

# BUDGET

REVIEW

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*Linking Australian Science,  
Technology and Business*

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# Budget: who gets what?

Reactions to Labor's first budget from the science community have been mixed. Winners are universities, water, climate change and the environment generally – as promised in Labor's election campaign. Unexpected losers are two of the major science agencies, the **Australian Nuclear Science and Technology Organisation (ANSTO)** and **Commonwealth Scientific and Industrial Research Organisation (CSIRO)**, and the Commercial Ready industry grants.

Many hope that the the results of the Innovation Review and other inquiries will prompt more spending in the next budget to boost innovation in Australia.

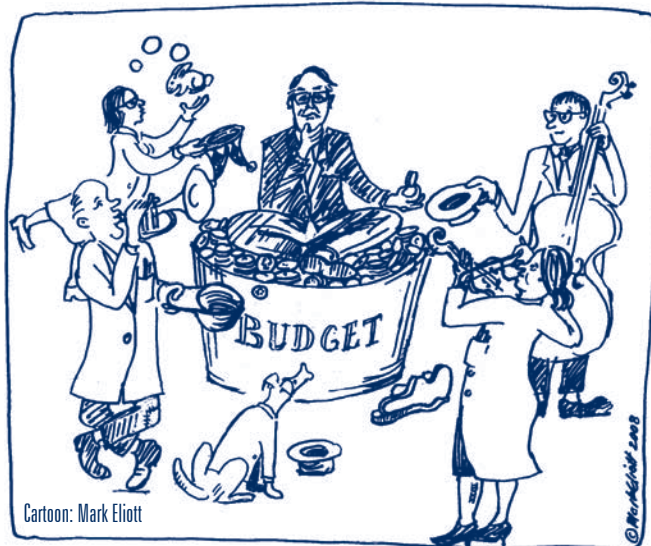
## Innovation

There is funding of \$75 million for the Climate Ready competitive grants program as part of the Clean Business Australia election commitment. Climate Ready will encourage Australian businesses to develop and commercialise products, processes and services that save energy and water, reduce pollution and use waste products in innovative ways.

Grants will be provided on a dollar-for-dollar basis, matching company spending on research and development, proof-of-concept and pre-commercialisation activities to develop solutions to climate change challenges. Funding will commence for the program in July 2008.

A key element of the Government's strategy is the \$500 million Green Car Innovation Fund, which will operate over five years from 2011. Under this initiative, industry will be asked to match the **Australian Government's** contribution on at least a three-to-one dollar basis, generating at least \$2 billion in investment.

The Fund will encourage the Australian automotive industry to develop and manufacture low-emission vehicles so that the challenge



of climate change can be met while maintaining critical automotive industry jobs.

The **Defence Science and Technology Organisation (DSTO)** will receive \$372.5 million in 2008-09. It will also manage \$61 million over the next three years to ensure the Capability and Technology Demonstrator Program achieves better outcomes for defence. The program fosters technology innovation in the Australian defence industry and is one of the key mechanisms through which DSTO engages small to medium sized enterprises.

ANSTO and CSIRO have suffered

cuts amounting to \$47 million over four years (see separate story).

Other Budget disappointments include the dropping of the Commercial Ready (COMET) program and the \$11 million national nanotechnology strategy, and cuts of \$90 million to the Low Emissions Technology Demonstration Fund and \$42 million to the Renewable Remote Power Generation Program.

## Environment, climate change

As promised, the new \$2.2 billion Caring for our Country Program includes a \$200 million rescue package for the Great Barrier Reef, \$180 million to boost the National Reserve System, \$10 million to save the Tasmanian Devil, \$2 million to tackle the cane toad menace and \$90 million for Indigenous rangers.

The Barrier Reef five-year rescue plan includes \$10 million for a Great Barrier Reef Water Quality Research and Development Program – a competitive research funding program to look at the link between land management practices and environmental impacts and develop new water-quality monitoring techniques for nutrients, chemicals and sediments; and \$22 million for a Water Quality Monitoring and Reporting Program to

expand existing monitoring and reporting of water quality in the Reef and fund a coordinated catchment-wide water quality monitoring program.

A new **Department of Climate Change** will design and develop the national emissions trading scheme and will provide support to the Garnaut Review.

## Energy

The Energy Innovation Fund will receive \$150 million over four years to focus on developing clean energy research and development capabilities in Australia. Of this, \$100 million will be allocated for solar thermal and photovoltaic research and development, including the establishment of an **Australian Solar Institute**; and \$50 million will be committed for research into clean energy technologies in areas such as energy efficiency, energy storage and hydrogen transport fuels.

The \$500 million National Clean Coal Fund will be used to establish and support a coordinated national strategy aimed at bringing forward the commercial availability and deployment of technologies that will achieve large scale reductions in greenhouse gas emissions from future coal power generation in Australia. The Initiative will support the research programs, demonstration projects, and the provision of infrastructure and carbon dioxide storage sites that Australia will need to accelerate the development and deployment of these technologies.

The Renewable Energy Fund provides \$500 million over seven years to expand and accelerate the development, commercialisation and deployment of a range of renewable technologies in Australia. Demonstration projects will take technology from the laboratory to the ground, helping to prove a project's viability on a technical and economic basis, attracting further investment to support renewable energy technology.

Funding will commence in the 2008-09 year for the Energy Innovation Fund's solar research component and the National Clean Coal Fund while funding for the Renewable Energy Fund will start in 2009-10.

## Education

As promised, the number of postgraduate scholarships will be doubled by 2012 and \$326 million over four years will create a Future Fellowships scheme for top mid-career researchers. The scheme will offer 1,000 talented Australian and international mid-career researchers four-year fellowships of up to \$140,000 a year. Host organisations will receive up

to an additional \$50,000 a year to support related infrastructure and equipment for research projects.

An extra \$500 million will be provided to universities to help them rebuild their campus infrastructure. The special one-off payment will be paid in 2007-08 and will be for capital expenditure on facilities to support teaching, research and student amenities. Higher Education institutions will receive the funding for the following priority areas:

- information and communications technology;
- laboratories;
- libraries and student study spaces;
- teaching spaces;
- student amenities.

## Agriculture

A \$130 million Australia's Farming Future initiative will be funded over four years with the first allocation in the 2008-09 Budget, which will include:

- \$20 million to help Australia's forestry industries prepare for the future, including the impact of climate change and the skills shortage;
- new measures to fight weeds, including \$15.3 million to establish a national weeds and productivity research program as a replacement for the **Weeds Cooperative Research Centre**;
- a \$35 million Regional Food Producers' Innovation and Productivity Program to encourage the growth of vibrant regional food industries;
- the \$20 million Preparing Australia's Forestry Industry for the Future package which includes \$8 million over three years to carry out more research into the impact of climate change on forest systems and industries. The action plan will identify:
  - priority areas for forestry research;
  - the risks posed by climate change such as the increased frequency and severity of bushfires; and
  - possible impacts of climate change such as faster forest growth from increased carbon, balanced with limited water availability.

There will be \$60 million for the Climate Change Adaptation Partnerships Program to increase understanding of climate change impacts and improve on-farm preparedness and \$15 million for the Climate Change and Productivity Research Program to undertake research on managing emissions and adaptation.

The Government will also invest \$0.3 million in a comprehensive fireweed research project, involving a risk analysis and further testing of biological control agents that manage fireweed to help reduce its impact on grazing industries and biodiversity. Further \$10 million is allocated for innovation and productivity in the seafood industry.

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

## Bitter medicine

**CSIRO** and **ANSTO** have announced their reaction to the cuts in funding they received in the Federal Budget.

Taking inflation into account ANSTO received a reduction in government funding of \$4 million, including the efficiency dividend and removal of funding for the Graduate Recruitment Program. It has announced an organisational restructure to deliver around \$10 million worth of savings. It will lose about 80 staff and will be refocusing its activities on its core functions in both the research and operational areas.

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Along with the increased efficiency dividend, CSIRO will take a total cut of \$63 million over the next four years. As forecast by the previous government, CSIRO has also had a \$3 million funding cut for its Southern Surveyor research vessel. CSIRO has announced that it will cut around 100 jobs and make the following structural changes, mostly affecting agricultural research:

- close Livestock Industry sites at Bakers Hill, Western Australia and Rockhampton, Queensland and move staff to Brisbane and Townsville;
- close the Plant Industry laboratory at Merbein Victoria, scaling back research on horticultural crops and consolidating wine research in Adelaide;
- close the forestry laboratory at Cooroy, Queensland and move forestry bioscience staff at Yarralumla, ACT into other Canberra Divisions;
- merge the Textiles and Fibre Technology Division in Belmont, Victoria, with the Materials Science and Engineering Division in Clayton. Belmont will continue to work on cotton fibre and textiles technology; Clayton will focus on other advanced materials technologies.

## Innovation councils

Consultations with stakeholders have begun as a first step in establishing Industry Innovation Councils. "The Councils will have a key role in transforming Australian Industry, so that we can keep pace with our global competitors," says **Senator Kim Carr**, Minister for Innovation, Industry, Science and Research. The Councils will be established in the second half of 2008, drawing members from leaders in innovation, business, unions and professional organisations, science and research agencies and government. They will act as key advisory bodies to government and as innovation advocates.

► **More information:** **Catriona Jackson, 0417 142 238**

## Research rigour

Australia needs to encourage a new form of research that contributes directly to the formulation of policy in government, according to a new report *Rigour and Relevance* from the **Council for the Humanities, Arts and Social Sciences (CHASS)**. Such research, being strategically driven, problem oriented and cross-disciplinary, would be initiated by the end user rather than the researcher. **Professor Stuart Cunningham**, president of CHASS, says such work aims to solve everyday problems such as transport in our cities, welfare in aboriginal communities, climate change, housing affordability, and healthy lifestyles.

The report calls for a new role for Government departments: to develop a research plan so they can identify the big problems in their portfolio. The capacity of government departments to undertake or commission research, says the report, was heavily run-down in the last decade, and few have the capacity to conduct research.

The report further recommends to assemble cross-disciplinary teams to work on problems. Issues may, for instance, require the combined skills of an historian, an engineer, a lawyer, an economist and a biologist. "Yet all our systems discourage people to work outside their disciplines. It's hard to work across university departments, and it's hard to get funding for projects that span disciplines. We need to break down the silos," says Professor Cunningham.

The report also suggests a new career path for researchers. Generally

## Sustainable Industries

### QSEIF Round 13

### Funding for energy and water innovation

The Queensland Sustainable Energy Innovation Fund (QSEIF) assists Queensland organisations to develop innovative technologies that reduce energy and water consumption, resulting in a reduction of greenhouse gas emissions.

The EPA is seeking applications for the next round of QSEIF funding. The QSEIF funding contribution may be up to \$200,000 per project.

Prospective applicants should call the EPA to discuss their project proposal. Applicants will be required to complete an application form, providing a detailed description of the proposal, demonstrated capacity to manage the project and commercialise the results. Applicants must be able to make a significant cash contribution to the project.

**Draft applications** must be submitted by **4 July 2008**.

Shortlisted applicants will be invited to submit a **final application** by **1 August 2008**.

Information about the QSEIF program and guidelines may be obtained by contacting Dr Martin Gellender on (07) 3224 8606 or Glenn Tipman on (07) 3225 1965 or from the EPA website at [www.epa.qld.gov.au/qseif](http://www.epa.qld.gov.au/qseif)



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researchers are promoted for making discoveries and publishing the results. "Discovery research is vital, and Australia must continue to invest in new ideas," Professor Cunningham says. "But we also need to construct a new alternative career path, for researchers who want to apply knowledge to solving problems."

► **More information:** **Toss Gascoigne 0408 704 442; [www.chass.org.au/papers/PAP20080520JH.php](http://www.chass.org.au/papers/PAP20080520JH.php)**

## Clunies Ross awards

The 2008 ATSE Clunies Ross Awards have gone to:

- **Professor Iven Mareels**, professor of electrical and electronic engineering and Dean of the Melbourne School of Engineering at the **University of Melbourne**, for a revolutionary new approach to reducing water wastage through an IT-based management system for water in irrigation canals, promising to deliver 72 gigalitres of water savings annually in Victoria alone;
- **Dr David Noon**, chief operating officer and general manager – Technology and Sales of **GroundProbe Pty Ltd** in Brisbane, for his continuous on-line system that integrates radar and visual images to remotely measure small movements of rock walls in large open-pit mines, preventing personnel injury and saving lives and equipment damage in open pit mines in Australia and overseas;
- **Professor Colin Sullivan**, professor in medicine at the **University of Sydney** and founder of the Australian company **ResCare** (later

ResMed) who has played a central role since the mid-70s in opening the new field in medicine related to how sleep alters breathing and developed the therapies and technology which has saved countless lives; and

- **Professor Stuart Wenham**, director of the ARC Photovoltaic Centre of Excellence at the **University of NSW** who has been a leader in photovoltaics research since 1981 and has taken silicon cell technology from the laboratory to the factory floor on a large scale, placing Australia at the focal point of renewable energy research and commercialisation.

A special Lifetime Contribution award was presented to **Emeritus Professor Raymond Stalker**, Division of Mechanical Engineering at the **University of Queensland**. As Australia's first professor of space engineering, he has made the search for economical access to space the primary purpose of his career, demonstrating pioneering originality and persistence over more than 50 years.

► **More information: Cathy Reade, 0413 575 934**

## Cancer centre

**Senator Kim Carr**, Minister for Innovation, Industry, Science and Research, has opened the **Peter MacCallum Pfizer Translational Oncology Research Collaborative Hub (TORCH)** at the **Peter MacCallum Cancer Centre** in Melbourne. The TORCH will conduct cancer research, focusing on pre-clinical imaging research and novel targeted anti-cancer therapies. The facility is a joint venture between the Peter MacCallum Cancer Centre and **Pfizer Australia**, which has committed \$15 million to support TORCH over the next three years.

The Peter MacCallum Cancer Centre houses the largest cancer research group in Australia. It combines basic, translational and clinical research with patient care in a specialist cancer hospital.

► **More information: Patrick Pantano, 0417 181 936**

## Action on innovation

The **Australian Academy of Technological Sciences and Engineering (ATSE)** believes there is an urgent need to strengthen Australia's National Innovation System and has called for a 10-year strategic plan to increase Australian innovation. This strategic plan should include investment milestones and performance indicators and its development should engage all key stakeholders. ATSE made the statement in response to the Review of the National Innovation System.

A priority is to develop a strategic national intelligence capability that explores critical emerging issues through horizon scanning, technology roadmaps and foresight – and provides findings that can be understood and acted on. It is also a key to recognise the high costs and risks in later stages of technological innovation and provide assistance measures that will address this need.

ATSE believes that Australian support for innovation is presently too focused on assisting research. New mechanisms are required to support innovation. ATSE also believes that Australia must increase collaboration between private and public sectors, and between research providers and the users of research outcomes. This will require top-down facilitation including additional funding. It will also require the creation of an environment in which bottom-up collaboration increases. Business should be able to readily access public sector research skills, ATSE says.

