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Linking Australian Science, Technology and Business

INSIDE

Pharma crisis

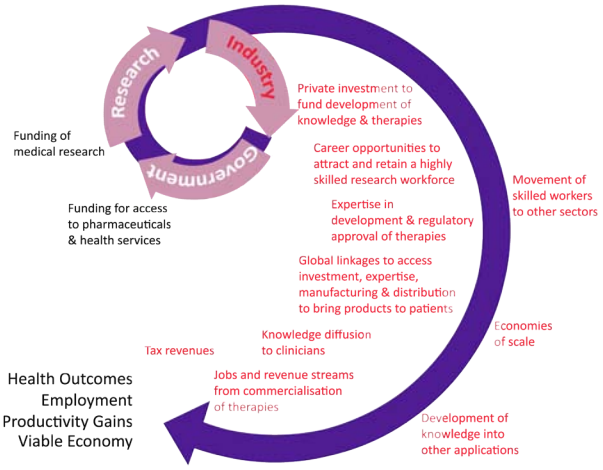
In the absence of Government intervention, the Australian pharmaceuticals industry is likely to decline in the face of a global financial crisis (GFC) that has further exacerbated a trend of global rationalisation. The local industry is already experiencing job losses and this is diminishing Australia's pharmaceuticals R&D, manufacturing and commercialisation activity. This is a key message of the final report submitted by the Pharmaceuticals Industry Strategy Group (PISG) to the Minister for Innovation, Industry, Science and Research, ***Kim Carr***, and follows a Direction Paper released in October 2008.*

In the Direction Paper the group had described a changing global operating environment for the industry, as the traditional business model of multinational corporations (MNCs) developing 'blockbuster' medicines is becoming more fragmented in response to rising costs and longer duration of drug development, falling R&D productivity, emerging new technologies, the increasing ability of smaller companies to monetise their intellectual property without first having to commercialise a product, and increasing competition from generic medicines as patents expire.

The group notes that this scenario poses opportunities for Australia's 470 specialist biotechnology companies as originator pharmaceuticals companies increasingly in-license or acquire potential drug targets from smaller, highly specialised biotechnology companies. However, this trend is offset by cost cutting measures by the originator sector and the generics industry alike.

In its final report the group also assessed the impacts of the GFC and found that in the current environment the relatively small manufacturing and R&D operations of many Australian subsidiaries of pharmaceuticals MNCs are far from secure. "This is especially true for operations that are easily replicated in lower cost locations. Many of the operations of Australian subsidiaries of pharmaceuticals MNCs fall into this category and are now increasingly vulnerable to rationalisation pressures, and will continue to be so for the short to medium term." The impacts of these pressures have particularly been felt in pharmaceuticals manufacturing, where in 2008 alone 400 jobs and more than $1 billion in export earnings were lost. In addition, two subsidiaries of MNCs announced the closure of globally significant R&D facilities, and this, with the loss of a further 135 jobs, will markedly reduce Australia's commercialisation and drug development infrastructure, states the report.

The collapse of global share markets significantly affects the market capitalisation of local biotechnology companies, many of which rely on regularly raising capital from external sources to pursue their drug



A virtuous cycle of research, industry and government to improve the delivery of health and medical care. The figure summarises the pharmaceuticals industry's key role in optimising the social and economic benefits from this cycle.

Figure is adapted from PISG, Final Report, 2008 and originates from the Final Report of the Health and Medical Research Strategic Review, Canberra 1999

The PISG was co-chaired by **Dr Brian McNamee**, chief executive officer, CSL, and **Mr Craig Pennifold**, head of Innovation Division, Department of Innovation, Industry, Science and Research. Its recommendations include that:

- the Review of Australia's Tax System consider reducing Australia's corporate tax rate;
- the Government's response to the Review of Australian Higher Education examines ways to improve pharmaceuticals industry skills and education;
- the Government urgently implements a competitive Innovation Grants Program and improves access to venture capital, as was recommended by the Review of the National Innovation System.

The group developed two proposals that specifically address issues related to clinical trials, manufacturing and industry infrastructure:

1. A strategic investment fund program to provide Government co-investment in strategic industry projects;
2. A proposal to increase Australia's attractiveness as a location for clinical trials activity, by:
   - accelerating the implementation of a national streamlined system of ethics approval processes for multi-centre clinical trials (including a national patient consent form);
   - accelerating the implementation of relevant e-health initiatives; and
   - establishing co-ordinated national patient referral networks.

Page 11: Dr Hugh Saddler comments on flaws in the national Renewable Engergy Target scheme

9 CASE STUDIES

3rd ANNUAL

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PLUS 2 ESSENTIAL WORKSHOPS:

WORKSHOP A

IP analytics

Led by: **Dr Anthony Coulepis,** *CEO,* **Cell Sense** and *Strategic Industry Advisor,* **PaleoTechnology Australia**

WORKSHOP B

Negotiation skills and techniques for IP commercialisation professionals

Led by: **Rob McInnes,** *Principal,* **Spruson & Ferguson Lawyers, Intellectual Property and Commercialisation**

- Adapting **IP management for local conditions**
- Avoiding pitfalls in **international deal-making**
- Exploiting global IP to **enhance the bottom line**
- **Generating new revenue streams** through IP
- Creating and fostering **an innovative IP culture**
- **Facilitating collaboration** and **enhancing innovation**
- **Accelerating commercialisation** of IP
- **Managing risks of commercialisation**
- Working with key service providers in **IP commercialisation**
- Increasing your chances of **industry-focused grants**
- **Decrease the cost of IP litigation**
- **Eliminating the myths of IP** in your organisation through targeted educational campaigns
- **Establishing IP** as a **strategic asset** within your organisation
- **Strengthen & protect IP**
- Raising the profile of **IP in M&A's**
- **Funding and valuing IP** in changing economic times
- **Controlling** and **protecting your digital IP**
- IP management under the **Personal Property Security Reform**

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development activities. This has a material impact on their ability to raise funds and on the investment risk by which they are categorised by lenders. Coupled with the global credit squeeze, this has made it markedly harder for these companies to raise capital to support ongoing R&D activities. The report states that from 1 January to 25 November 2008, the market capitalisation of listed biotechnology companies (excluding **CSL**) fell by 56.7 per cent from $4.9 billion to $2.1 billion.

