramifications pose a threat to the way we live our lives. It involves massive changes. Denial is the easy – but unthinking – way out."

He adds that for the better part of a decade, the Australian Government has engaged in precisely that kind of mindless denial. So too industry: "During the ABC broadcast, a representative from the coal industry was at pains to appear respectful and serious about dealing with climate change. But the coal industry too was pretending climate change was not happening, well past the point that the science was saying otherwise."

If Mr Macintosh is right, climate research is upsetting precisely that sector of society with the greatest means to mitigate the crisis – capitalists that can drive market-based solutions: "Realistically, dealing with climate change means putting our faith in technological innovation and markets to find ways of living affluent lives in sustainable ways."

Notably, it is precisely this sector that has the most to lose by stalling on climate and clinging to the idea that money can motivate the scientific community to lie. Given what is at stake, some industries, like coal, have already switched sides. But if the response to the theory of evolution is anything to go by, we may yet have to endure a long, drawn-out period of science-bashing.

\* Gio Braidotti, a PhD in molecular genetics, is the Melbourne editor of R&D Review.

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6 to 9 August, Texas

**9th International Conference on Biology and Synchrotron Radiation**  
13 to 17 August, Manchester

**Renal Society of Australasia National Conference 2007**  
15 to 18 August, Perth

**2007 Goldschmidt Conference**  
19 to 24 August, Cologne

**Joint Meeting CSCOP, TSOP & ICCP**  
19 to 25 August, British Columbia

**BioMech 2007**  
20 to 22 August, Honolulu

**2007 Queensland Landcare Conference**  
22 to 25 August, Mackay

**International Conference on Stress**  
23 to 26 August, Budapest, Hungary

**25th International Australasian Winter Conference on Brain Research**  
25 to 29 August, Queenstown, New Zealand

**Discrete Element Methods 07**  
27 to 29 August, Brisbane

**3rd Alexander von Humboldt International Conference on The East Asian Summer**  
27 to 29 August, Beijing

**2nd International Conference on Earth System Modelling**  
27 to 31 August, Hamburg

**BIOSURF VII International Conference**  
29 to 31 August, Zurich

**Precious Metals 07**  
30 to 31 August, Brisbane

**Endocrine Society of Australia (ESA) & Society for Reproductive Biology ASM**  
2 to 5 September, Christchurch

**International Basal Ganglia Society Meeting**  
2 to 6 September, Egmond aan Zee, Netherlands

**10th International Riversymposium & Environmental Flows Conference**  
3 to 6 September, Brisbane

**Trends in Nanotechnology**  
3 to 7 September, San Sebastian, Spain

**International Conference on Mathematical Biology**  
4 to 6 September, Malaysia

**Looking Toward Excellence in Mental Health Care in 2020**  
4 to 7 September, Melbourne

**AddCon World 2007**  
5 to 6 September, Frankfurt

**Mining 2020**  
5 to 6 September, Sydney

**10th International Conference on Environmental Science & Technology**  
5 to 7 September, Kos Island, Greece

**6th International Conference on Ecosystems and Sustainable Development**  
5 to 7 September, Coimbra, Portugal

**Porous Metals & Metallic Foams**  
5 to 7 September, Montreal

**3rd Conference Strategies for Engineered Negligible Senescence**  
6 to 10 September, Cambridge

**2nd International Symposium on Advanced Micro- and Mesoporous Materials**  
6 to 9 September, Varna, Bulgaria

**Excellence in Mining & Exploration 2007**  
9 to 11 September, Sydney

**Exploration 07: Exploration in the New Millennium**

9 to 12 September, Toronto

**NEUROTOX '07**  
9 to 13 September, Portsmouth, UK

**5th International Heavy Minerals Conference**  
9 to 14 September, Hluhluwe, South Africa

**14th International Union of Air Pollution Prevention and Environment Protection Associations (IUAPPA) World Congress**  
9 to 14 September, Brisbane

**BA Festival of Science 2007**  
10 to 14 September, London

**International Conference on Environmental Electromagnetic Compatibility**  
12 to 14 September, The New Forest, UK

**Australasian Society for Ultrasound in Medicine 37th Annual Scientific Meeting**  
13 to 16 September, Cairns

**11th National Conference Sustainable Economic Growth for Regional Australia**  
17 to 19 September, Wollongong

**Polymers in Defence & Aerospace 2007**  
18 to 19 September, Toulouse, France

**Mines and Wines 2007**  
20 to 21 September, Orange

**Australasian Society for Bipolar Disorders Conference 2007**  
20 to 22 September, Sydney

**International Workshop on Cities, Science & Sustainability**  
20 to 22 September, Trieste, Italy

**ComBio2007**  
22 to 26 September, Sydney

**Australian Entomological Society 38th Annual Scientific Conference**  
23 to 26 September, Beechworth, Victoria

**Society for Engineering in Agriculture 2007 National Conference**  
23 to 26 September, Adelaide

**Mutation Detection 2007: HUGO IXth International Symposium on Mutations in the Genome**  
23 to 27 September, Xiamen, China

**8th International Conference & Workshop on Lobster Biology & Management**  
23 to 28 September, Charlottetown, Canada

**2nd International Conference on the Environmental Effects of Nanoparticles & Nanomaterials**  
24 to 25 September, London

**Kalgoorlie 07: Old Ground, New Knowledge**  
25 to 27 September, Kalgoorlie

**51st Annual Meeting of the Australian Mathematical Society**  
25 to 28 September, Melbourne

**Australian Psychological Society Conference**  
25 to 29 September, Brisbane

**Water Loss 2007**  
26 September, Bucharest, Romania

**EuroBio 2007**  
26 to 28 September, Lille, France

**'Evidence in Practice: Leading the way in Aged Care'**  
26 to 28 September, Melbourne

**GREENHOUSE 2007**  
2 to 5 October, Sydney

**2007 Precious Metals Symposium**  
3 to 6 October, Tucson, Arizona

**NanoKAP 2007: 5th International Conference on Nanoimprint Lithography Application in Nanosystems**  
4 to 5 October, Miami Beach

**5th Congress of the International Society for Autonomic Neuroscience**  
5 to 8 October, Kyoto, Japan

**American Institute of Professional Geologists 2007 National Meeting**  
7 to 11 October, Traverse City, Michigan

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8 to 12 October, León, Mexico

**The Global Environment 2007**  
9 to 11 October, London

**6th World Congress on Stress**  
11 to 13 October, Vienna

**Association of Science-Technology Centers Annual Conference 2007**  
13 to 16 October, Los Angeles

**Australian Energy User 2007**  
17 to 18 October, Gold Coast

**19th International Geophysical Conference**  
17 to 22 October, Perth

**2nd Asia-Oceania Ceramic Federation Conference**  
18 to 20 October, Daegu, South Korea

**World Gold 2007**  
22 to 24 October, Cairns

**Chemeca 2007**  
23 to 26 October, Melbourne

**Thermoplastic Elastomers TPE 2007**  
23 to 24 October, Cologne

**12th World Lakes Conference**  
28 October to 2 November, Rajasthan, India

**18th International Symposium on Environmental Biogeochemistry**  
28 to 31 October, Denver

**2nd IWA-ASPIRE Asia-Pacific Regional Group Conference & Exhibition**  
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