ATSE also calls for greater cooperation between Commonwealth, State, Territory and local governments in encouraging innovation. It says

the Cooperative Research Centre (CRC) program is valuable and should be retained, as it has achieved excellent outcomes and helped to improve research management in Australia. There is scope for two (or possibly more) categories of CRCs, each with some common characteristics but having different guidelines, depending on their objectives. There should be scope for both CRCs with commercially focused outcomes and CRCs that are primarily directed towards non-commercial objectives. More flexibility is required in the program to accommodate different sizes and funding durations for CRCs.

It calls for a new class of research funding through the establishment of a new mechanism to fund collaborative research for projects that are smaller (and involve shorter time frames) than a CRC, but are bigger than **Australian Research Council (ARC)** Linkage grant funding provides.

ATSE also calls for revised financial incentives for innovation – an increase in the R&D tax concession to 200%, a higher turnover limit for the R&D Tax Offset and other improvements to fiscal incentives in order to increase business expenditure on R&D. Other key aspects of the ATSE response include recommendations to:

- assist firms (especially small and medium-sized enterprises – SMEs) to develop products that government agencies are interested in buying;
- increase the numbers of science, technology, engineering and mathematics (STEM) graduates from Australian universities by mechanisms such as reducing fees in these disciplines;
- improve the teaching of STEM in Australian schools by making teaching more attractive to STEM graduates and providing better teaching resources;
- establish an annual Prime Minister's prize for innovation based on the application of Australian-developed scientific discoveries;
- improve the commercialisation of public sector research results by supporting training and adoption of best practice in knowledge commercialisation;
- include an element in the new university block funding formula which rewards investment in proof-of-concept and innovation/commercialisation activities.

► **More information: Bill Mackey 03 9340 1206, 0418 923 370**

## Innovation vision

Australia may lose its competitive edge in health and medical research with relative funding set to decline and major skills shortages developing, according to **Research Australia**, a national not-for-profit alliance of over 180 member and donor organisations committed to make health and medical research a higher national priority.

Research Australia has lodged a submission to the **Australian Government's** Innovation Review calling for a comprehensive approach to supporting innovation, including a further doubling of funding to the **National Health and Medical Research Council (NHMRC)** from 2010 to a new base of \$1.4 billion by 2014-1015.

The submission finds that the NHMRC funding profile will flatten from 2009-2010 with no real growth in expenditure, causing Australia's international position to slip against countries across Asia and Europe.

The submission also identifies the need for innovation and research policies that ensure the gains from medical research are captured by the community. New investments should be made in improving communication, providing shared infrastructure, developing skills and translating knowledge into better technologies and health care.

► **More information: Rebecca James, 0408 120 241, 03 9650 3131**

# Innovation post budget: a script unchanged

Once heard it said that when a new government comes in, the seats in Parliament change but the script stays the same.

The Rudd Government went to the election as the party of the future – touting an ‘education revolution’; promising to act on climate change; and unwilling to countenance an Australia that “...did not make things anymore”.

Thus, its first Budget should have focused on setting up Australia to meet future challenges with innovative solutions. Instead, it adopted a confused message.

Universities will gain an injection of funding for infrastructure – namely, the \$11 billion Education Investment Fund (EIF) and the \$500 million Renewal Fund. These were a pleasant surprise and should help universities to pare back the sector-wide \$2 billion backlog in deferred maintenance. Allowing research institutions to access the EIF is also a good move.

On the other side of the ledger, the axing of the \$700 million Commercial Ready Program and cuts of more than \$60 million to the CSIRO are ill-timed, with the Expert Panel for the Review of the National Innovation System yet to even deliver its Green Paper.

If the Panel were to praise the effect of Commercial Ready, the Government would be in an awful pickle. The cynic in me suggests that this will not be allowed to happen.

Labor went to the last election talking about the need to reduce red tape and streamline the bewildering array of support for innovation – the position of the Australian Democrats also – but they have now created six new programs. Yet more evidence of a confused commentary.



Photo: Daniel Horne

There are times when the Government needs to tighten the proverbial belt but research and innovation is one of the last areas that should be cut.

There are times when the Government needs to tighten the proverbial belt but research and innovation is one of the last areas that should be cut. It lays the groundwork for future economic, environmental and social wellbeing.

The National Innovation Review may result in fundamental and long-term improvement in our support for innovation. So far though, the script has not changed that much.

## Other Reactions:

### On innovation:

**Professor Kurt Lambeck, *president of Australian Academy of Science:***  
“As promised, the budget focussed on election promises made and as a result we should not have been surprised that the words science and technology were barely mentioned. But some recognition that infrastructure extends beyond ports, roads and rail, that the development of the technologies to underpin the requirements of the future also has been much neglected would have made our wait for the innovation revolution more bearable.”

### On CSIRO cuts and agricultural science:

**John Chapman, *President Australian Society of Horticultural Science:***  
“As food security and rising fuel prices are becoming critical issues, only strategic investment in research and development will provide long-term solutions. Horticulture scientists around Australia are working passionately to provide affordable food and amenity horticulture on behalf of their clients, the growing and marketing supply chain, and ultimately the consumer.

This \$12 billion industry is constantly challenged by issues including access to irrigation, sustainable management of pests and diseases, climate change and access to markets. For Australia’s premier research organisation [CSIRO] to vacate research in horticulture is extremely disappointing. This decision will put further pressure on state government and private providers.

Countries that turn their back on R&D are condemning their economies to the dark ages.”

### On education:

**Professor Stuart Cunningham, *president of the Council for the Humanities, Arts and Social Sciences (CHASS):***

“The Government has honoured and funded its pre-election commitments on fellowships and scholarships, doubling the number of postgraduate scholarships available to higher degree research students by 2012. Should some of this additional funding have been used to increase the value of the PhD scholarship? Analysis by CHASS and CAPA show that in 1992 the scholarship was 44% of average weekly earnings, but today it is 34%. This year the scholarship dropped below the Henderson Poverty Line.”

### On medical research:

**Rebecca James, *chief executive officer of Research Australia:***

“The Federal Government’s \$10 billion fund to support investment in hospitals, health care technology and medical research is an important first step in investing in the future health of Australia. The renewed commitment to a growth in funding for the National Health and Medical Research Council is welcomed. ... the sector is looking to a doubling of funding for the NHMRC from 2010 to maintain Australia’s leading edge in health and medical research.”

► For full comments and other reactions: [www.ARDR.com/Budgetreactions2008.html](http://www.ARDR.com/Budgetreactions2008.html)

## Filed offenders

The national DNA database, used by police and law enforcement agencies to connect offenders with unsolved crimes, has reached a significant milestone, with the system now holding about 400,000 DNA profiles obtained from human biological samples.

The DNA database is administered by **CrimTrac**, the agency responsible for developing information technologies to support law enforcement, and has proven to be a valuable investigative tool. This was demonstrated recently when the DNA database was used to link a Perth man with a sexual assault in Melbourne after DNA found at the crime scene matched a DNA profile that had been taken by Western Australian Police and placed on the national database.

CrimTrac chief executive officer **Ben McDevitt** says this is one of hundreds of matches identified since CrimTrac's National Crime Investigation DNA Database (NCIDD) commenced inter-jurisdictional matching. "CrimTrac's national DNA database holds DNA profiles collected from crime scenes, serious offenders, suspects, objects belonging to missing persons and unknown deceased persons," says Mr McDevitt. "This system allows police and forensic scientists to automatically compare DNA profiles from crime scenes with profiles of convicted offenders throughout Australia, immediately identifying potential suspects where matches occur."

► **More information:** [www.crimtrac.gov.au/files/file/media/060508\\_mr\\_crimtrac\\_dna\\_to\\_fight\\_crime.pdf](http://www.crimtrac.gov.au/files/file/media/060508_mr_crimtrac_dna_to_fight_crime.pdf)

## Strange star

An obese oddball of a star has left astronomers wondering how it could have formed. **Dr David Champion** at CSIRO's Australia Telescope National Facility and his colleagues from 20 other institutions found the compact, rapidly spinning star - a pulsar - with the Arecibo radio telescope in Puerto Rico. The pulsar called J1903+0327 lies 20,000 light-years away spinning at a rate of 465 revolutions per second - the fifth fastest-spinning pulsar known in our Galaxy.

Astronomers believe such super-fast pulsars started life as more common, sedate pulsars that spin only a few times a second, but were later 'reborn' in their present hyperactive state. This re-birthing or recycling could take place as a nearby orbiting companion at a certain point in its

life cycle pours its own matter onto the pulsar. As a result, the pulsar 'spins up' and its orbit around its companion usually becomes almost completely circular.

But J1903+0327 is totally different in that its orbit is elliptical rather than circular.

The astronomers think the pulsar may once have been part of a triple system of stars and was 'spun-up' by its closest companion star, which was either ejected from the system or worn away after it transferred all its mass to the pulsar.

The pulsar, however, now remains in an elongated orbit around the third, more distant member of the original trio.

As well as having a highly eccentric orbit, the pulsar is heavier than normal with a mass of about 1.74 times that of the Sun. "Pulsars like this are why you do these surveys," Dr Champion says. "You don't want to just find hundreds of objects, you want to find the two or three that are plain weird and we've found one."

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

## Electronic ears

CSIRO scientists with the **Minerals Down Under National Research Flagship** have successfully used an electronic listening post to track and control a drill operating more than 300 metres below the Earth's surface.

The research demonstrated, for the first time in Australia, that the use of 'microseismics' technology has significant potential in delivering cost savings and efficiency improvements in the directional drilling process for exploration and mining applications.

The trial was carried out at a coal field test site in Queensland as part of a program to develop and exploit coal seam gas.

Normally in coal seam drilling for gas, a vertical production well in the subsurface is linked to another borehole that has been drilled through the main seam where the gas is generated and channelled.

The challenge is that when using current methods to try to connect a sub-horizontal borehole to the vertical production borehole, the bit often misses the target. CSIRO's solution was to use seismic monitoring to identify the location of the drill bit from the noise it generated while drilling. Minerals Down Under Microseismic Team leader **Dr Xun Luo** says the drill string and bit were navigated sub-horizontally towards the target gas production well situated approximately 1200m from the test drilling site. "We used a multiple geophone array to improve the signal to noise ratio, but even so, the seismic data was still rather noisy and contaminated by periodic electrical noise signals," he says.

Using a sophisticated filtering and cancelling algorithm the researchers could successfully identify the drill bit location and were able to intercept the target borehole at the first attempt.

Drilling is a critical component of both the exploration and mining industries. It contributes approximately 20% of exploration costs and 10% of mining costs.

► **More information:** **Xun Luo, 07 3327 4551, Xun.Luo@csiro.au**

Photo: Bill Saxton, NRAO/AUI/NSF



*Orbital Comparison with the solar system: This diagram shows a comparison of the sizes and strangely elliptical shapes of the orbits of the pulsar J1903+0327 and its possible Sun-like companion star with the orbit of the Earth around the Sun. The sizes of the Sun and the possible companion star have been exaggerated by a factor of about 10, while that of the Earth has been exaggerated by a factor of 1000. The pulsar, with its magnetic field and beams of radiation, is too large by a factor of about 1000,000.*

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## Hydrophobic novelty

CSIRO researchers have discovered a new class of fatty acids – alpha-hydroxy polyacetylenic fatty acids – that could be used as sensors for detecting changes in temperature and mechanical stress loads.

CSIRO Entomology business manager, **Cameron Begley**, says researchers believe that the discovery could open up an entirely new class of chemistry. “Some of these alpha-hydroxy polyacetylenic fatty acids act as indicators for a range of different conditions, such as mechanical stress or heat, and display self-assembling properties. Others display anti-microbial properties,” he says.

“Australian scientists working within the **Crop Biofactories Initiative (CBI)** have also been developing applications for alpha-hydroxy unsaturated fatty acids (AHUs). Alpha-hydroxy fatty acids (AHAs) are well known to industry, but we have found some interesting applications for AHUs. We have introduced them to a range of bio-based condensation polymer systems that have increased film flexibility. Using these AHUs we have also observed strong adhesion between polyolefins and a range of substrates.”

CBI researchers have also identified novel uses for hydroxy fatty acids and how these affect polymer properties. The CBI is a 12-year project which aims to add value to the Australian agricultural and chemical industries by developing technologies to produce novel industrial compounds from genetically modified oilseed crops. This initiative is a joint venture between CSIRO and the Grains Research and Development Corporation.

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

## Epileptic heritage

A mutated gene has been discovered as the key behind epilepsy and mental retardation specific to women, thanks to new research at Adelaide's **Women's & Children's Hospital** and the **University of Adelaide**.

The world-first discovery, published in *Nature Genetics*, shows that although men carry the ‘bad’ gene, only women are affected.

The research has been led by **Dr Leanne Dibbens** and **Associate Professor Jozef Gecz** from the Department of Genetic Medicine, Women's & Children's Hospital, and the Discipline of Paediatrics at the University of Adelaide. The discovery is a result of a major international collaboration involving the **Sanger Institute** in Cambridge (UK), **Wellcome Trust** (UK) and many other collaborators in Melbourne, the United States, Ireland and Israel. Their work has linked, for the first time, a large family of genes known as protocadherins with a condition known as ‘epilepsy and mental retardation limited to females’ (EFMR).

Although a relatively uncommon disorder, the condition is hereditary, with successive generations of women affected. In one of seven families studied in Australia, the United States, Israel and Ireland, which all carried the genetic mutation, 23 women were affected by the disorder across five generations. This discovery will now enable such families to benefit from genetic counselling, including screening for the genetic mutation at pregnancy.

“This is the first time this type of gene has been found to be involved in epilepsy,” Dr Dibbens says. “One of the most important discoveries we've made is that women in families affected by EFMR carry both a ‘good’ gene and a ‘bad’ (mutated) gene, while the men carry only the bad gene. For some reason, the men remain unaffected by the condition,” Dr Dibbens says. Dr Dibbens says the gene involved in this discovery is important for cell-to-cell communication in the brain, and could also hold

the key to better understanding related issues, such as autism and obsessive disorders.

“With 100 related proteins involved in this gene family, this study could lead to many new areas of research, with the need to understand the role and function of each protein,” she says.

That only females are affected makes this a unique disorder among the epilepsies and mental retardations. Men are usually more prone to X-chromosome related disorders as they cannot compensate a faulty gene with a healthy gene on a second chromosome.

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

## Threatened koalas

New research shows increased temperatures and carbon dioxide levels are a threat to our national icon, the koala.

**Professor Ian Hume's** team from the **University of Sydney** has been researching the effects of CO<sub>2</sub> increases and temperature rises on eucalypts. The group has shown in the laboratory that increases in CO<sub>2</sub> affect the level of nutrients and ‘anti-nutrients’ (things that are either toxic or interfere with the digestion of nutrients) in eucalypt leaves. Anti-nutrients in eucalypts are built from carbon and an increase in carbon dioxide levels will favour the production of anti-nutrients over nutrients.

Koalas are highly selective for the species of eucalypts that they eat which differ in the ratios of nutrients to anti-nutrients.