As a result, companies are forced to curb their R&D activities and reduce staff until funding becomes available. **Alchemia**, one of Australia's largest biotechnology companies, has already suspended some of its R&D activities and reduced its staff, and there are reports that more than 50% of the small life science companies that report quarterly cash statements have less than a year's funding left, 70% have less than 18 months. According to the report, this could lead to serious cash flow issues affecting financial solvency and ability to trade.

According to the report, the cessation of the **Australian Government**'s Commercial Ready program in early 2008 has added to the squeeze, which has put clinical development on hold and this is contributing to the stalling of clinical trial activity in Australia. The group concludes that many Australian biotechnology companies will not survive the current financial crisis without an injection of funds. "In addition to company closures, there is likely to be some consolidation in the biotechnology sector through mergers and acquisitions, where complementary IP assets and business models make such options viable business propositions. The risk is that good value propositions will struggle to find partners and raise funds," states the report.

Adding to this, **Dr Anna Lavelle**, chief executive officer of **AusBiotech** and member of the PISG, has recently released a statement in which she expresses her disappointment that the biotechnology sector has been overlooked for support in the recently announced Government stimulus package. "The financial crisis has put at risk a generation of small biotech companies, which are in a precarious position, and we risk losing life-saving discoveries and therapies that will ultimately improve our economic situation," she says calling for refundable tax credits, competitive matched grants and an increased pool of venture capital.

**The PISG Direction Paper and its recommendations have been extensively covered in an ARDR Special report, ARDR Nov 2008, p10 and an opinion piece by Dr Lavelle, p11, same issue. The issue can be downloaded at www.ARDR.com.au.*

▶ **More information: (PISG) www.innovation.gov.au/pisg; (AusBiotech) www.ausbiotech.org**

R&D AUSTRALIAN REVIEW Elwinmedia

EDITOR
Dr Gerd Winter
08 8370 2778
editor@elwinmedia.com

DESIGN
Elwinmedia

WWW
www.ardr.com.au

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Nation building

The new $28 million Institute for Photonics and Advanced Sensing at University of Adelaide will bring together leading research in optical fibres(shown below), lasers, luminescence, chemistry, proteomics and virology.

photo: Tanya Monro

In December, the **Australian Government** announced a $1.6 billion investment in universities and TAFES as part of a $4.7 billion nation building package put forward in response to the current global financial crisis. The investment has three major components:

1) The Government will fast track $580 million of funding through the **Education Investment Fund**, for 11 projects focussed on strengthening the research facilities at Australian universities. The successful projects are:

- **The Centre for Obesity, Diabetes and Cardiovascular Disease, University of Sydney**, $95 million;
- **The Peter Doherty Institute for Immunity and Infection, University of Melbourne**, $90 million;
- **The Institute for Photonics and Advanced Sensing, University of Adelaide**, $28.8 million;
- **The Hearing Hub, Macquarie University**, $40 million;
- **The RMIT Design Hub, RMIT University**, $28.6 million;
- **The Energy Technologies Building, University of New South Wales**, $75 million;
- **New Horizons Centre, Monash University**, $89.9 million;
- **The International Microsimulation Centre, University of Canberra,** $11 million;
- **The Materials and Minerals Science Learning and Research Hub, University of South Australia**, $40 million;
- **The School of Veterinary Science at Gatton Campus, University of Queensland**, $47.2 million;
- **The SMART Infrastructure Facility, University of Wollongong**, $35 million;

2) A one-off $500 million investment will target capital expenditure for the development of teaching and learning spaces in Australia's universities. The funding will be provided by a new **Teaching and Learning Capital Fund for Higher Education** which, according to the Minister for Education, ***Julia Gillard***, will target the development of new infrastructure as well as the upgrading of existing facilities. The funding will be distributed among universities through grants available from 1 July 2009 and take into account each university's share of total domestic students. Institutions with large numbers of students will especially benefit. The **Australian National University** will receive an additional $10 million in recognition of its unique mix of teaching and research.

3) $500 million will be invested into public skills and training infrastructure through a new **Teaching and Learning Capital Fund for Vocational Education and Training**. The funding will be distributed through grants, whereby $400 million allocated for TAFE training infrastructure and $100 million for not for profit organisations providing adult and community education.

▶ **More information: www.pm.gov.au/media/Release/2008**

Water power

For the first time, a single agency will be responsible for planning the integrated management of water resources of the Murray–Darling Basin. In addition to the functions of the previous **Murray–Darling Basin Commission**, the new and independent Murray–Darling Basin Authority (MDBA) will be responsible for:

- preparing the Basin Plan for adoption by the Minister for Climate Change and Water, ***Senator Penny Wong***, including setting sustainable limits on water that can be taken from surface and groundwater systems across the basin;
- advising the minister on the accreditation of state water resource plans;
- developing a water rights information service which facilitates water trading across the Murray–Darling Basin;
- measuring and monitoring water resources in the basin;
- gathering information and undertaking research;
- engaging the community in the management of the basin's resources.