According to Professor Hume, a significant rise in CO<sub>2</sub> concentration in the atmosphere is going to push the ratio of nutrients to anti-nutrients lower by increasing the concentration of carbon-based anti-nutrients. At the rate that CO<sub>2</sub> concentrations are rising, current koala habitats may, in the foreseeable future, become marginal habitats, and force koalas to travel in search of more nutrient-rich species. With habitats fragmented by roads and agriculture this will increase the risk of koalas being hit by vehicles or eaten by predators.

Prof Hume's group has been studying the four marsupials that eat eucalypt foliage with the koala being the most highly specialised. The others are the greater glider, common ringtail possum, and common brushtail possum.

By comparing the responses all four species make to dietary changes, a larger picture of the state of the environmental system can be formed.

► **More information:** **Richard Bray**, 02 6201 9452, 0416 331 821, [richard.bray@science.org.au](mailto:richard.bray@science.org.au); [www.science.org.au/sats2008](http://www.science.org.au/sats2008)

## Good riddance

New research on cane toads in Northern Australia has discovered a way to control the cane toad invasion using parasites and toad communication signals.

**Professor Rick Shine** from the **University of Sydney** says that controlling toads has been difficult as things that kill them will often kill frogs. Studying cane toads in Queensland that lagged behind the invasion front, Professor Shine and his team found that these were infected with a lungworm parasite which slows down adults and, in laboratory tests, kills around 30% of baby toads.

Lungworm parasites infecting toads in Australia were all thought to



Photo: Sydney Wildlife World



Photo: Ben Phillips

originate from Australian frogs, which would have ruled out their use for toad control due to potential frog impacts. DNA sequencing by Professor Shine's team has now shown, however, that the parasite species found in the Queensland toads was introduced from the Amazon and is genetically different to those found in Australian frogs.

"The toads have brought with them a parasite that kills them and that doesn't attack Australian frogs, so this is a phenomenal opportunity for biological control," says Professor Shine.

Professor Shine's team also discovered 'alarm pheromones' which are released into a pond when a toad tadpole is frightened or injured to warn other toad tadpoles to flee the area. The signal stresses the tadpoles so much that in field trials around half of them died before they became adult toads, and those that became adults were half the size they should have been. The pheromones were also found to be different to those of Australian frogs and didn't affect them.

Using the lungworm parasite and the alarm pheromone together would be particularly powerful as the pheromone either kills or produces smaller 'toadlets', and the parasite is more effective at killing these smaller sized toads.

► **More information:** [www.science.org.au/sats2008](http://www.science.org.au/sats2008)

## Future car

**Deakin University** has been selected by **Ford Motor Company** to design a revolutionary concept vehicle to drive the future of the automotive industry. Deakin is one of five universities worldwide, and the only Australian university, selected to take part in the 'Creating a Ford Model T for this Century University Challenge' to design a simple, practical, lightweight, innovatively sustainable vehicle for the non-traditional consumer that would revolutionise the automotive industry and society in a similar way to the original Model T Ford.

The Deakin team, involving staff and students from Deakin's School of Engineering and Information Technology, School of Architecture and Building, and **Centre for Materials and Fibre Innovation**, will have four months and US\$75,000 in funding from **Ford Global Technologies** to design a revolutionary vehicle that redefines the modern day car through innovation and sustainability.

**Dr Bernard Rolfe**, team leader and senior lecturer with Deakin's School of Engineering and Information Technology, says the vehicle must be simple, lightweight, compelling and practical and be able to be sold for under US\$7,000. "Rather than being just an engineering challenge, this task will require innovative ideas drawn from a variety of sources throughout the University."

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

## Undersea treasures

A breathtaking array of marine life on Victoria's seafloor has been discovered off Victoria's Surf Coast by **Deakin University** scientists.

The discovery includes previously unknown 'gardens' of magnificently coloured sponges, seaweed forests and seagrass meadows, and submerged river systems and lagoons that would have supported Aboriginal communities over 10,000 years ago.

The findings are captivating and will redefine the way the Victorian's see their marine environment, according to **Dr Daniel Ierodiaconou**, Deakin researcher and the principal scientist overseeing the project. "For the first time we have an accurate and comprehensive picture of life and the diversity of marine habitats along the Surf Coast, including hotspots

for marine plants and animal communities," says Dr Ierodiaconou adding that the findings also present a picture of what our region looked like prior to sea-level rise that occurred 10,000 to 12,000 years ago.

The research project mapped seafloor habitats from Anglesea to the 12 Apostles - a massive 600,000 hectares of the State's coastal waters. Research was done by sonar technology, towed video cameras and remotely operated vehicles.

The project, a joint initiative of Deakin University, the **Australian Maritime College**, **Fugro Survey P/L** and the **Victorian Partnership for Advanced Computing**, received \$700,000 funding from the **Australian Government** to eventually map all of Victoria's marine environment, which is home to an estimated 12,000 plants and animals, the vast majority of which are unique to the waters of southern Australia.

"The significance of this work is immense," says Dr Ierodiaconou. "For some areas, this is the first information that has been obtained since **Matthews Flinders** took depth readings from his boat, the *Investigator*, in 1803."

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

## Reef skin

The Great Barrier Reef (GBR) will soon be the most monitored reef in the world with the application of a "digital skin" of sensors that could provide the finest resolution picture ever of the region's dynamic systems.

The Minister for Innovation, Industry, Science and Research, **Senator Kim Carr**, has announced the **Great Barrier Reef Ocean Observing System** (GBROOS), a regional ocean observation network covering the eastern Coral Sea and the Great Barrier Reef and incorporating the world's first large scale reef-based Internet Protocol (IP) network.

GBROOS is a multidisciplinary infrastructure project costing about \$16 million. It is led by the **Australian Institute of Marine Science** (AIMS) on behalf of a consortium of agencies including AIMS, **James Cook University** (JCU), **Great Barrier Reef Island Research Stations**, **University of Melbourne** and **CSIRO**. The Great Barrier Reef marine tourism industry is participating in GBROOS by including ship board sensors on some of their vessels.

This system will cover the GBR in a variety of sensors to pick up real-time information on the state of the reef. This is especially crucial as the GBR faces its biggest threat, global climate change.

The network will use a blend of technologies including high frequency coastal radar, experimental over-the-horizon microwave technology developed by James Cook University and **Telstra**'s 3G mobile phone network to transmit data from multiple sensors deployed along the Great Barrier Reef from Cooktown to Gladstone.

The over-the-horizon technology exploits a physical phenomenon found above tropical waters, the 'surface humidity duct', a 10 metre corridor sitting above the water that eliminates the need for microwaves to be sent only to line-of-sight receivers. This makes data gathering from remote locations on the reef easier and faster.

Seven reef-based sensor networks will be installed over the next 18 months. The next phase will provide coverage at island research stations near Townsville and Cooktown and the network will be completed by building networks on offshore reefs where AIMS operates automated weather towers. At each location, the sensors will monitor water temperature, salinity and the intrusion of nutrients from oceanic upwelling.

► **More information:** [www.aims.gov.au/docs/media/media-releases-2008.html](http://www.aims.gov.au/docs/media/media-releases-2008.html)

# Academic freedom, a welcome debate

Tolerance and persecution travel together. History reveals how tolerance shines a bright light on the human spirit but persecution and intolerance reappear with great regularity. Academic freedom is about tolerance – the tolerance of society to allow experts to investigate and to speak and teach in public about issues that are potentially offensive, subversive, or controversial. In many countries citizens have rights to speak and be heard, and also duties not to defame, offend excessively, or encourage sedition. But academic freedom goes beyond these rights and confers special status on experts based in universities. This status is not legislated, and exists by virtue of the consent of the community: it comes with responsibilities as well as freedoms.

The 1940 Statement of Principles on Academic Freedom and Tenure by the American Association of University Professors and the Association of American Colleges and Universities makes it clear that the purpose of academic freedom and tenure is to serve the community, and not to further the interests of academics or universities. Fundamentally, academic freedom has to do with academia (researchers and institutions) contributing to public good. More specifically, the statement maintains that freedom in research is fundamental for the advancement of truth, and that freedom to teach is fundamental to the rights of both teachers and students.

In America, academic tenure as well as the operation of the First Amendment to the United States Constitution provides a protective framework for academic freedom. Australia, however, does not have an equivalent of the First Amendment and employment of academics is governed differently. Different again are employment arrangements that determine the rights of government employees, including researchers, to speak out.

In 2007 the Council of the ANU issued a public statement (Council statement). We had become aware of a growing stridency and personal edginess in the public debate on certain topics and felt that some ANU staff were being criticised and attacked in a way that we hadn't seen for some time. In some important topics organised 'pressure groups', sometimes international in focus, enter into and seek to influence the debate from a particular perspective. This is part of the democratic process, but it is not acceptable for pressure groups to personalise the discussion, or make veiled threats against academics or their universities.

The ANU Council's statement encourages and supports its academic staff to comment publicly within their areas of expertise, and willingly permits academics to report that, while not speaking for the ANU, they are from the ANU. When an ANU academic speaks within their area of expertise, they will have the support of the university, even when their comments attract adverse attention. ANU will back them up and may weigh into the debate in terms of how it is being framed.

Another area in which recent trends tend to diminish academic freedom lies in contractual obligations. Some research sponsors – public or private - may have a legitimate interest in delaying or preventing the publication of research findings, but the occasions on which this is appropriate are really very limited. It is far more common for the sponsor

to benefit by having the academic work subject to open review by the scholarly community and other interested parties. Intellectual property considerations are particularly troublesome in my experience – for example, an industry partner seeking to protect university-generated IP through confidentiality provisions will run directly into academic values regarding open publication. A government that seeks to own or control the IP produced under a research contract unwisely (in my view) opens itself to the charge of censorship or altering the truth.

Another area where academic freedom is under pressure concerns the operation of anti-terrorism regulations. It is not surprising that persons of interest to anti-terrorism authorities will sometimes be conducting research on topics of great interest for the control of terrorism. Under the present antiterrorism laws, the authorities can investigate these people in secrecy, outside the university. However, it seems unwise for a government to inhibit or interfere with research on terrorism, since a greater understanding of the phenomenon is one useful way to deal with it.

When an ANU academic speaks within their area of expertise, they will have the support of the university, even when their comments attract adverse attention.



One of the most difficult situations I have encountered regarding academic freedom concerns the balance between the freedom of an academic to speak openly about a matter (such as a government funding program) in a way that may disadvantage their employing university, and the role of management in defending that university. It seems to me that the appropriate way to play this is for the academic to speak with freedom, and for the university management to speak equally forthrightly. Unfortunately, it is my experience that the management is expected to be muted in its response, leading to a significant problem for the university.

It is exciting to see renewed interest in academic freedom in Australia, stimulated in large measure by the openness of the new Australian government. What is particularly exciting are the intimate connections between traditional issues of academic freedom, and the emerging movement towards open publication and open access to research materials. Issues surrounding academic freedom will become even more interesting over the next decade or so, as institutions and academics publish more of their scholarly work in directly accessible forms in the public domain. ANU is at the forefront of this trend, and I look forward to hearing the community's responses once a greater proportion of academic work is openly and widely available.

## No girls stuff

A national research project has identified reasons why the number of girls taking IT at secondary school is still significantly lower than that of boys.

The research shows that despite enjoying and using computers for email and instant messaging, many girls shun IT at school because they find it uninteresting, unrelated to the IT skills they develop outside of school, and irrelevant to their career aspirations.

Researchers from **Deakin University**, **The University of Western Sydney** and **Charles Sturt University** looked at what students in New South Wales, South Australia and Victoria thought of secondary school IT subjects and the reasons they chose to study or not study IT in the senior years of secondary school.

Many girls and boys still believe that females are not suited to high level technical work in IT, the **Australian Research Council** (ARC) funded study found. According to **Dr Julianne Lynch** from Deakin University, even those students with an interest in technology find the content of school IT subjects boring and irrelevant to their lives and aspirations. "For many students their experiences of using computers in the earlier years of secondary school to perform basic and repetitive tasks puts them off pursuing IT studies in years 11 and 12 and beyond," she says. Enrolments in senior IT subjects have fallen dramatically in recent years, and those of girls, whose interest in this subject area has traditionally been very fragile, have fallen at a greater rate than that of boys.

Dr Lynch says that students fail to see the connection between what they were learning at school in the IT classroom and their use of technology outside school. The proportion of girls participating in year 12 certificate-level IT subjects in 2006 was approximately 30% in NSW, SA and Victoria. Girls made up only 8% of enrolments for what are considered to be the most demanding and most technical IT subjects, for example those focusing on software design and development. Yet, in South Australia girls made up 51% of enrolments for a popular IT subject which focussed on skill development and software applications rather than the theoretical foundations of computer science and information systems.

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

## Mobiles popular

A report released by the **Australian Communications and Media Authority** (ACMA) shows that 90% of household consumers have both a fixed line phone and mobile phone, with nearly half (45%) preferring to use mobiles as their main form of voice communications.

The ACMA research indicates there is an increasing proportion of 'enthusiastic embracers', consumers who have replaced or intend to replace their fixed-line phone service with other forms of voice communications. A quarter of household consumers indicated considering replacing their fixed-line service with another form of communication. Cost was the major decision factor as many indicated they would replace their fixed-line if the price of mobile calls was reduced.

The report also found that despite the availability of converged technologies that offer both voice and data services on one device, such as 3G, VoIP and mobile email, most service replacement relates to fixed-line and mobile phone voice services. Although take-up of these converged technologies is low, consumers are starting to become aware and understand the benefits of these services.

The report is the fifth in ACMA's ongoing Telecommunications Today research program conducted in 2007 examining the take-up and use of telecommunications services in Australia and can be found on ACMA's website.

► **More information:** [www.acma.gov.au/WEB/STANDARD/pc=PC\\_311148](http://www.acma.gov.au/WEB/STANDARD/pc=PC_311148)

## Medicare records online

For the first time ever, Australians can access their Medicare claims history on the **Medicare Australia** website.

The Medicare Claims History Online service is a joint initiative of Medicare Australia and the **Department of Health and Ageing** and provides a simple and convenient way for people to check their Medicare claims. The Minister for Human Services, **Senator Joe Ludwig** says the availability of the new Medicare claims summary online was a significant step forward in the implementation of eHealth services to assist the Australian public. "The online service through Medicare Australia allows people to view, save and print a record of their Medicare claims history statement for the past 12 months from the date of request," says Senator Ludwig. "About 400,000 Australians are already doing business with Medicare Australia over the internet and this online service is sure to see that number rise."

People are able, via secure online access, to view, save or print a record of their Medicare claims history statement for the 12 months preceding the date of request, as well as their Medicare tax statements.

► **More information:** [www.mhs.gov.au/media/media-releases.html](http://www.mhs.gov.au/media/media-releases.html)

## Digital citizens

Appropriate skills and confidence in using new communications and media services are increasingly important for participation in all aspects of Australian society according to research released by the **Australian Communications and Media Authority** (ACMA).

ACMA commissioned the report, titled *Media Literacy - Concepts, Research and Regulatory Issues*, from consultants **Dr Robyn Penman** and **Associate Professor Sue Turnbull** to examine media literacy - the ability to access, understand and create communications in a variety of contexts - in consumer education and protection activities.

Key findings from the research include that media literacy, whether in traditional or convergent media contexts, is important for being engaged in society. Effective use of media and communications services is increasingly a prerequisite to broader citizen engagement including access to essential services. In addition, while the gap between 'haves' and 'have nots' is narrowing in terms of access to information and communications technologies, there is evidence of a digital 'use/literacy' divide associated with socio-economic status, age, workforce participation and household type.

The promotion of media literacy is an important prerequisite to effective regulatory intervention designed to protect consumers, particularly for online and mobile services. An important conclusion of the research is that preparing young people to deal confidently with a range of media in their education, social life or in the workforce should be an increasing focus of media literacy initiatives.

► **More information:** [www.acma.gov.au/WEB/STANDARD/pc=PC\\_311154](http://www.acma.gov.au/WEB/STANDARD/pc=PC_311154)

Dr Mark Matthews  
EXECUTIVE DIRECTOR, FORUM FOR EUROPEAN-AUSTRALIAN SCIENCE AND TECHNOLOGY COOPERATION (FEAST)

# Australia is in the southern hemisphere!

Australia's science and innovation policy has evolved with only a passing reference to a critical fact – we are the major science power in the southern hemisphere. For a long time we have been focused rather too heavily on a science and innovation “cultural cringe”. We aspire to be a player in major global advances (like nanotechnology) in which the relatively small scale of our economy pretty much guarantees that we will be a bit player in the wider drama – albeit a good bit player. We talk about the “tyranny of distance” as a liability in our relationship with the ferment of R&D taking place in the northern hemisphere. In so doing we draw attention to our relative weaknesses as a player in the northern hemisphere science and innovation game.

Rarely do we play our trump card – as we are currently trying to do in relation to the Square Kilometre Array (SKA) radio telescope. Australia stands out in the southern hemisphere as possessing a long-standing and well-regarded critical mass in southern hemisphere-specific public science – in the

a more active and very high-profile ‘stewardship’ role in championing and coordinating research efforts in the southern hemisphere – and on behalf of all nations. This stewardship role has important implications for our strategies toward international engagement in science. It requires us to foster better international coordination of research in the southern hemisphere and to seek a leadership role in dealings with the north. To date, little emphasis has been placed on this aspect of scientific diplomacy.

Finally, we should not forget that the southern hemisphere factor has, and will always play, a key role in Australia's industrial innovation. For example, we have a strong lineage in microprocessor design capability (reflected in new ICT business formation) that has its roots in inter-disciplinary graduate training in 1960/70s radio-astronomy. The prescience demonstrated by CSIRO at that time was that graduate training in radio-astronomy, closely integrated with electronic engineering (astronomers needed to design their own custom

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All this means that Australia is perfectly placed to articulate a more active and very high-profile ‘stewardship’ role in championing and coordinating research efforts in the southern hemisphere – and on behalf of all nations.

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signal processing chips at that time), would generate a generic capability of strong future relevance to industry. This is indeed what happened. There are a raft of (initially Australian) companies started and run by people trained in that inter-disciplinary environment within radio-astronomy. The impetus from radio-astronomy was there because we play this key role in southern hemisphere research.

Thus, when we recognise our locational advantages, and set out to actually exploit these advantages, we really do get somewhere in both science and innovation. Current developments in location-finding satellite-using technologies (known as GNSS) are a major opportunity for Australia in this context – a more geographically aware policy framework will help to stimulate potentially lucrative technological applications developed to help us to manage natural and people-made processes in the vast emptiness of the southern hemisphere (on land, on the ocean, on the ice and in the air).

The incoming government would be wise to articulate a distinctively southern hemisphere “aware” science and innovation policy, particularly with regard to international engagement. Let's not ignore a key natural comparative advantage.

environment, astronomy, oceanography, geology, biology, climate change, meteorology, atmospheric processes and, of course, Antarctic research.

The southern hemisphere plays a major role in global climate change – there is a lot of ocean, atmosphere and ice, and relatively little land. All this needs monitoring and analysing in order to understand the future of the planet as a whole. The northern hemisphere science powers spend significant sums of research money in this domain – but so do we in relative terms.

All this means that Australia is perfectly placed to articulate



## Resourceful centre

The **University of Adelaide** is establishing the **Institute for Mineral and Energy Resources** to provide integrated research, education, professional development and consulting services across all aspects of the mineral and energy resources industries in the Asia-Pacific region. It is seeking alliances that complement its expertise and has agreed a Memorandum of Understanding on research and teaching collaboration with the **University of Nottingham** in the UK.

► **More information:** Peter Dowd 08 8303 4700, [peter.dowd@adelaide.edu.au](mailto:peter.dowd@adelaide.edu.au)

## Hypersonics boost

The **University of Queensland** has joined with the **Defence, Science and Technology Organisation (DSTO)** to further advance Australia's leadership in hypersonics research. UQ has appointed two new professors in hypersonics: **Dr Russell Boyce**, formerly of the **University of New South Wales** at the **Australian Defence Force Academy** has been appointed DSTO chair and professor in Hypersonics while **Associate Professor Michael Smart**, formerly of **NASA**, has been appointed to the new position of chair and professor in Hypersonic Propulsion.

► **More information:** UQ: Jan King 07 3365 1120, 0413 601 248; DSTO: Steve Butler 08 8259 6923, 0418 800 323.

## Linking up

The **Australian National University** and the **University of South Australia** are to collaborate to provide expanded opportunities for students to study and move between the universities and build a framework for working together in research and research training. The first collaborative programs are expected to commence in the 2009 academic year.

The move was welcomed by the Minister for Innovation, Industry, Science and Research, **Senator Kim Carr**, saying that "this is exactly what we are looking for. There are people who say we can't possibly achieve more collaboration and stronger networks in the university sector. This initiative proves them wrong."

► **More information:** Jane O'Dwyer (ANU) 02 6125 5001, 0416 249 231; Michèle Nardelli (UniSA) 08 8302 0966, 0418 823 673

## Cyber defence

Criminal attacks through the web are increasingly the focus of cyber research: A \$5 million project will put researchers from India and Australia in the shoes of internet criminals to better defend both nations' IT networks against attack. The three-year project *Protecting Critical Infrastructure from Denial of Service Attacks: Tools, Technology and Policy* has been granted \$2.25 million from the **Australian Government's** Australia-India Strategic Research Fund and \$3 million from the **Indian Government**.

**Queensland University of Technology** is collaborating with the **Indian Institute of Technology** in Madras and the **Society for Electronic Transaction and Security** on research which will include the construction of test beds to simulate denial-of-service attacks. The research is to preempt cyber terrorism, which for example could bring countries to a standstill by shutting down bank and government websites.

**Eric Hall**, director of QUT's Information Security Institute says that modern servers are vulnerable from attacks that bombard them with massive volumes of traffic. "We are trying to understand the pathology of

these attacks, to detect them and develop appropriate countermeasures," he says. One possible scenario, he explains, could be that "we would attack our Indian collaborators' 'network' to test their defences."

Another development targeting cyber-crime is the **Internet Commerce Security Laboratory (ICSL)**, a joint venture between the **University of Ballarat**, the **Westpac Banking Corporation**, **IBM Australia**, and the **Victorian Government**, which has opened in Ballarat. It will focus initially on two approaches to defeating financial cyber-crime: profiling the activities of criminal groups by using data mining techniques, and developing transformational technologies to ensure that consumers and businesses can use internet commerce with confidence.

Vice-Chancellor **Professor David Battersby** says: "The international growth of cybercrime is disturbing and a significant economic and social burden; thus the ICSL has the potential to make a significant impact."

► **More information:** Rachael Wilson 07 3138 1150, [rachael.wilson@qut.edu.au](mailto:rachael.wilson@qut.edu.au)

## Nurturing talent advised

The **Group of Eight's (Go8)** submission to the **Australian Government's** Review of the National Innovation System includes over 20 recommendations designed to ensure that Australia's research and research training systems are capable of underpinning a dynamic economy and society. It stresses the importance of basic research and business/community/university collaboration to innovation, but suggests that the most important function of universities is the cultivation of talent in an environment that values intellectual curiosity.

Key recommendations are:

- recognising the importance of basic research and full cost funding of research and research training;
- increasing the value and length of Australian Postgraduate Research stipends;
- reviewing international Higher Degree by Research programs to provide a single, high-quality scheme targeted at top quality international students;
- increasing Australia's participation in international research efforts;
- increasing business-university research collaboration, particularly involving SMEs; and
- funding for the proof-of concept gap in the research commercialisation process.

► **More information:** [www.go8.edu.au](http://www.go8.edu.au)

## Hunter focus

Funding of \$2.4 million from the **New South Wales Government** will establish a **Neurobehavioural Genetics Unit** in the Hunter. Researchers from the **University of Newcastle's** Priority Research Centre for Brain and Mental Health Research will collaborate with the **Hunter Medical Research Institute's** Brain and Mental Health and Information Based Medicine research programs. The team hopes to increase understanding of the interaction between susceptibility genes for mental illness and stressful events.

The Hunter Medical Research Institute (HMRI) and Xstrata Coal have formed a partnership to improve the care of people with asthma in the Hunter region of New South Wales and beyond. Xstrata Coal has committed \$300,000 to HMRI for a three year study to investigate a newly recognised type of asthma which accounts for 50% of asthma cases.

► **More information (Mental health):** [www.newcastle.edu.au/news/index.html](http://www.newcastle.edu.au/news/index.html)  
 ► **More information (Asthma research):** Lauren Eyles 02 4921 4841.

## Detecting weapons

**QRSciences Pty Ltd** has entered into a contract with the Australian Customs Service to continue the development of technology for the automatic detection of firearms and firearm components in mail, packages and baggage.

The contract is the second phase development, following on from an initial Advanced Metal Detection System (AMDS) contract and successful trial conducted in the **Melbourne Gateway Facility** in October last year. The funding is for \$1,066,000 with the project extending over a period of 18 months.

The project, funded jointly by the **American Technical Support Working Group** (TSWG) and the Australian Prime Minister and Cabinets Office and **Australian Customs Service**, is the first funded under a new cooperative agreement between the US and Australia, a significant milestone in cooperation between the two nations in the security technology development arena. The new development will extend the performance envelope of the new AMDS machines to tightly integrate them with current x-ray technology. It will also extend system features, including video package tracking hardware provided by sister company Q Video Systems, which is to assist operators in identifying suspect packages. Endorsement of AMDS technology by the Australian and US Government bodies provides a platform for the upcoming global commercial launch of the product via QRSciences distribution division **Q Detection Systems** with target markets including the US, Europe and Asia.

► **More information:** [www.qrsciences.com/index.phtml](http://www.qrsciences.com/index.phtml)

## Healthy claims

Australian listed health information technology company **IBA Health Group Ltd**, has announced that two additional Australian private health insurance funds will connect to its expanding eHealth network for real-time, point-of-care electronic health claiming and payment services.

These latest agreements are with **HBF** and **GMF Health** funds. With more than 900,000 members, HBF is the leading provider of health insurance in Western Australia. Also based in Western Australia, GMF Health provides health insurance to more than 60,000 members across Australia.

IBA now has agreements with 30 health funds, which collectively represent 98% of privately health insured Australians. Privately insured Australians can settle their accounts on the spot with their health insurer and health care professional through connectivity to IBA's HealthPoint claiming service. HealthPoint gives healthcare professionals and their patients a single point solution for EFTPOS, patient claims to health funds and, where appropriate, Medicare claims. Both HBF and GMF are expected to go live with IBA's HealthPoint service from August/September this year with claims for optometrists, dentists, chiropractors, physiotherapists and podiatrists.

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

## Innovators help

**Senator Kim Carr**, Minister for Innovation, Industry, Science and Research, has welcomed an innovative new online database developed by **IP Australia** that makes the breadth of Australian inventions more accessible.

The database, entitled **AusPat**, allows inventors, industry and

researchers to access patent applications lodged and granted in Australia since 1979. Previously those researching Australian patent literature had to work across several unconnected databases. According to Senator Carr, the release of AusPat is a big step forward for the innovation community in Australia. "IP Australia has listened to stakeholders and involved them in every step of the development process, so I'm confident that this new tool will be widely used by inventors and those that provide services to them," Senator Carr says.

AusPat represents the first outcome in an extensive program that will result in a host of other related patent search products, all of which are designed to assist Australian inventors to better understand their particular field of technology.

► **More information:** [minister.industry.gov.au/SenatortheHonKimCarr/Pages/PATENTLYBETTERDATABASEBENEFITSAUSSIEINVENTORS.aspx](http://minister.industry.gov.au/SenatortheHonKimCarr/Pages/PATENTLYBETTERDATABASEBENEFITSAUSSIEINVENTORS.aspx); **AusPat website:** [www.ipaustralia.gov.au/auspat/](http://www.ipaustralia.gov.au/auspat/)

## Neglected ethics

A **Deakin University** business ethics expert has called on the **Australian Government** to legislate that Australian corporations are to comply with their code of ethics.

Commenting his research on how companies comply with their code of ethics, **Associate Professor Greg Wood** at the University's Bowater School says that many companies have an ethical code but few align it with their activities in the market place - a practice which could lead to another Enron or HIH. The survey undertaken by Professor Wood has been run over 10 years and looked at the commitment of Australia's top 500 companies' to business ethics. It has been replicated in Canada, Sweden, the United States, Turkey and Taiwan.

"If you look at legislative change and company behaviour, there is a clear link," Professor Wood says. "For instance companies' support for whistleblowers coincided with changes to the Corporations Act."

According to Professor Wood, business ethics was not a major consideration in Australia until the stockmarket crash of 1987. "This event, and the more recent US Sub Prime crisis has put the spotlight firmly on the ethical practices of a number of high profile companies and individuals," he says. "What came through in the Australian study and was echoed in the overseas research was that while companies had a code of ethics, and these numbers increased year on year, less than half used them in strategic planning. This was despite companies communicating their ethical codes widely and using them for disciplinary purposes."

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

## Purer growth

**Stem Cell Sciences plc** has launched Culticell iSTEM, a novel, serum-free, feeder-free embryonic stem (ES) cell research media product that maintains cells in their basal, pluripotent state.

The development of Culticell iSTEM was based on pioneering work of **Professor Austin Smith**, a scientific founder of SCS, and his team at **The Wellcome Trust Centre for Stem Cell Research, Cambridge University** (UK), which found that self-renewal properties of ES cells are innate and can be maintained by providing a neutralised culture environment, without needing to add external stimulation from cytokines and growth factors. Mouse ES cells, first described more than 26 years ago, have been cultured and derived using combinations of feeder cells, cytokines, growth factors, hormones and serum. These additives, however, may have been shielding the true nature of the ES cells and are not required to maintain pluripotency. In addition, ES cells with greater purity

can be cultured by blocking external signals in the culture environment to pERK, a protein that triggers differentiation, instead of providing an external stimulus to activate the signalling protein STAT3 to block differentiation. SCS's Culticell iSTEM provides all these elements in one product and may, according to chief scientific officer *Dr Tim Alsopp*, allow researchers a purer starting point for embryonic stem cell research.