MDBA chief executive ***Rob Freeman*** says there is an opportunity to set a new limit on the water that is used in the basin. This new limit will be based on science and is adaptive to drought and climate change, he says, providing a cautiously optimistic outlook for the basin.

"Given the likely impacts of climate change on the basin's water resources, we probably won't be able to restore all of the natural values in the basin's unique rivers and wetlands." No one has ever tried to work out environmentally sustainable limits on water extraction and then tried to maximise economic and social outcomes, he says. "However, I think it's achievable."

The authority will release a concept statement in March/April 2009 which explains the contents of the Basin Plan, the timing for its development and the processes to involve interested parties and individuals.

▶ **More information: www.mdba.gov.au**

Well grounded

A national consortium led by **Flinders University** will administer a total of $60 million for a new **National Centre for Groundwater Research and Training**. The centre is jointly funded by the **Australian Research Council** and the **National Water Commission**, contributing $30 million, and a further twenty organisations, which provide an additional $30 million and include the **University of New South Wales**, the **University of Queensland**, the **Australian National University**, **CSIRO**, **Geoscience Australia**, and the **NSW** and **SA Governments**.

"The centre will train a new generation of scientists in advanced hydrogeological and related technologies, and improve our knowledge of groundwater connectivity, policy and management," says Minister for Innovation, Industry, Research and Science ***Kim Carr,*** jointly announcing the centre with Minister for Climate Change and Water ***Penny Wong***.

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

Chinese friends...

The **Australian Government** has set aside $2.7 million to assist 12 Australian scientific research organisations in collaborative projects with Chinese research institutions.

Spanning a variety of disciplines and selected on the basis of scientific merit, the projects will benefit both Australia and China, according to Minister for Innovation, Industry, Science and Research ***Kim Carr***. "Engaging with Chinese partners enables Australian researchers to tap into global networks, technologies and infrastructure to achieve even greater results," he says.

The recipients will investigate a variety of topics across the medical, environmental, communications, agricultural and industrial fields.

The grants are provided from the Australia-China Special Fund for Scientific and Technological Cooperation, as part of the **International Science Linkages program**. Participating Australian research institutions, industry, and the **Chinese Government** will also contribute funds to the projects.

▶ **More Information: Patrick Pantano, 0417 181 936; https://grants.innovation.gov.au/ISL/**

...and French connections

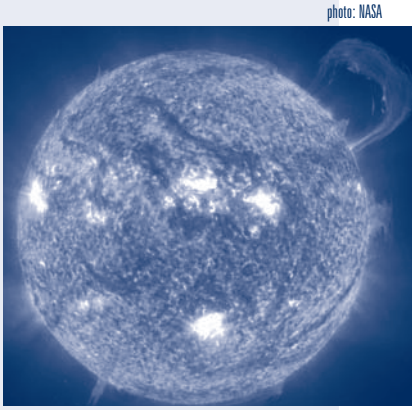
The **Australian** and **French Governments** have renewed a memorandum of understanding (MoU) in support of the **French-Australian Science and Technology Program** (FAST), which in Australia is managed by the **Department of Innovation, Industry, Science and Research**. Its French counterparts are the **Ministry of Foreign and European Affairs** and the **Ministry of Higher Education and Research**.

FAST has so far supported 65 projects in the areas of bio-medical, agricultural and climate change adaptation research. The Australian component of funding is provided through the International Science Linkages program and details on projects funded under the FAST Program can be accessed at the International Science Linkages website.

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

G'day sunshine

photo: NASA



The $100 million **Australian Solar Institute**, which will be led by ***Dr Bruce Godfrey*** as interim executive director, has opened its headquarters in the CSIRO Energy Centre in Newcastle, NSW.

In launching the institute, Minister for Resources and Energy ***Martin Ferguson*** says it will allow greater collaboration between Australian and international researchers in solar energy technologies in addition to providing funding for research and development of solar thermal and solar photovoltaic technologies across Australia.

As part of the initial funding, the **Australian Government** will support three foundation projects with $15 million:

- $5 million to support the development of a crystalline silicon pilot line at the **University of New South Wales**;
- $5 million to establish a solar thermal tower at the CSIRO in Newcastle; and
- $5 million to assist in the establishment of a process and characterisation solar research facility at the **Australian National University** in Canberra.

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

Have it for 6 billion

A new study by the Australian Academy of Technological Sciences and Engineering (ATSE) has looked into identifying technologies that can most efficiently and effectively reduce carbon emissions for stationary power generation. It found that no single new technology for stationary energy production will be capable of achieving projected reductions for CO_2 (10% atmospheric CO_2 by 2020) and that around $6 billion will be required by 2020 on RD&D on new power generation technologies. Increased deployment expenditure is required after that.

The report recommends the establishment of a new **Energy Research Council** to fund necessary RD&D proposals.

▶ **More information: www.atse.org.au/index.php?sectionid=1259**

Faster renewables

The $500 million **Renewable Energy Fund**, which was established to reduce the cost of demonstrating and deploying key renewable energy technologies, has been brought forward for investment, with $100 million to be spent in 2008-09 and further $400 million in the period 2009-10, subject only to availability of suitable demonstration projects.

The Renewable Energy Fund includes the Renewable Energy Demonstration Program, the $15 million Second Generation (Gen2) Biofuels Research and Development Program and the $50 million Geothermal Drilling Program. With the decision the **Australian Government** intends to accelerate investments in solar and renewable energy projects, complement the Carbon Pollution Reduction Scheme, and stimulate the economy and the creation of jobs in low pollution industries.

Guidelines for applications to the Renewable Energy Demonstration Program will be released early in the year.

▶ **More information: www.pm.gov.au**

Ready for ERA?

The **Australian Research Council** (ARC) has released two key documents, the *ERA Indicator Principles* and *ERA Indicator Descriptors,* to assist institutions as they prepare for a trial of Excellence in Research for Australia (ERA) in 2009. The ERA initiative will undertake evaluations of the research in Australian higher education institutions at a discipline level according to research quality and activity, which will be assessed using a combination of indicators and expert review.

According to ARC chief executive officer ***Professor Margaret Sheil***, the *ERA Indicator Principles* provide the overall context and application of the indicator approach and the *ERA Indicator Descriptors* provide the detail of each indicator type.

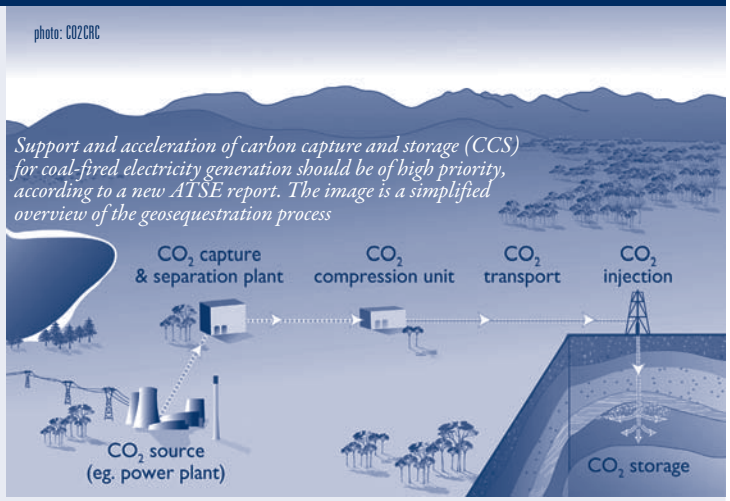
ERA evaluations will take place in eight clusters of disciplines of which Cluster One (Physical, Chemical and Earth Sciences) and Cluster Two (Humanities and Creative Arts) will be evaluated in the first half of 2009. This will help the ARC to further develop and test the indicators to ensure they are valid and robust.

Journal ranking lists for Cluster One and Two are complete and are now subject to a final review by discipline-specific experts. These lists will be released in early-2009.

The *ERA Indicator Principles* and *ERA Indicator Descriptors* are available on the ARC website.

▶ **More information: Sheena Ireland, 02 6227 6711, 0412 623 056**

photo: CO2CRC



Support and acceleration of carbon capture and storage (CCS) for coal-fired electricity generation should be of high priority, according to a new ATSE report. The image is a simplified overview of the geosequestration process

New ways wanted

The Diversity and Structural Adjustment Fund, which commenced on 1 January 2008, aims to promote structural reform by higher education providers enabling greater specialisation, more diversity in the higher education sector and better responsiveness to labour markets. Through its latest competitive round the fund will provide $111.5 million to support 49 projects by more than 30 universities.

The projects will promote innovative arrangements with partners in higher education and in vocational education and training in order to create new pathways for students across the tertiary sector. Many of the projects will also promote access to universities for students from low socio-economic status backgrounds, regional and remote Australia and Indigenous students.

▶ **More information: Deputy Prime Minister's Press Office, 02 6277 7758. For a full list of funded projects and further information: www.deewr.gov.au/dsa.**

Well trained

The Minister for Innovation, Industry, Science and Research, ***Senator Kim Carr***, has released details of the 2009 Higher Education Research Block Grants provided to Australia's 41 universities. Senator Carr says that the Government is providing an additional 1000 Australian Postgraduate Awards (APA) compared to the previous round and will further increase this number from currently 2584 to 3,500 by 2012.

APA grants are available for students undertaking a PhD or Masters by research degree in order to assist with students' living costs.

The 2009 research block grants total $1.27 billion and are provided through six programs supporting research training in Australian Higher Education Providers:

- Research Training Scheme, $597.7 million;
- Institutional Grants Scheme, $314.5 million;
- Research Infrastructure Blocks Grants Scheme, $212.3 million;
- Australian Postgraduate Awards, $121.2 millon for 2584 awards;
- The Commercialisation Training Scheme $5.5 million;
- International Postgraduate Research Scholarships $19.6 million for 330 scholarships.

▶ **More information: (Minister's office) Patrick Pantano, 0417 181 936; (DIISR) Anne Byrne, 02 6276 1068**

Malignant focus...

The **Australian Government** will provide $5.6 million in funding for new cancer research and clinical trial initiatives.

In South Australia, the **Institute of Medical and Veterinary Science** (IMVS) will receive $3.7 million in **National Health and Medical**

Research Council (NHMRC) Program Grant funding for its work on better treatment for blood cell cancers such as leukaemia, and inflammatory diseases. The co-head of the newly-formed **SA Centre for Cancer Biology**, ***Professor Angel Lopez***, will lead the IMVS research, which is focusing on a group of protein hormones and their receptors implicated in blood cell cancers and inflammatory diseases. The program funding is spread over five years starting in 2010.

A further $1.9 million provided through **Cancer Australia** will fund four national cancer clinical trials groups: three established clinical trials groups working in sarcoma, neuro-oncology and children's haematology/oncology research; and a new **Primary Care Cooperative Cancer Clinical Trials Group** focussing on prevention, detection and care of people with cancer.

▶ **More information: www.pm.gov.au/media/Release/2009/media_release_0755.cfm**

... finds new ways

An innovative approach to funding research brings together cancer charities and government to provide a total of over $14 million for 42 projects in cancer research. The projects will focus on improving treatment, care and support of people afflicted with cancer, and some on the early detection of cancer. Of the funded projects, 14 are clinical trials.