► **More information:** [www.stemcellsciences.com/pressoffice/releases.html](http://www.stemcellsciences.com/pressoffice/releases.html)

## Topical anesthetic

**Phosphagenics Limited** has announced positive results of a pre-clinical study using TPM, the company's patented drug delivery system, for the targeted delivery of lidocaine (a local anesthetic), demonstrating increased efficacy while restricting systemic exposure. A Phase I human clinical trial is scheduled to commence in the third quarter of 2008.

The study was designed to demonstrate the ability of TPM to deliver lidocaine (5%) to a targeted local site after a single topical application, while restricting systemic exposure. Lidocaine concentrations were measured in the skin at the site of application as well as in the underlying muscle and tissue. The studies were performed in parallel using a leading commercial form of lidocaine, Xylocaine® 5%, to assess the relative efficacy of the TPM/Lidocaine formulation.

The results indicate that TPM has the potential to be used as a targeted, localised delivery system, capable of increased delivery of therapeutic levels of lidocaine to targeted areas while minimising exposure to the rest of the body.

According to *Harry Rosen*, president and chief scientific officer of Phosphagenics, the portfolio of topically delivered products offers a number of commercial advantages compared to transdermal products delivering actives into the bloodstream, including a faster time to market, a relatively easier path to regulatory approval, a cost effective development program, and significant markets and unmet medical needs.

"These unmet needs include dentistry," Mr Rosen says, "as our lidocaine formulation may potentially replace the need to inject patients with lidocaine, as well as possible use as a spray pain reliever for certain types of burns."

► **More information:** [www.phosphagenics.com/main/News\\_Releases.htm](http://www.phosphagenics.com/main/News_Releases.htm)

## Clear vision

Enrolment has begun for a clinical trial to assess the safety and efficacy of **pSivida Ltd's** Medidur™ FA in conjunction with Lucentis® (ranibizumab injection, **Genentech**) in patients with exudative age-related macular degeneration (Wet AMD).

Wet AMD, the leading cause of vision loss in people over 65 in the developed world, is characterised by the formation of leaky new blood vessels originating in the choroid which may haemorrhage and cause accumulation of sub- and intra- retinal fluid. Lucentis is an antibody against vascular endothelial growth factor (VEGF), preventing it from interacting with its receptor and thus from causing additional damage in patients with wet AMD. Lucentis is approved for the treatment of wet AMD and requires repeated injections directly into the eye to maintain efficacy.

Medidur FA is a tiny injectable intravitreal device designed to release fluocinolone acetonide (FA), a corticosteroid, to the retina for up to three years. It is presently in a fully enrolled Phase III clinical trial for the treatment of Diabetic Macular Edema (DME). Corticosteroids inhibit VEGF secretion in addition to their anti-inflammatory action and ability

to suppress leukostasis. The complementary actions of Lucentis and FA warrant a concomitant use of Lucentis and Medidur in patients being treated with Lucentis for wet AMD.

The study is designed to provide preliminary information on the potential of Medidur FA to maintain the efficacy established with Lucentis while reducing the overall number of Lucentis treatments.

The study will compare two doses of Medidur FA (0.2 and 0.5 ug/day) in patients that have been treated with Lucentis for at least six months. The change from baseline in parameters such as visual acuity and retinal thickness will be assessed, and the number of Lucentis injections required pre and post-treatment will be compared.

► **www.psivida.com/news/ASXAnnouncements.asp**

## Enrolment extension

The accrual time for the OVarian TUMor REsponse (OVATURE) clinical study, a Phase III study of the investigational chemosensitising drug, phenoxodiol, has been extended to facilitate complete patient enrolment in the US, Europe, and Australia.

Phenoxodiol is being developed by **Novogen's** subsidiary, the US oncology company **Marshall Edwards, Inc.**, as a novel therapeutic in combination with carboplatin for late-stage chemoresistant ovarian cancers, as well as a monotherapy for prostate and cervical cancers.

The OVATURE study will now enrol 340 patients at 60 – 80 clinical sites throughout the United States, Europe, and Australia. Initially, this study was announced to enrol 470 patients.

The primary outcome of the OVATURE trial is the assessment of the relative time it takes for the ovarian cancer to progress. It is a major multi-centre multinational Phase III clinical trial of orally-administered phenoxodiol in combination with carboplatin in women with advanced ovarian cancer resistant or refractory to platinum-based drugs, to determine its safety and effectiveness when used in combination with carboplatin.

The OVATURE trial is recruiting ovarian cancer patients whose cancer initially responded to chemotherapy, but has since become resistant or refractory to traditional platinum treatments. Patients are being recruited at clinical sites across US, UK, Europe and Australia. Currently, more than 25 sites in the US, 20 sites in Europe/UK, and five sites in Australia are participating in this clinical study.

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

## Clearing the way

**Pharmaxis** has announced that it has agreed with advice from the **US Food and Drug Administration (FDA)** on the design of a pivotal Phase III trial of the company's mucus clearing agent, Bronchitol, in patients with bronchiectasis.

Pharmaxis is developing Bronchitol as a treatment to improve mucus clearance in the lungs of patients with cystic fibrosis, bronchiectasis and chronic obstructive pulmonary diseases. Bronchitol is a patented, inhalable dry powder formulation of mannitol that is administered directly to the lungs through a convenient, breath activated and easy to use hand held device. The US Food and Drug Administration has granted Bronchitol fast track status and it is designated as an orphan drug in the US and Europe.

The trial is a randomised, double-blind investigation of Bronchitol twice daily in approximately 300 adults with bronchiectasis. Participants will be treated for 52 weeks during which they will be assessed for

reduction in frequency of exacerbations and quality of life. The trial will be undertaken in Europe and the USA.

This trial is the second Phase III study to be undertaken with Bronchitol in people with bronchiectasis and follows the completion of a successful trial reported during the third quarter of 2007. These trials are expected to form the basis of a marketing application in both the European Union and the US. Recruitment of volunteers will begin following receipt of the necessary approvals to begin the trial and is expected to be during the third quarter of 2008.

A large Phase III trial expected to form the basis of a marketing approval for Bronchitol in Europe in patients with cystic fibrosis is currently actively recruiting.

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

## Hearty assistance

Ventracor has announced that there have now been more than 250 patient implants of the VentrAssist® Left Ventricular Assist Device (LVAD).

Ventracor's VentrAssist LVAD, a new third generation centrifugal flow LVAD, is a cardiac assist system designed primarily as a permanent alternative to heart transplants for patients that suffer heart failure. It is market released in Europe and Australia and one of only two devices in the US which has been implanted in both a BTT and DT clinical trial. There is more clinical experience with the VentrAssist LVAD than all other third generation centrifugal LVADs combined.

There are now 36 centres in ten countries worldwide that have implanted the VentrAssist LVAD.

In the United States, clinical trials continue to gain momentum, with 59 patients enrolled in the Bridge to Transplant (BTT) Clinical Trial and 26 patients enrolled in the Destination Therapy (DT) clinical trial, in addition to the 28 patients implanted in the US Feasibility Trial, which is now complete. There are now 19 centres in the US that have performed at least one implant of the VentrAssist LVAD, with 22 centres trained and ready to go.

Commenting on the achievement, Ventracor chief executive officer **Peter Crosby** says: "The clinical results from the US feasibility trial that were presented at the International Society of Heart and Lung Transplantation in April compare favourably with all new generation LVADs."

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

## Breathing test

Specialist pharmaceutical company **Pharmaxis Ltd** has received national approval to market Aridol in Germany. Aridol is indicated for measuring airway hyperresponsiveness and has been approved in 14 European countries under the mutual recognition procedure (MRP).

The necessary national approvals that follow the MRP have now been received for Denmark, Germany, Ireland, The Netherlands, Portugal, Sweden, and the United Kingdom.

In Germany a total of 660,000 lung function tests are conducted annually, of which approximately 90% are conducted by office-based physicians and the remainder in the major hospitals. To enter the market, Pharmaxis will first negotiate with insurance companies that cover the office-based physician market before launching with a local distributor.

A simple-to-use airways inflammation test, Aridol is a mannitol dry powder administered to patients' lungs via a small hand-held inhaler. Inhalation causes a change of osmolarity of the airway surface liquid

triggering the release of inflammatory mediators, which in sensitive individuals cause the bronchial smooth muscle to contract. This can be measured by a fall in FEV<sub>1</sub> (fall in forced expiratory volume in one second). Doctors can use the results of this test to identify airway hyper-responsiveness – a hallmark of asthma. Medications can be adjusted according to the severity of the disease.

"We are pleased that Aridol is becoming globally recognised as a useful test for identifying airway hyper-responsiveness," says Pharmaxis chief executive officer **Dr Alan Robertson**. "With this latest approval, Aridol is on the way to becoming the worldwide standard for detecting sensitive airways in people with conditions such as asthma.

"The Aridol test provides objective information on airway hyper-responsiveness and assists in the diagnosis and assessment of severity of asthma and how much medication should be used."

As well as being included as one of the tests recommended by the **International Olympic Committee - Medical Commission Independent Panel** and the **World Anti-Doping Agency**, Aridol is also included in the GINA Report of Global Strategy for Asthma Management and Prevention, the US Asthma Management Guidelines, the British Guideline on the Management of Asthma and the Australian Asthma Management Handbook.

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

## Patent granted

The **US Patent and Trademark Office (USPTO)** has granted **Stem Cell Sciences plc** a patent for technology that improves the efficiency of the culture and derivation of embryonic stem cells which leads to an increased purity of the cells. This technology offers advantages for cell-based drug discovery applications, where the prevention of uncontrolled differentiation facilitates the efficient expansion of the cells prior to their utilisation.

The new patent claims (US Patent 7,371,573) cover the culture and derivation of embryonic stem (ES) cells using a medium that contains leukemia inhibitory factor (LIF) and an inhibitor of an enzyme which activates mitogen-activated protein kinases, named MEK. When ES cells differentiate they begin to secrete factors that lead to the differentiation of other ES cells and the proliferation of these cells results in the purity of the ES culture being lost. A MEK inhibitor in combination with LIF suppresses undesired differentiation and maintains the pluripotent nature of the ES cells. This patent broadens the claims already granted under US Patent 6,875,608.

As **Tim Allsopp**, chief scientific officer of Stem Cell Sciences, explains, the purity and homogeneity are critical factors when ES cell growth from single cells is required. The probability of a cell being an ES cell in a culture becomes very low when differentiation is not controlled. Single ES cell colony growth is vital when selecting for gene targeted variants of ES cells for use in drug discovery.

► **More information:** [www.stemcellsciences.com/pressoffice/releases.html](http://www.stemcellsciences.com/pressoffice/releases.html)

## Unsatisfied demands

**Biota Holdings Ltd** has received written notification from **GlaxoSmithKline (GSK)** that indicative royalties for Relenza were \$4.4 million during the three months ended 31 March 2008. GSK reported sales of Relenza of £29 million (\$62.9 million), "reflecting the variable timing of tender orders from governments stockpiling against a possible flu pandemic."

According to Biota chief executive officer **Peter Cook**, "GSK's sales for the quarter clearly indicate that the potential stockpiling orders identified in January by their chief executive officer **Jean Pierre Garnier**, have not been fulfilled during the quarter. Measured against stated policy intentions, unsatisfied demand for stockpile products remains with a number of governments including those in the UK and US."

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

## Centrally managed

**IBA Health Group Ltd** has announced a contract with the **South Australian Department of Health** (SA Health) for a pharmacy management solution and support services in a deal worth \$4.4 million over five years.

The centrally-managed solution from IBA's **iSOFT** subsidiary will streamline pharmacy services at eleven hospitals across South Australia. Importantly, it will provide consistency in managing medications and offer clinical decision support to assist with the prevention of medication errors whilst streamlining the management of medications in the ward environment through the systems web-based capabilities.

iSOFT is providing its iPharmacy solution integrated with the PharmCare application from partner **Healthcare Software**. Both are true multi-site, multi-database applications and will run on a single server.

Implementations across the state will follow a planning study with the first go-live due at the **Royal Adelaide Hospital**. The new information system is expected to be fully operational in all SA public hospitals by the end of 2009. The new system will also assist SA in implementing a series of pharmaceutical reforms including on-line processing.

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

## Eastern potential

**Polartechnics** (PLT) has signed a distribution agreement with a leading Russian medical distributor, **Luminary Ltd**. Luminary is a high profile medical distribution company within the region and distributes medical products for companies such as **Digene**, **Siemens** (Buhrlmann), **Hitachi** and **Hal Allergy**. This agreement includes the Ukraine, Uzbekistan and Kazakhstan as well as Russia for the sale of the TruScreen product, a cervical cancer screening device, which is a portable system to directly identify cancer or pre-cancerous cells in cervical tissue. TrueScreen uses low levels of electric signals and light to examine the cervix by gently touching the surface of the cervix with a hand-held wand.

With low levels of pap testing in the region there is great potential for TruScreen take-up. Product registration for TruScreen in Russia has commenced and is expected to be complete within six months.

This will consolidate an Eastern European regional market of over 150 million screening aged women who are currently serviced with an underperforming Pap Test market estimated at \$400million per annum.

According to PLT chairman **Mr Robert Hunter**, the Russian cervical cancer market is under-developed with over 42% of the female population not aware of what a Pap test is. Only 30% of Russian women have ever had a Pap test, he says, and only 20% have being tested more than once, suggesting a great market potential for TruScreen.

TruScreen sales in Russia are to commence in early 2009. The commencement of operations in Eastern Europe supports the proposed increase in TruScreen production, which is currently underway in Australia and China.

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

## Positive territory

**QRSciences** has had its first profitable quarter and its plans are well advanced to list the company's technology assets in the US. Net after-tax profit for the third quarter was approximately \$0.4 million.

The company's proprietary technologies are making steady progress including receipt of the first royalty payments from **General Electric Security** (GE Security) and the commissioning of two QXR1000 units for deployment in Iraq and delivery of two modified T303 units to China.

The company's 30.2% owned associate, **Spectrum SDI** (Spectrum) has also made significant progress with the first delivery of CastScope production units and commencement of the US airport roll-out under the previously announced contract with **TSA**.

The company anticipates listing the technology assets through the acquisition of a public company in the US and then possibly making a pro-rata stock dividend in the new US entity to existing shareholders in QRSciences. The Board is considering the tax and legal implications of a transaction of this nature and will report back to the market as soon as practicable.

Overall, cash flow was markedly improved over the previous quarter with the company continuing to invest cash back into the business and Spectrum. The company expects to continue building its shareholding in Spectrum over coming months and holds an option to buy the remainder of Spectrum's ordinary shares until September 2009.

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

## Raising cash

**Phosphagenics Limited** has raised \$9.1 million via a placement of approximately 60.6 million fully paid ordinary shares to leading overseas and domestic institutions, and other sophisticated investors, at 15 cents per share.