The funding has been awarded through the Priority-driven Collaborative Cancer Research Scheme, created by the **Australian Government**'s cancer agency, **Cancer Australia**. The national depression initiative, **Cancer Council Australia**, **Cure Cancer Australia Foundation**, and the **National Breast Cancer Foundation** will jointly fund many projects through this scheme. The projects are also endorsed by the **NHMRC**. The scheme supports the involvement of consumers in cancer research from design to completion and encourages collaboration between research groups across Australia.

▶ **More information: 02 6277 7220; List of recipients: www.canceraustralia.gov.au**

Risky living in a warmer world

The **Australian Government's** National Climate Change Adaptation Research Facility (NCCARF), **NHMRC** and the **CSIRO** have identified health and climate change as a strategic priority for research and the Australian Government has announced it will contribute $6 million to the effort.

This recognises the increasing health risks associated with climate change, which range from greater incidences of infectious diseases and increases in bushfire-related injuries, to more heat-related death and illness.

The Government has released *Human Health and Climate Change – a National Adaptation Research Plan* developed by the National Climate Change Adaptation Research Facility. The plan outlines Australia's research priorities over the next five to seven years, which focus on the key areas of heat, extreme weather, vector-borne disease, mental health, health care, food safety, and the factors that influence risk.

The CSIRO Climate Adaptation National Research Flagship will establish a $4 million 'Collaboration Cluster on Urbanism, Climate Adaptation and Health', which will be led in partnership with CSIRO by **ANU**'s National Centre for Epidemiology and Population Health and **UQ**'s School of Integrative Biology, and is to develop ways to reduce the impact of climate change on the health of Australia's urban populations.

Vector-born diseases such as dengue fever and malaria may spread with climate change. The Anopheles mosquito pictured here transmits Plasmodium, a unicellular parasite that causes the malaria disease. Each year, more than 500 million people are infected and 2-3 million die, mainly children under the age of five.

photo: Andrew Michel

The Cluster's research program will focus on heat stress, food security and safety, air quality, and the changing risk posed by vector-borne diseases such as dengue fever due to climate change.

▶ **More information: Catriona Jackson, 0417 142 238;**

Buckets for health

In December and January, the **Australian Government** announced funding for researchers and research projects under a series of **NHMRC** grant schemes:

- $48 million for 132 Postdoctoral Training Fellowships ($36.9 million), 139 NHMRC Postgraduate Scholarships ($9.4 million), and two fellowships under the NHMRC-European Union Collaborative Health Research Grants Scheme ($1.5 million over five years). The two fellowships were awarded to:
  - ***Professor Graham Giles***, from the **Cancer Council of Victoria**, receives $996,294 to research genetic variants that underlie susceptibility to prostate, breast and ovarian cancers, and assess the genetic and environmental factors involved; and
  - ***Professor Malcolm Sim***, from **Monash University**, receives $693,550 to investigate the risk of brain cancer from mobile phone use during childhood and adolescence.
- $22 million for 58 grants funded under the Career Development Awards scheme, including 38 grants in the area of biomedical research, 11 grants in population health and 9 grants in clinical and industry research fields. The grants are directed to help translate research into outcomes and to enable investigators early in their careers to establish themselves as independent researchers. The funding also includes five travelling awards of $46,906 for research training at a temporary host institution.
- The Government announced further $4.1 million in NHMRC development grants funding research commercialisation at the early proof-of-concept stage. The grants support development work in fields related to human health including diagnostics, medical devices, pharmaceutical products, bioinformatics, biomaterials and biotechnology.

▶ **More information: www.nhmrc.gov.au**

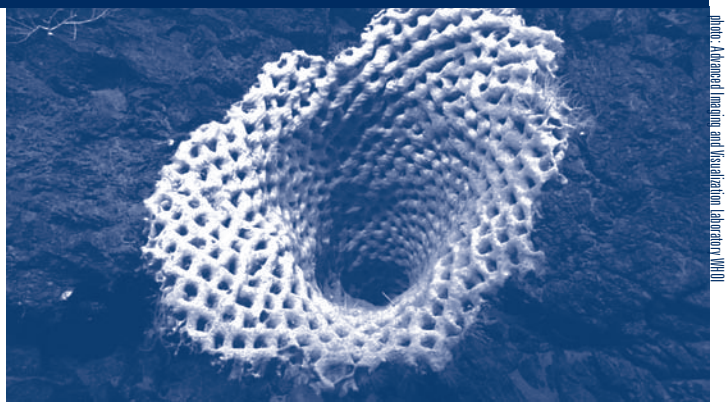


photo: Advanced Imaging and Visualization Laboratory (AIVL)

The half-metre-wide mouth of a 2-metre high "waffle-cone" sponge, found at a depth of 2197 metres in the Tasman Fracture Zone.

Deep-sea treasure hunt

A four-week US-Australian collaborative project to explore the deep ocean south-west of Tasmania has revealed new species of animals and more evidence of impacts of increasing CO_2 on deep-sea corals.

Led by chief scientists ***Dr Jess Adkins***, **California Institute of Technology**, and ***Dr Ron Thresher***, **CSIRO Climate Adaptation and Wealth from Oceans Flagships**, the project also gathered data to assess the threat posed by ocean acidification and climate change on Australia's unique deep-water coral reefs.

The survey through the Tasman Fracture Commonwealth Marine Reserve, south-west of Tasmania, explored the near vertical slice in the earth's crust, known as the Tasman Fracture Zone, which drops from approximately 2000 metres to over 4000 metres. Below the 2000 metre mark, the researchers documented the deepest known Australian fauna, including carnivorous sea squirt, sea spiders and giant sponges.

Vast fields of fossil corals were discovered below 1400 metres, and dated to more than 10,000 years old. The samples collected will be used to determine the periods over the past millions of years when reefs have existed south of Tasmania. They will also provide ancient climate data that contribute to models of regional and global climate change, based on historical circulation patterns in the Southern Ocean.

▶ **More information: www.csiro.au/news/MediaCentre.html**

Beware the paddock

Melioidosis is a disease that can develop into a potentially fatal community-acquired bacterial pneumonia. This wet season it has already cost the lives of two people in the NT. The disease is caused by bacteria (*Burkholderia pseudomallei*) that live in the soil in the tropics including northern Australia, although not much is known about the habitat of the bacteria. Now researchers from **Charles Darwin University** have found evidence that changes in land use influence the occurrence of the bacteria. Only around 40 cases of melioidosis occur each wet season, but there is now concern that the disease might be spreading because of complex environmental disturbances and changed landscape ecology.

Lead author ***Dr Mirjam Kaestli*** performed a survey in the Darwin area in tropical Australia and found that in environmentally undisturbed sites the bacteria were mainly found close to streams and in grass-and roots-rich areas. In disturbed soil, however, the bacteria were most often found in paddocks, pens and kennels holding livestock and dogs.

The study was published in January in the open-access journal *PLoS Neglected Tropical Diseases*.

▶ **More information: www.aussmc.org**

Twin radiation

The new Positron Emission Tomography (PET) radiopharmaceutical production facility that is being built at Lucas Heights by **PETNET Solutions**, is part of a global network offering nuclear medicine products and facilities. It will consist of two **Siemens** manufactured cyclotrons which will produce the short-lived radiopharmaceutical 18F-FDG (fluorodeoxyglucose) used in PET nuclear medicine scanning.

PET has produced significant advances in the diagnosis of cancer and other major medical conditions as it allows doctors to see disease at its earliest stage and precisely monitor treatment. The twin cyclotron facility will ensure there is a duplication of quality systems and processes to guarantee delivery of the radiopharmaceuticals to hospitals and research facilities at the required dose.

The first customer shipment of PET radiopharmaceuticals from the new Lucas Heights facility is expected in June 2009.

▶ **More information: www.ansto.gov.au/**

Dragonfly eyes

The extraordinary flying ability of the dragonfly could be the key to speeding up the development of micro-aerial vehicles, according to a researcher from the **Australian National University** (ANU). Ongoing research by ***Dr Richard Berry*** from the ANU **Centre for Visual Sciences** attributes the dazzling aerial control of dragonflies to their remarkable vision.

Dragonflies are one of the oldest existing arthropods and also one of the most accomplished fliers known, says Dr Berry. Like many other flying insects, dragonflies possess a triplet of eyes found on the front and top of the head, known as the ocelli.

photo: Richard Berry

Dragonfly in the movies

He and his colleagues, ***Mr Joshua van Kleef*** and ***Dr Gert Stange***, have determined what the ocelli see by " literally peering through the lenses of the eyes to see what sort of patterns could be seen through the other side," says Dr Berry. "We then made a virtual three-dimensional model to describe the shapes of the eyes." The team also developed a 'movie theatre' for dragonflies which consists of hundreds of ultraviolet and green LEDs that encircle the head of a dragonfly. By analysing the eyes while being exposed to random light patterns the team found that ocelli of dragonflies are exceptionally well tuned to provide fast, sensitive and directionally selective information about the world.

Dr Berry says the eyes of dragonflies could hold the key, for example, for designers of tiny insect-size aircraft to learn how to fly like a dragonfly.

The results were presented at the 29th annual Australian Neuroscience Society Conference.

▶ **More information: http://news.anu.edu.au/?cat=22**

Sea(water) change

In 2006, an international guiding body, the **Scientific Committee on Oceans Research** (SCOR), agreed that there was a scientific case to change the definition of 'seawater'.

It established a working group, chaired by ***Dr Trevor McDougall***, of **CSIRO's Wealth from Oceans Flagship**, which has now proposed changes to the definition. According to Mr McDougall the changes are important in order to account for the variations of salinity and temperature responsible for driving deep ocean currents and the major vertical overturning circulations of the world's oceans. "Getting these circulations right is central to the task of quantifying the ocean's role in climate change."

The group is proposing to adopt new and more accurate oceanographic variables, 'Absolute Salinity', and 'Conservative Temperature', which would replace the currently in use variables, 'Practical Salinity' and 'Potential Temperature'. The new definition would allow, for the first time, an accurate measure of the heat content of seawater that could be included in ocean models and climate projections.

Sea water consists to 3.5% of material such as salts, dissolved gases, organic substances, and undissolved particles. Current salinity measurements using the conductivity of seawater do not account for the small variations in seawater composition around the globe. The SCOR working group now recommends a practical method for taking these variations into account. The changes in salinity, while small, are a factor of about ten larger than the accuracy with which scientists can measure salinity at sea.

More information: **www.csiro.au/news/New-Ocean-Science.html**

Sticky polymers

An international team of chemical engineers, chemists and pharmacists has made a major breakthrough that will allow scientists to test for performance enhancing drugs by simply coating an electric probe with a polymer and then dip it into the blood sample.

Dr Michael Stockenhuber from the **University of Newcastle** and colleagues at the **University of Cardiff** in Wales have discovered a technology, extended X-ray absorption fine structure or EXAFS, that allows researchers to explore how imprinted polymers (synthetic plastic materials) and complex molecules bind together. This has been so far difficult due to the amorphous nature of the polymers. The technology will enable researchers to optimise the design of polymers so that they can detect and separate enzymes, proteins and drugs in complex mixtures such as blood.