Welcoming the received support, **Harry Rosen**, Phosphagenics' president and chief executive officer, says that Phosphagenics will continue to focus on the discovery of new and cost-effective ways to enhance the bioavailability, delivery, efficacy and safety of proven pharmaceutical and nutraceutical products. "The funds raised considerably strengthen the company's financial position and together with government grants and other revenue will support Phosphagenics' research and development programs through to the end of calendar year 2009," Mr Rosen says.

► **More information:** [www.phosphagenics.com/main/News\\_Releases.htm](http://www.phosphagenics.com/main/News_Releases.htm)

## Anti-cancer agreement

**Arana Therapeutics Ltd**, and **Kyowa Hakko Kogyo Co Ltd** (Kyowa Hakko), a major Japanese biotechnology company, have entered into an agreement to co-develop a new anti-cancer drug for colorectal cancer (ART104).

Under the co-development agreement Arana will receive an upfront US\$4 million payment and additional milestones of up to US\$4 million. ART104 will be enhanced using Kyowa Hakko's proprietary **POTELLIGENT®** and **COMPLEGENT™** Technologies.

Arana and Kyowa Hakko will have equal ownership of the product and will equally share development costs. Kyowa Hakko has an option to develop and commercialise the product in some Asian markets such as Japan, South Korea, Taiwan and China. Arana will receive royalties on these sales.

► **More information:** [www.arana.com/news\\_media.htm](http://www.arana.com/news_media.htm)

## Science budget highlights

### Australian Capital Territory

- \$1.7 million over two years to advance the East Lake sustainable urban renewal project. A partnership with the **CSIRO**, this builds on the established sustainability design funded in last year's Budget to develop innovative applications of urban sustainability;
- \$70,000 for the Government's contribution to the joint feasibility study into a large-scale solar power plant for the ACT;
- \$2.5 million for a one-off grant to establish a **Climate Change Adaptation Research Centre** at the **Australian National University**, the university will match this funding;
- \$440,000 over four years to enable the implementation of strategic off-reserve conservation programs, improving the ability of high conservation areas to adapt to the effects of climate change;
- \$1.273 million will be for sustainability programs to expand the **ACT Government's** ongoing commitment to the key areas of water, energy, waste, climate change, sustainability and natural resource management;
- \$112,000 for the Commissioner for the Environment and Sustainability to continue the Grasslands studies. These studies will focus on the policy and legislative changes, conservation management principles and immediate actions required to ensure the protection and long-term sustainability of native lowland grasslands and the ecosystems they contain; and
- \$155,000 for a new Kangaroo Action Plan to manage the impacts of over-abundant kangaroo populations in the ACT. The plan will provide ecological assessment and monitoring as well as measures to manage the kangaroo population in the long term.

► **More information:** [www.treasury.act.gov.au/](http://www.treasury.act.gov.au/)

### Northern Territory

- \$200,000 to support the **Climate Change Policy and Coordination Unit**; and
- \$1 million for native and improved pastures research.

► **More information:** [www.budget.nt.gov.au/](http://www.budget.nt.gov.au/)

### Western Australia

- \$8.7 million for the Low Emissions Energy Development Fund for the development of new technology and to support technology advancements to cut greenhouse gas emissions;
- \$3 million to undertake scoping and planning for the new **Underwood Avenue Research Precinct**, which is a collaboration involving **CSIRO**, the **University of Western Australia**, the **Department of Agriculture and Food** and other Agricultural Research WA partners. As the first step, 15 staff from the Department of Agriculture and Food and CSIRO have been co-located to Floreat to undertake consolidated climate science and modelling research; and
- A review of public and industry investment into pasture breeding and productivity research in Western Australia.

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

## Maximising value

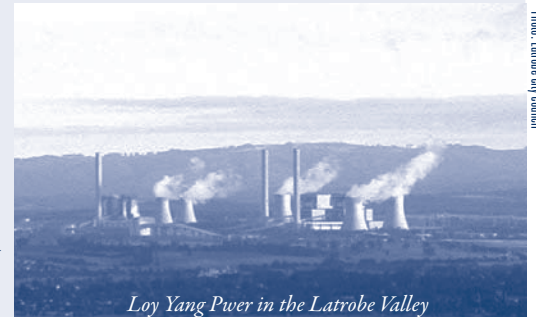
The **Victorian Government** has implemented a \$110 million fund to establish new large-scale, pre-commercial Carbon Capture Storage (CCS) demonstration projects. The fund builds on previous clean coal announcements for projects such as the Latrobe Valley Post Combustion Project at Loy Yang, a joint collaboration between **Loy Yang Power**, **International Power Hazelwood**, government and researchers from the **CO2CRC** (including Monash and Melbourne Universities) and the **CSIRO**. The Government is also providing \$12.2 million to create **Clean Coal Victoria**, an organisation dedicated to maximising the value of Victoria's brown coal resources, and a further \$5.2 million will go towards investigating carbon storage sites in the Gippsland basin to understand better carbon storage potential through research and modelling of the region's geology.

According to the Minister for Energy and Resources, **Peter Batchelor**, the clean coal projects will involve working in partnership with industry and the Commonwealth to demonstrate carbon capture and storage technologies from power plants on an industrial scale.

Clean Coal

Victoria will be based in the Latrobe Valley and focus on identifying future coal resources, planning for long-term brown coal use and rehabilitation. It will develop strategic resource plans to manage Victoria's valuable coal resources, develop detailed information about current resources and undertake test drilling to determine the quality and quantity of brown coal resources in under-explored areas.

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



*Loy Yang Power in the Latrobe Valley*

Photo: Latrobe City Council

## Smartening up continues

Premier **Anna Bligh** has launched the next phase of Queensland's Smart State strategy by announcing that \$120 million will be allocated over the next four years, with a major shift in focus from 'bricks' to 'brains'. According to Ms Bligh, there will be a major overhaul of existing programs as part of *Smart State Strategy: Queensland's smart future 2008-2012* as well as the introduction of several new initiatives.

"We are trebling our investment in our people," says Ms Bligh. "All up, we will spend around \$43 million providing scholarships, fellowships and other research grants to individual researchers – compared to \$12 million in the previous Strategy. This will fund around 280 scholarships and fellowships – 190 more than in the past. This includes funds to expand our existing scholarship and fellowship programs and offer new opportunities for exchanges between industry and research leaders, to commercialise research discoveries. It also includes a new Health and Medical research and development program with clinical and health research fellowships."

Under this program three streams of fellowships will be awarded:

- Senior Clinical Research Fellows – six of these fellowships will

be awarded valued at up to \$850,000 per annum each. They will include a salary component as well as laboratory and support staff;

- Health Research Fellows – 22 fellowships will be awarded at up to \$250,000 per annum each. These fellowships are designed to help medical, nursing and allied health staff kick-start careers in clinical research; and
- Clinical Academic Fellows – 12 fellowships will be awarded at up to \$75,000 per annum each. These fellowships will provide ‘top-up’ funding to support academics already holding full-time appointments in clinical disciplines.

Ms Bligh says her government will establish the first dedicated **Office of Health and Medical Research and Development in Queensland Health**, to coordinate research in the health sector and signal the importance of research in dealing with demands on health services.

“Another \$60 million will create new partnerships and collaborations to ensure that research is applied, to build our industries and solve contemporary challenges like climate change,” Ms Bligh says. “We will also spend \$6 million to bolster creativity and innovation in design and tropical research.”

► **More information:** 07 3224 4500

## Nature focus

Victoria’s famous penguins and seals are part of the focus for the new **Research and Environment Centre** opened on Phillip Island. Victoria’s Environment and Climate Change Minister **Gavin Jennings** says the Phillip Island Nature Park’s new centre will help researchers advance their conservation work and research. The island’s birds and animals will be tracked by satellite, and their breeding habits, weight, diving depths and diet studied. Up to 100 conservation staff and volunteers will work at the sustainable facility, which cost over \$1 million.

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

## Cattle tick committee

New South Wales (NSW) Minister for Primary Industries **Ian Macdonald** has announced that a new scientific advisory committee will be appointed to provide additional technical back-up for cattle tick and tick fever policy development in NSW.

“This new scientific committee will meet in July, after the end of each cattle tick season, and report directly to the NSW chief veterinary officer **Bruce Christie**,” Mr Macdonald says. “The **Scientific Advisory Committee on Cattle Ticks** will review the outcome of cattle tick control strategies in NSW in the previous season from a purely scientific perspective. The members of the new committee will be scientists from NSW and Queensland with expertise in cattle ticks and tick fever. They will be an additional group to the existing **Cattle Tick Ministerial Advisory Committee** which is chaired by **Mr Nick Keatinge** and provides advice directly to me.”

Mr Macdonald says the appointment of the new committee follows on from a comprehensive tick fever inquiry in 2005 by former Nationals Minister and Member for Orange **Garry West**. “This new committee is another mechanism to ensure that all decisions relating to cattle tick control are based on good science and risk management, taking into account economic, social and environmental outcomes.”

► **More information:** Jason Barlett 0438 209 281

## Informing interference

The **Victorian Centre for Functional Genomics (VCFG)** has opened at the **Peter MacCallum (Peter Mac) Cancer Centre**. The VCFG, via the **OpenBioSystem’s** ‘Open Access Program’ is the only Australian facility that provides the Australian medical research community access to a vast library of short hairpin microRNAi (shRNAmir) used for RNA interference (RNAi), a technology that enables researchers to shut down specific genes in a genome to understand its particular function. RNAi technology earned its inventors the 2006 Nobel Prize in Physiology or Medicine and can be used in fields such as cancer, neuroscience, stem cells, cardiovascular science, immunology, respiratory and reproductive biology and endocrinology.

The **Victorian Government** has provided \$483,900 towards the VCFG’s total cost of \$974,300 as part of ongoing support for Victoria’s biotechnology sector. It builds on the \$4.42 million allocated to the **Victorian Microarray Technology Consortium** which houses the VCFG.

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

## Innovation report

Victorians are benefiting from the **State Government’s** investment in innovation, according to a report recently released. The *Science and Technology Innovation Achievements* report, commissioned by the **Victorian Government** from **Deloitte (Insight Economics)**, analyses the performance of Victorian Science, Technology and Innovation (STI) projects delivered by the State Government since 1999.

The report shows research bodies are attracted by Victoria’s research infrastructure and the human capital available to them. It highlights confidence among Victoria’s research community, in contrast to a decade ago, along with the growth of collaboration between researchers and industry. In 2005/06, 281 highly skilled researchers were attracted to Victoria through STI supported projects - 155 from overseas and 126 from interstate.

“Economic gains driven by State Government-backed STI projects include the development of carbon fibre composites which has seen Victoria become a key supplier of aircraft components for **Airbus** and **Boeing**,” says Innovation Minister **Gavin Jennings**. “Other benchmarks in the report include Victoria winning the lion’s share of **NH&MRC** grants, over 40% in 2006 alone, and over 370 patents filed by Victorian STI initiatives.”

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



## Schizophrenia research

The **New South Wales Government** will provide \$2.45 million over the next five years for research into the causes of schizophrenia. The funding comprises \$1.075 million for the Schizophrenia Research Institute to establish an evidence library, and \$1.375 million for the **University of New South Wales** to establish a research program into the epidemiology and population health of schizophrenia, including a chair position. The funding is in addition to the annual \$1 million grant to the **Schizophrenia Research Institute**.

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



Peter Cawood



Beth Fulton



Simon Warfield



Karl Glazebrook

## Earthly investigator

**Professor Peter Cawood** from the University of Western Australia's School of Earth and Geographical Sciences has been awarded the Australian Academy of Science's Mawson Medal and Lecture for 2008. His research is concerned with the integration of field-based studies of mountain belts and what they tell us about the way the earth has looked and behaved through time.

## Fishy leader

A CSIRO chief executive officer's Science Leader Fellowship has been awarded to marine scientist **Dr Beth Fulton**. The Fellowship recognises Dr Fulton's exceptional leadership of marine ecosystem modelling research at CSIRO Marine and Atmospheric Research in Hobart. It follows Dr Fulton's award last year of the Science Minister's Prize for Life Scientist of the Year – part of the Prime Minister's Prizes – for her work and its influence on managing the impacts of fishing and understanding climate change.

## eHealth traveller

**Dr Simon K. Warfield**, an expert in medical imaging, has been awarded an Australia-Harvard Fellowship to travel to Australia to work closely with the biomedical imaging team at the Australian e-Health Research Centre on early diagnosis of Alzheimer's disease. Dr Warfield is associate professor of Radiology at Harvard Medical School and director, Computational Radiology Laboratory at the Children's Hospital Boston.

## Small scale expert

The inaugural Barry Inglis Medal for outstanding measurement research has been awarded to **Associate Professor John Sader** of the University of Melbourne. One result of his research is a new technique – now known as the Sader method – that enables accurate measurements to be made at the nanoscale. The Barry Inglis Medal was created to honour the first chief metrologist and chief executive officer of the National Measurement Institute. It acknowledges and celebrates outstanding achievement in measurement research and/or excellence in practical measurements by an individual or group in the fields of academia, research or industry in Australia.

## GSK award

**Drs Jane Visvader** and **Geoff Lindeman**, researchers at Melbourne's Walter and Eliza Hall Institute and the Royal Melbourne Hospital, have been presented with the GlaxoSmithKline Award for Research Excellence for their outstanding contribution to breast cancer research. The GSK Award is presented annually for distinguished discovery and its application to human health. The award recognises the recipient's

outstanding achievement and includes a grant of \$50,000.

## Investment planer

**Dr Brian McNamee**, the chief executive officer of CSL, will head the Australian Government's recently announced Pharmaceuticals Industry Strategy Group, which will develop a plan to attract investment in R&D, clinical trials and manufacturing activity in Australia.

## Animal food expert

**Dr Dennis Poppi** has been appointed professor in Animal Nutrition in the University of Queensland's Faculty of Natural Resources, Agriculture and Veterinary Science. He has been involved in international consultancies with the International Atomic Energy Agency and more recently has been on the Board of the Global Livestock CRSP, funded by USAID and administered by University of California, Davis.

## New boarders

**Professor Tom Spurling** has been appointed a part-time member of the CSIRO Board. Professor Spurling is the Dean of the Faculty of Engineering and Industrial Sciences at Swinburne University of Technology and chief executive officer, CRC Wood Innovations. He has over 30 years of experience in research and development in the areas of applied chemistry and industrial technology. **Professor John Hearn** and **Professor David Copolov** have been appointed to the Board of the Australian Nuclear Science and Technology Organisation (ANSTO). Professor Hearn, Deputy Vice-Chancellor (International) and professor of physiology at the University of Sydney, has extensive experience as a scientific advisor to the Australian Government and has served on a variety of international and Australian steering groups and committees. Professor Copolov, Senior Advisor, Office of the Vice-Chancellor at Monash University, possesses considerable corporate management expertise and has also provided scientific advice to the Government over many years.

## New deans

**Professor Stephen Thurgate** has been appointed Executive Dean of the Faculty of Science at Macquarie University. He has been with the University since 2006 in the position of Dean of the Division of Information and Communication Sciences. **Associate Professor Gavin Frost** has been appointed as The University of Notre Dame Australia's Dean of the School of Medicine, Fremantle Campus and will take up the position mid July 2008. He is currently associate professor in population and public health at Notre Dame's Sydney School of Medicine.

**Professor Kevin Tickle** has been appointed Pro-Vice-Chancellor & Executive Dean, Central Queensland University, Faculty of Business and Informatics through to 2011. He was appointed Deputy Executive Dean of the Faculty of Business and Informatics in 2006, managing international partnerships and implementing administrative and academic restructures of the Faculty. Before joining the university, Kevin was a senior hydrologist in the Queensland Government.

## Astronomy prize

Swinburne University of Technology astrophysicist **Professor Karl Glazebrook** has been awarded the Astronomical Society of the Pacific's Maria and Eric Muhlmann Award for his contribution to the astronomy field. The prize goes to Professor Glazebrook and his colleagues **Dr Jean-Charles Cuillandre** and **Professor Joss Bland-Hawthorn** for the development of the 'nod and shuffle' technique as a way to control night sky emission in deep exposures.

## Safety excellence

**Professor Derek Smith**, from the School of Health Sciences, University of Newcastle, has been awarded the World Safety Organization Award for Achievement in Scientific Research and Development. This annual award is presented to an individual or group that has made significant and internationally relevant contributions towards improving safety through research and development.

## Premier's Fellow

**Professor Ove Hoegh-Guldberg**, deputy director of the Australian Research Council Centre of Excellence for Coral Reef at the University of Queensland, is the Smart State Premier's Fellow for 2008. Professor Hoegh-Guldberg pioneered research linking climate change projections with coral reef distress and was one of the world's first scientists to show how projected changes in global climate threaten coral reefs including Australia's Great Barrier Reef.

## Atomic achiever

University of New South Wales (UNSW) physicist **Frank Ruess** has been awarded the 2007 UNSW Science Prize, which recognises the best science PhD thesis passed each year. This follows his recent award of the 2007 Bragg Gold Medal by the Australian Institute of Physics. Dr Ruess is pioneering a new way to make atomic-scale electronic devices using the atomic resolution capability of the scanning tunnelling microscope. Based at UNSW's Centre for Quantum Computer Technology, he is working with colleagues in the Atomic Fabrication Facility under the supervision of Federation Fellow, **Michelle Simmons**.



John Sader



Brian McNamee



Dennis Poppi



Tom Spurling



Ove Hoegh-Guldberg



Stephen Thurgate

## Rural issues

A new program to look into emerging issues and trends that may have an impact on all rural industries and communities in Australia is to be established by the **Rural Industries Research and Development Corporation (RIRDC)**. The Emerging Rural Issues program will be established under RIRDC's National Rural Issues portfolio and will help rural Australia track and manage "over the horizon" issues.

RIRDC managing director, **Dr Peter O'Brien**, says the new program will generate information about possible future trends and assess future conditions and their likely impact on rural industries and communities based on current experience and trends. The program will also explore the potential for collaboration with other research and development corporations.

► **More information:** Danny O'Brien, 02 6271 4175, 0438 130 445

## Climate change funds

Minister for Climate Change and Water, **Senator Penny Wong**, has announced \$1.2 million funding to investigate the effects of climate change on key coastal areas, including the Central and Hunter Coasts region of New South Wales. The money will support six case studies on coastal sites across Australia. They will look at issues that include the impact of climate change on the coast, on commercial fisheries, and on infrastructure in remote oil and gas communities.

One case study is based in the Central and Hunter Coasts region of NSW, modelling the impact of climate change on estuaries and nearby infrastructure. It will assess the vulnerability of existing and future residential, industrial and commercial infrastructure to sea level rise, storm surge and intense rainfall.

Senator Wong also announced funding of \$600,000 to examine the impact of climate change on Australia's infrastructure. "Research funded through this project will help the **Australian Government** to develop and deliver the appropriate policy responses to effectively manage climate change risks to Australia's infrastructure, particularly the effect on the Australian economy," Senator Wong said.

► **More information:** Ilsa Colson, 0418 368 639

## Wooden benefit

The Australian forest industry has continued its growth of recent years, with plantations, exports and the volume of logs harvested all increasing over the past financial year, according to a new **Australian Bureau of Agricultural and Resource Economics (ABARE)** report.

The report *Australian Forest and Wood Products Statistics* notes that a significant investment in the plantation sector over the past 10 years is beginning to show benefits with a 10 per cent increase in total forest product exports over the financial year.

**Mr Philip Glyde**, executive director of ABARE, says: "This represents an addition of \$215 million to Australia's export earnings."

During the previous 10 year period, the volume of logs harvested from our broadleaved plantations increased 25-fold and forest product exports almost doubled, Mr Glyde says.

The report also notes a recovery of wood-based panel production in the first two quarters of 2007-08, and in excess of 3 million tonnes of paper collected for recycling for the second consecutive year.

► **More information:** Kevin Burns, 02 6272 2253; email [kburns@abare.gov.au](mailto:kburns@abare.gov.au)

## Forest fitness

The **Bureau of Rural Sciences** has released the latest *State of the Forests Report*, the third in a series of 5-yearly reports that assess how Australian forests are changing and provides a snapshot of Australian forest health.

The report uses several different criteria and indicators to describe and evaluate Australia's progress towards sustainable forestry. The report indicates that Australia's forest plantations now produce two-thirds of the nation's log supply and together with managed native forests offset approximately 9% of the country's greenhouse gas emissions.

Other key findings include:

- Forestry and forest products industries are now worth \$19 billion annually (a real increase of 10%) and support more than 120,000 direct jobs;
- Other forest-related industries underpin rural and regional economies, including honey production, ecotourism and handicrafts; and
- Since 2003, the area of Australia's native forest in formal conservation reserves grew by almost 1.5 million hectares to 23 million hectares, with additional areas set aside through informal reserves.

But despite improvements in information about forest biodiversity, the report pinpoints substantial gaps in knowledge especially regarding forest-dwelling invertebrates, fungi, algae and lichens.

► **More information:** [adl.brs.gov.au/forestsaustralia/](http://adl.brs.gov.au/forestsaustralia/)

## Positive outlook

A record \$70.5 billion investment in 97 advanced minerals and energy projects is highlighted in a report *Minerals and Energy: major development projects – April 2008 listing* by **ABARE**.

Key outcomes of the report were:

- In 2007-08, exploration expenditure in Australia's minerals and energy sector is estimated to be at a record \$6.1 billion or two and a half times above the average annual expenditure on mineral exploration over the past 25 years; and
- In the six months to April 2008, 22 major minerals and energy projects, with a total capital expenditure of \$11.3 billion, were completed. A further 97 projects are at an advanced stage with projected capital expenditure of \$70.5 billion.

"This is a record value and number of advanced projects and will lead to continued expansion in the production and capacity of Australia's mining industry," says ABARE executive director, **Phillip Glyde**.

The report lists 341 major projects including a record 244 projects which are still undergoing feasibility studies. The 97 advanced projects, of which 55% account for Energy projects, are defined as either under construction or committed to.

Mr Glyde says global skills shortages and higher materials and construction costs continue to have an impact on the timing and overall costs for some projects. "Project cost pressures and delays are a challenge for the global mining industry and are expected to continue in the short to medium term while this level of development activity continues."

► **More information:** Alan Copeland, 02 6272 2270; [acopeland@abare.gov.au](mailto:acopeland@abare.gov.au)

## Big wet buy

The Minister for Climate Change and Water, **Senator Penny Wong**, has announced the Federal Government's \$50 million water buy-back will secure entitlements to 35 billion extra litres of water for Murray Darling

Basin rivers. "Purchasing water entitlements is a crucial step toward improving river health," says Senator Wong.

However, the current dry conditions and low water storage levels across the Murray Darling Basin mean it may be some time before the water is able to be delivered.

Senator Wong says the Government is finalising purchases in seven of the Basin's 18 subcatchments.

Water is categorised into a range of different products which are priced to recognise how often the water is likely to be available. 'High security' water is available more often than 'general security' water. The water purchased will be a mixture of both 'high security' and 'general security' water. Around a quarter of the 35 billion litres will be 'high security' entitlements.

The Government has committed \$3.1 billion to purchase water in the Murray Darling Basin over ten years as part of the *Water for the Future* plan.

► **More information:** [www.environment.gov.au/minister/wong/2008/pubs/mr20080523.pdf](http://www.environment.gov.au/minister/wong/2008/pubs/mr20080523.pdf)

## Bigger estimates

According to the Minister for Resources and Energy, *Martin Ferguson*, Japan's **INPEX Holdings Inc** has significantly increased previous estimates for its Ichthys liquefied natural gas (LNG) project off the coast of Western Australia.

INPEX plans to develop the Ichthys field in partnership with the French oil major **Total**.

Minister Ferguson says he was advised by the president of INPEX *Mr Kuroda* that the reserves for the Ichthys field now stand at 12.8 trillion cubic feet of gas and 527 million barrels of condensate (a light oil produced in association with gas production), the largest liquid hydrocarbon accumulation found in Australia since the Bass Strait oil fields in the 1960s.

"At today's production rates, Australia has only about a decade of known oil resources remaining and we are looking at a possible \$25 billion trade deficit in petroleum products by 2015," says Mr Ferguson affirming a commitment by the Australian Government to deliver a framework that will increase investment in offshore petroleum exploration and the development of remote gas resources.

► **More information:** Michael Bradley, 0420 371 744

## Flagshipping news

CSIRO launched its latest flagship, the **Minerals Down Under National Research Flagship**, in Canberra. Involving collaborative links with eight CSIRO Divisions, **Geoscience Australia**, **ANSTO**, 10 universities, three CRCs and a variety of others research initiatives, the flagship will focus on creating transformational technologies to help meet the challenges facing the minerals industry.

The Minister for Innovation, Industry, Science and Research, *Senator Kim Carr*, says "The industry currently contributes 8.9 per cent of Australia's GDP and generates 50 per cent of Australia's total exports. But this contribution is not guaranteed. Australia must become more efficient and environmentally sustainable at finding, mining and processing minerals to help ensure our future prosperity."

According to **Minerals Council of Australia** chief executive, *Mitchell Hooke*, the minerals industry will work closely with CSIRO and partner research agencies to ensure the Flagship achieved its overarching goal of

assisting the industry to exploit new resources with an estimated 'in-situ' value of \$1 trillion by 2030.

The Flagship's budget for 2007-08 includes CSIRO appropriation of \$27.7 million plus anticipated external earnings of \$15.5 million.

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

## Terrestrial bias

Research into the impacts of climate change is heavily skewed towards land-based studies at the expense of ocean ecosystems, says a report in the prestigious journal *Science* by scientists from CSIRO's **Climate Adaptation National Research Flagship**.

According to the report, studies on marine ecosystems are grossly under-resourced, resulting in patchy and incomplete knowledge. This was highlighted by the fact that the **2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report** included only 85 significant biological changes in marine ecosystems compared to 28,500 changes to terrestrial ecosystems.

"There is an overwhelming bias toward land-surface studies which arise in part because investigating the ocean realm is generally difficult, resource-intensive and expensive," say the researchers.

To make matters worse, the IPCC only includes data that has been collected over a minimum of 20 years. The authors recommend a change in the IPCC process to provide better assessments of marine impacts, a change that is made more urgent by indications that marine ecosystems may be responding more rapidly to climate change than terrestrial ecosystems. "As the climate is warming, marine plants and animals are shifting towards the poles and their timing of peak abundance is occurring earlier in the year," says the report's author, *Dr Anthony Richardson*, from the **University of Queensland** and CSIRO. "The slower dynamics of the ocean also means that some changes such as ocean acidification will be irreversible this century."

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

## Hot drilling boost

The Minister for Resources and Energy, *Martin Ferguson*, has announced the \$50 million geothermal drilling program, a key election promise of the **Australian Government**, will be funded earlier than expected.

Up to \$20 million dollars will be sourced from the Energy Innovation Fund in the short term to take advantage of a window of opportunity in late 2008 for the geothermal industry to access drilling rigs and start proof-of-concept drilling. The Minister says a number of promising geothermal projects are now ready to move to the proof-of-concept drilling stage.

"The geothermal drilling program will be a competitive grants program for proof-of-concept projects with the potential to develop geothermal resources for either electricity production or direct-use heat," the Minister says.

According to Mr Ferguson, a **Department of Resources, Energy and Tourism Geothermal Energy Committee** will be established to assess applications and **Geoscience Australia** will provide specialist advice on technical issues.

► **More information:** Michael Bradley, 0420 371 744



Photo: OCEANOPOLIS

By Gerd Winter

# Toward a healthy future... bit by byte

It is a revolution in health, no doubt, but one that is still evolving. eHealth is an umbrella term that describes a complex array of services and approaches (see fact box) with enormous potential. However, there are also big challenges.

According to Professor Bruce Barraclough, eHealth medical director of the CSIRO ICT Centre, eHealth applications will become particularly relevant as, in the context of an aging population, the focus of care is shifting from acute care to chronic disease management of conditions such as diabetes. Even some forms of cancer will in future be regarded as a chronic disease, which require a continuum of care, adding pressure on strained health care systems. The vision is that eHealth will facilitate a better understanding of the vast amount of information that is out there and allow a better handle on medical history and personal risk factors. This will allow more appropriate individual therapeutic management options and a more efficient use of available resources.

## eHealth is...

It's been a buzz word for more than a decade but there is no all-encompassing definition. The WHO defines it broadly as the combined use of electronic communication and information technology in the health sector. Depending on your perspective, it can be seen as more consumer centred or more health provider centred. eHealth researchers, for example, frequently include cybermedicine, a consumer centred global exchange of information on the Internet. Governments and medical bodies, however tend to use eHealth as a term restricted to ICT based provider applications such as real-time video conferencing, electronic health records, remote disease monitoring and other modalities.

**Electronic Medical Records (EMR)** and **Electronic Health Records (EHR)** are proclaimed centrepieces of government eHealth strategies around the world. Frequently used synonymously by government and health professionals, they may describe very different things.

The EMR is a record of a patient created and legally owned by individual care providers. It is source data for EHRs, which the Canadian Health Infoway describes as "a secure and private lifetime record of an individual's health and care history, available electronically to authorized health providers. It facilitates the sharing of data –across the continuum of care, across healthcare delivery organizations and across geographies." EHRs are reliant on EMRs being in place, and EMRs will never reach their full potential without a comprehensive and interoperable EHR system.

## The holy grail of eHealth: electronic health records....

For this vision to be realised, governments around the world believe that there needs to be a comprehensive electronic health record (EHR) system in place (see box). Currently, information on a person's medical history is usually dispersed over a multitude of filing cabinets and personal computers of individual care providers. With EHRs key clinical data could become instantly accessible and shared by a team of care givers. However, while the vision is clear, the implementation of such a system has proved to be challenging for any health care system. Australia is no exception.

"In a country [like Australia] that has a federal system with individual jurisdictions, budgets and needs, the task should not to be underestimated," says Barraclough.