Dr Stockenhuber says an electrical signal would quickly and accurately indicate the presence of the drug. In current methods polymers do not stick to the blood as efficiently, which means the results are not as precise or fast as they could be, he says. The second major benefit of this research is its ability to control the delivery of drugs to specific parts of the body, particularly in cancer chemotherapy where potent drugs coupled to a polymer could be directed straight to the malignant tissue.

The research has been published in the *Royal Society of Chemistry (RSC) Journal*.

▶ More information: **www.newcastle.edu.au/news/index.html**

Cancer detective

Deakin University researchers have developed an automated system to improve the accuracy in the interpretation of CT (computed tomography) and MRI (magnetic resonance imaging) scans, which are widely used to detect lung disease including early stages of lung cancer. "Currently, expert radiologists need to view many images per patient to try and identify nodules that may be cancerous. This large amount of data increases the complexity of inspection and interpretation," says Deakin researcher ***Dr Abbas Kouzani***, adding that automated approaches can improve the precision of lung nodule detection and serve as a preliminary interpreter to assist radiologists. The system developed by Dr Kouzani and **Alycia Lee** can automatically identify lung nodules of varying sizes and shapes in CT images and could improve the accuracy of cancer detection. The system has also proved to be more accurate than alternative automated systems currently available. "Our nodule detection rate is higher than that of the existing systems, and at the same time, our false detection rate is lower than that of those systems," says Dr Kouzani.

▶ More information: **www.deakin.edu.au/news/media.php**

Fantastic voyage

Remote controlled robots equipped with micro-motors small enough to be injected into the human bloodstream could save lives in complex surgeries by reaching parts of the body, a stroke-damaged cranial artery for example, that catheters have previously been unable to reach.

Researchers from **Monash University**'s Micro/Nanophysics Research laboratory use piezoelectricity to run the 'Proteus motor' which, named after the tiny submarine that travelled the human body in the science fiction Fantastic Voyage, is just 250 micrometres wide and still strong enough to swim against the blood's current to reach spots difficult to operate.

According to research team leader ***Professor James Friend,*** methods of minimally invasive surgery are a preferable alternative to cut and sew operations. However, he says, serious damage can still occur as surgeons are often limited, for example, by the width of a catheter tube. In serious cases, this can fatally puncture narrow arteries, Professor Friend says. "With the right sensor equipment attached to the microbot motor, the surgeon's view can be enhanced and the ability to work remotely also increases the surgeon's dexterity."

The team has produced prototypes and is now working on ways to improve the assembly method and the mechanical device which moves and controls the micro-motors. Details of the research were published in the *Journal of Micromechanics and Microengineering*.

▶ More information: **www.monash.edu.au/news/**

Evolution pinnacle

A new genetic research finding has scientists scratching their heads in amazement at a miracle of nature – head lice.

"It will be of little comfort to parents but head lice have the most highly evolved mitochondrial chromosomes of all multi-celled animals," says ***Associate Professor Stephen Barker*** from the **University of Queensland.**

Almost all multi-celled animals, including humans, have one large mitochondrial chromosome, but head lice have 12 or more mini-chromosomes. What's more, parts of these 12 mini-chromosomes join to one another for a while only to split again later.

These mini-chromosomes "seem to sit at the summit of mitochondrial chromosome evolution," his colleague, ***Dr Renfu Shao*** says. In this sense, head lice have extreme genomes, he says and the researchers are now examining the implications for knowledge of the biology of head lice.

▶ More information: **www.uq.edu.au/news/**

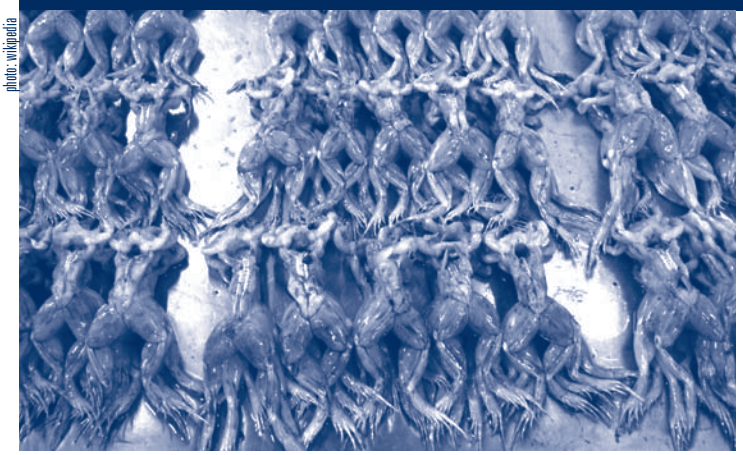


photo: wikipedia

Extinctive appetite

The global trade in frog legs for human consumption is threatening their extinction, says a new study by an international team including **University of Adelaide** researchers. The researchers have called for mandatory certification of frog harvests to improve monitoring and help the development of sustainable harvest strategies.

Ecologist ***Associate Professor Corey Bradshaw*** says frog's legs are not just a French delicacy but on the menu at school cafeterias in Europe, market stalls and dinner tables across Asia to high end restaurants throughout the world. He says amphibians are already the most threatened animal group yet assessed because of disease, habitat loss and climate change. Man's appetite adds to this as annual global trade in frogs for human consumption has increased over the past 20 years with at least 200 million and maybe over 1 billion frogs consumed every year. Only a fraction of the total trade is assessed in world trade figures.

The study will be published online in the journal *Conservation Biology*.