Canada, although similarly fragmented in its health care system, has progressed further and is on track to implement a 'baseline EHR' for every Canadian by 2015, collating core patient information, diagnostic imaging, laboratory, medication, hospital/clinical reports and immunization data. Barraclough puts this down to a strong leadership able to link a vast array of systems across the number of provinces, but which could also draw on a

budget of more than a billion dollars.

However, there is no off-the-shelf answer, he says, and in Australia a lot more work and coordination is needed. This is also a leadership issue, in particular after Dr Ian Reinecke's resignation as chief executive officer of the National Health Transition Authority (NEHTA), the body that is to oversee the implementation of EHRs in Australia.

The chief executive officer of the Australian eHealth Research Centre, Garry Morgan, believes that a strong leadership is needed that understands the legal, social and technology aspects but also has a sense for business and commercial issues. Australia's health system is governed by complex financing agreements involving multiple layers. In this context, Morgan says, there is currently no sustainable business model in place. Who is going to build a sustainable business model and who is going to implement it and is making money out of it? Or is the Commonwealth going to provide it for all Australians? These are questions nobody has an answer for at the moment, says Morgan.

Another hurdle in the Australian system is that each patient has to give consent to have his data included in an eHealth record, and, Morgan says, it may require an education campaign so patients become aware of the relevance to consent to the usage of their data for the benefit of their own health outcomes.

Faced with similar challenges, the British NHS is now introducing two types of online health records, the Summary Care Record, a centrally stored summary of patient information generated from provider EMRs, and 'HealthSpace', which people can use to create their own record. The Summary Care Record will be generated for everyone without patient consent asked for. Individuals that do not wish to participate need to actively opt-out, a model much criticised by the British Medical Association.

HealthSpace on the other hand, is to provide a more consumer centred documentation of health, recognising a trend towards an increasingly self-empowered health consumer. However, commercial IT organisations, such as Google and Microsoft, have already commenced similar health spaces, which consumers are entirely in control of, and in a recent editorial in the British Medical Journal Professor Michael Kidd, a leading Australian expert in eHealth, comments: "Given the choice of having governments create and exert a degree of control over your internet based personal health record, and being able to do it yourself with a little help from Microsoft or Google, which would you choose?"

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"Given the choice of having governments create and exert a degree of control over your internet based personal health record, and being able to do it yourself with a little help from Microsoft or Google, which would you choose?"

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## ...people's choice? – the personal health record

The Australia 2020 Summit recommendation to: "Create a 'Healthbook' (like Facebook) for Australians to take greater ownership of their health information.." shares a similar sentiment. There is no need to wait for Google or Microsoft, though, which as large and diverted organisations, are also plagued with concerns over privacy issues.

A consumer driven complementary model to the EHR, the personal



*Screenshot of a miVitals account page. On the left, there are various core modules covering health issues relevant for the average account holder (e.g. Emergency, Preventative Health, Immunisations). Added modules (bottom left) will in future address specific conditions such as diabetes or asthma. Within each module account holders can add records guided by prompts.*

health record (PHC), is already up and running. An Australian startup, miVitals, is offering a secure personal online health record system which allows consumers to store and manage their health and lifestyle.

With miVitals the consumer is the captain in his boat but he is not left without advice on how to steer it. Individual records are organised around modules covering relevant health aspects, such as emergency information, allergies, preventative health measures etc, whereby each of these modules feature prompts guiding the account holder on what information on health and lifestyle issues they should record to best assist their health professionals.

According to Jude Forrest, chief executive officer and founder of miVitals, these prompts were developed in extensive consultation with health professionals and with contributions from an international advisory board to ensure they were informed by best practice.

The site also allows primary account holders to manage a group of individuals such as dependent children, with separated records of members organised within one account.

Forrest says that miVitals is unique in being “totally consumer driven yet professional friendly” adding that the site will also allow a level of integration into a future EHR strategy.

miVitals reflects a global shift in how health care is delivered, says Forrest, with people being more engaged in a partnership involving an increasing number of professionals. People are also more mobile. “It just makes sense for people to have access to their information wherever they are and 24/7,” Forrest says.

She is aware of the imminent competition by Google and Microsoft but says miVitals has first mover advantage in the Australian market after having completed trials in 2007. And importantly, personal health records are miVitals core business, whereas Microsoft and Google are across many markets and health is only one area of focus.

MiVitals has gained support from various consumer advocacy groups, such as the Asthma Foundation and Epilepsy Australia, and is in the process of developing specialist modules for patients with chronic diseases such as diabetes and asthma. Consequently, Forrest expects the chronically ill to be an important user group. Another is expected to be families with young children. However, since it was launched in January 2008, miVitals has attracted users aged from 20 to 75 located in over 40 countries,

indicating that the site appeals to people across all age groups.

The general reaction from health practitioners is positive, she says, because they can see the benefits. Once the system is fully developed, patients can share data on their health and lifestyle with their practitioner but have control over what kind of information they want to disclose.

In turn, health professionals can easily upload files they want to share with the patient.

Spelling out her vision of the future, Forrest says ten years from now people will access their health information, wherever they are in the world, with their mobile phone by accessing PHCs such as miVitals, and instantly share selected data with a care provider at the point-of-care.

## Staying home: the telecare option

Telecare is another area of eHealth promoting a more self-reliant and empowered patient. Nigel Lovell, Professor at the UNSW Graduate School of Biomedical Engineering, who is also involved in the acclaimed Bionic eye project, believes telecare options for the elderly and chronically ill in their home setting will have a greater overall impact. Lovell is director of the Australian startup company TeleMedCare, which provides home telecare systems designed for routine scheduled monitoring of people with chronic diseases. The TeleMedCare service records various standard clinical indicators of a patient’s health such as ECG, blood pressure, lung function etc within their home environment, and creates longitudinal datasets that can be monitored by health professionals.

“This is not rocket science technology, it is integrative technology

“Once patients start to understand a certain behaviour affects their health status and they can see that on a graph over time, they feel more empowered and in control,” says Professor Nigel Lovell

very well thought through and targeted towards the root causes of the problem,” says Lovell. The monitoring technology is well in place but they are now intensively working on sophisticated decision support systems that help health professionals to extract knowledge from the large amount of collected data.

Are there compliance issues? Lovell says that at least their trials did not suggest problems with patient compliance. “Once patients start to understand a certain behaviour affects their health status and they can see that on a graph over time, they feel more empowered and in control.” The depersonalisation of the doctor-patient relationship could be an issue and needs to be addressed. However, he says that in their experience tele-monitoring actually brings patients closer to the doctor, because they feel continuously cared for. The technology is not replacing the doctor-patient interaction but complements it.

There are barriers in the acceptance of such technology, Lovell says, although there is good evidence that when correctly implemented and within specific target groups, such as in the follow-up of patients with congestive heart failure, the cost savings are considerable, simply as the number of costly hospital admissions can be reduced.

To his own surprise, Australia is leading the world in this area. There was a very strong technology base to begin with but also an early understanding of how the technology integrates into existing health services, also in the context of rural and remote populations. This has been adapted now to other systems, the UK, New Zealand, and South East Asia.

However, this position has to be secured as the world is catching up...

More events or jobs go to [www.sciencealert.com.au](http://www.sciencealert.com.au)

## EVENTS

**Clean Energy Australia 2008**  
17 to 19 June 2008, Sydney, NSW

**5th International Conference on Information Technology and Applications (ICITA 2008)**  
23 to 26 June 2008, Cairns, QLD

**Asia Pacific Symposium on Nanobionics**  
22 to 26 June 2008, Wollongong, NSW

**5th International Conference on Information Technology and Applications (ICITA 2008)**  
23 to 26 June 2008, Cairns, QLD

**Western Australia Infrastructure: Building a Sustainable Infrastructure Future**  
24 to 28 June 2008, Perth, WA

**8th Annual Hospital in the Home 2008**  
25 to 27 Jun 2008, Melbourne, VIC

**NSW & ACT Australian Institute of Medical Scientist (AIMS) - Australian Association of Clinical Biochemists (AACB) Combined Meeting**  
3 to 5 July 2008, Hunter Valley, NSW

**Population Health Congress**  
6 to 9 July 2008, Brisbane, QLD

**Australian Society for Microbiology 2008**  
6 to 10 Jul 2008, Melbourne, VIC

**21st Congress of the International Commission for Optics**  
7 to 10 July 2008, Sydney, NSW

**OECC/ACOFT 2008 (Opto-Electronics, Optical Fibre Technology and Communications)**  
8 Jul 2008 - 10 Jul 2008, Sydney, NSW

**Vision, Memory, Spectacle**  
9 to 12 July 2008, Perth, WA

**Australian Association for Environmental Education Conference 2008**  
9 to 12 July 2008, Darwin, NT

**5th International Congress on Nematology**  
13-18 July 2008, Brisbane, QLD

**The mathematics of water supply and pricing**  
14 to 16 July 2008, Surfers' Paradise, QLD

**2nd ASIAMiner Investing in Mining Conference**  
15 to 16 July 2008, Brisbane, QLD

**Australian Earth Sciences Convention 2008**  
20 to 24 July 2008, Perth, WA

**41st Annual Australian Institute of Food Science & Technology (AIFST) Convention 2008**  
21 to 24 July 2008, Sydney, NSW

**Australian Space Development Conference**  
21 to 23 July 2008, Adelaide, SA

**9th World Meeting of International Society for Bayesian Analysis**  
21 to 25 July 2008, Hamilton Island, QLD

**International Conference on Photochemical Conversion and Storage of Solar Energy**  
27 July to 1 Aug 2008, Sydney, NSW

**International Conference on Electronic Materials**  
28 July to 1 August 2008, Sydney, NSW

**2008 Western Pacific Geophysics Meeting**  
29 July to 1 Aug 2008, Cairns, QLD

**2008 - From Babies to Blokes - The Making of Men**  
3 to 6 August 2008, Perth, WA

**Australasian Aquaculture 2008 International Conference & Trade Show**  
3 to 6 August 2008, Brisbane, QLD

**5th World Congress of Society of Environmental Toxicology and Chemistry**  
3 to 7 August 2008, Sydney, NSW

**XXII International Congress of The Transplantation Society**

10 to 14 August 2008, Sydney, NSW

**3rd Australian International Green Build, Design & Technology Show**  
15 to 17 August 2008, Sydney, NSW

**National Science Week**  
16 to 24 August 2008, throughout Australia

**Food Innovation: Emerging Science, Technologies and Applications - FIESTA 2008**  
17 to 18 August 2008, Brisbane, QLD

**Coast to Coast 2008**  
18 to 22 August 2008, Darwin, NT

**12th Sustainable Economic Growth for Regional Australia (SEGRA) Conference**  
18 to 20 August 2008, Albury, NSW

**2nd Australian Lung Cancer Conference 2008**  
21 to 24 August 2008, Gold Coast, QLD

**6th International Symposium on In Vitro Culture and Horticultural Breeding**  
24 to 28 Aug 2008, Brisbane, QLD

**Zinc Processing 08**  
25 to 26 Aug 2008, Brisbane, QLD

**Endocrine Society of Australia & Society for Reproductive Biology Annual Scientific Meeting**  
25 to 28 August 2008, Melbourne, VIC

**Automated Mineralogy '08**  
27 to 28 August 2008, Brisbane, QLD

**12th World Congress of the World Federation for Ultrasound in Medicine and Biology**  
30 to 3 September 2008, Sydney, NSW

**Fire, Society and Environment 2008: from Research into Practice**  
1 to 3 September 2008, Adelaide, SA

**Bushfire CRC National Conference**  
1 to 3 September 2008, Adelaide, SA

**Brain Injury Australia National Conference 2008**  
1 to 3 September 2008, Melbourne, VIC

**11th International Riversymposium**  
1 to 4 September 2008, Brisbane, QLD

**5th World Conference on Promotion of Mental Health and the Prevention of Mental and Behavioral Disorders**  
10 to 12 September 2008, Melbourne, VIC

**12th International Lupin Conference**  
14 to 18 September 2008, Perth, WA

**2008 World Congress of WATOC (theoretical and computational chemists)**  
14 to 19 September 2008, Sydney, NSW

**Australasian Sexual Health Conference 2008**  
15 to 17 September 2008, Perth, WA

**11th International Conference on Principles of Knowledge Representation and Reasoning (KR 2008)**  
16 to 19 September 2008, Sydney, NSW

**4th Innovative Foods Centre Conference**  
17 to 18 September 2008, Brisbane, QLD

**Leura VI International Breast Cancer Conference 2008**  
18 to 21 September 2008, Sydney, NSW

**World Sustainable Building Conference**  
21 to 25 September 2008, Melbourne, VIC

**Open Access and Research Conference 2008**  
24 to 25 September 2008, Brisbane, QLD

**A Climate of Change in the Rangelands**  
28 September to 2 October 2008, Charters Towers, QLD

**eResearch Australasia 2008**  
29 September to 3 October 2008, Melbourne, VIC

**3rd Annual Conference of the Aus and NZ Chapter of the Society for Risk Analysis**  
30 September to 1 October 2008, Canberra, ACT

## JOBS

JOBS	INSTITUTION	CLOSING DATE
Paediatric Clinical Trials Project Coordinator	University of Sydney - Westmead Children's Hospital   NSW	22 June
Materials or Solid State Physicist	Industrial Research Limited   NZ	20 June
Professor of Obstetrics and Gynaecology (Perinatal Medicine)	University of Queensland   QLD	11 August
Appointment of the Dean - Faculty of the Built Environment	University of New South Wales - Faculty of the Built Environment   NSW	30 June
Health Economist / Health Services Researcher	University of Adelaide - School of Population Health and Clinical Practice   SA	23 June
Dean of Science	University of Melbourne   VIC	18 August
Lecturer/ Senior Lecturer in Pharmacy	Charles Darwin University   NT	21 June
Lecturer/ Senior Lecturer in Social Work	University of New South Wales - Faculty of Arts and Social Sciences   NSW	4 July
Associate Professor/Professor in Industrial Design	Massey University - Institute of Design for Industry & Environment   NZ	1 August
Deputy Head of Institute of Design for Industry and Environment	Massey University - Institute of Design for Industry & Environment   NZ	1 August
Lecturer in Paramedicine	University of Ballarat - Mt Helen Campus   VIC	15 June
Lecturer / Senior Lecturer In Veterinary Pathology	University of Melbourne   VIC	1 August
Senior Lecturer in Information Studies, Librarianship	University of Canberra   ACT	20 June
Lecturer in Education - (Health, Physical Ed & Pedagogy)	University of Ballarat - Mt Helen Campus   VIC	15 June
Theme Leader Climate and Atmosphere	CSIRO - CSIRO Marine and Atmospheric Research	11 July
Lecturers/senior Lecturers In Physiotherapy	University of Queensland - School of Health and Rehabilitation Sciences   QLD	23 June
Senior Systems Scientist - Compact Array	CSIRO - Australia Telescope National Facility   NSW	31 July
Team Leader - Automated Spectral Logging Applications	CSIRO - Exploration and Mining   NSW	25 June
Research Fellow/Fellow/Senior Fellow - Centre for Mental Health Research	Australian National University - College of Medicine & Health Sciences   ACT	18 June
Clinical Research Manager	University of Queensland   QLD	16 June

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