▶ More information: **www.adelaide.edu.au/news/**

New cancer target

Researchers at the **Children's Cancer Institute Australia for Medical Research** have identified a potential new target, a gene called ODC1, for treatment of neuroblastoma, the most common solid tumour among young children.

The presence of multiple copies of the cancer-associated gene, MYCN, in neuroblastoma tumours is known to be a powerful predictor of death in this disease. MYCN also drives the expression of many other genes including one called ODC1. The researchers found that as ODC1 becomes over expressed it contributes to the aggressive biology of this tumour and poor clinical outcomes.

In a laboratory model the researchers showed that the treatment of neuroblastoma with conventional chemotherapeutic drugs was improved when combined with DFMO, a known inhibitor of ODC1 function. This suggests that targeting ODC1 for suppression is a potentially valuable therapeutic approach, says ***Professor Michelle Haber***, chief executive of the Children's Cancer Institute. She adds that by suppressing ODC1 the development of neuroblastoma could be delayed or even prevented, highlighting the importance of this gene in the aetiology of the disease.

Because DFMO has been approved for use in humans, the researchers hope to proceed rapidly to clinical trials.

▶ More information: **www.ccia.org.au/**

Budding talent

Eucalypts are already known to have special 'buds' buried within the bark of their trunks for recovery after intense fire. Researchers from **Charles Sturt University** (CSU) and **Charles Darwin University** (CDU) have now found that, for a fast recovery after lower intensity fires, Australian eucalypts have also special primordial buds buried in their leafy canopies.

Dr Geoff Burrows, a plant research scientist with CSU and colleagues from CDU have looked at bud structures in the canopy and under the bark in the trunks of a range of NT trees. According to Dr Burrows, all plants have axillary or leaf buds where the leaf meets the stem. However, eucalypts have a number of minute, back-up or accessory buds buried beneath the surface of the smallest branches. These buds are protected from being eaten or killed by the heat of a ground fire.

He says that eucalypts are the only trees that let a very delicate bud go out first and in most cases lets it drop off, but keep a reserve of accessory buds hidden and protected within the smallest branches and twigs.

In the NT most bushfires are grass-fires and the eucalypt canopy does not burn, says ***Dr Sean Bellairs*** from CDU. "However, you get heat scorch and the leaves shrivel up. With this unique set-up eucalypts are able to successfully re-sprout in the canopy of the tree.

▶ More information: **http://news.csu.edu.au**

Camel culprit

More than a million camels, the world's largest wild herd, are inflicting major damage on Australia's fragile desert ecosystems, scarce water supplies, rare plants and animals, Aboriginal cultural resources, remote communities and pastoral enterprises across the inland, according to a new report by the **Desert Knowledge CRC**.

"The damage camels inflict has gone largely unnoticed by the bulk of Australia's population," warns lead author ***Glenn Edwards***. The current camel herd is doubling every nine years spread across three States and the NT, with major hotspots where the WA/SA/NT borders come together, and in the Simpson Desert.

Camels are thought to cause around $15 million in economic damage a year and the pastoral industry is estimated to lose millions of dollars every year in wrecked water points, windmills and fences and lost effort. The report advocates a risk-based approach to the camel plague, with the aim of managing their impacts rather than exterminating them, which may not be possible. The study calls for camel densities to be reduced to around 0.1–0.2 camels per square kilometre.

▶ More information: **www.desertknowledgecrc.com.au/news/media.html**

Singled out

Ovine SNP50 BeadChip is a new genomic tool to trace genetic variations at more than 50,000 Single Nucleotide Polymorphisms (SNP) in the sheep genome, and it is set to transform the future selection and breeding of sheep around the world.

Scientists at **CSIRO** are taking part in the **International Sheep Genomics Consortium** (ISGC), a partnership of scientists and funding agencies, which is developing a range of publicly available genomic resources. Now available for research groups, there has been extremely strong demand for the Ovine SNP50 BeadChip, according to ISGC Secretary and **CSIRO Livestock Industries** molecular geneticist ***Dr James Kijas***. He says that in Australia, the new tool is used to speed up the development of genetic markers to fast-track genetic gain, and this will benefit producers. But scientists will also use the chip to help unravel the process of sheep domestication and impact of selection. The research will provide information about the history of the species and reveal which parts of the genome have been under selection for economically important traits, Dr Kijas says.

▶ More information: **James Kijas, 07 3214 2200, james.kijas@csiro.au**

Dr Mark Lonsdale
CHIEF CSIRO ENTOMOLOGY

Biosecurity for Australia

In December 2008, Tony Burke, Minister for Agriculture, Fisheries and Forestry, released a report, *One biosecurity: a working partnership*, undertaken by an independent panel of experts chaired by independent consultant and former secretary of the Department of Environment and Heritage, Mr Roger Beale.

The report contains 84 recommendations for far-reaching changes to Australia's quarantine and biosecurity arrangements, to all of which the Australian Government, in a preliminary response released at the same time, agreed in principle.

The review had been an election commitment of the incoming Government in response to the perception that biosecurity risks are growing as a consequence of population spread, increasing global trade and climate change. Biosecurity is defined here as "The protection of the economy, environment and human health from the negative impacts associated with entry, establishment or spread of exotic pests (including weeds) and diseases". Although not as high profile as climate change, biosecurity threats represent a clear and present danger to Australia's agriculture and environment and, if not addressed, would undercut any of our efforts to manage the worst depredations of climate change.

Interestingly, the thrust of many of the recommendations echoed or amplified those of the last major review of Australia's biosecurity arrangements - the Nairn review in 1996. This had proposed a shift to treating biosecurity as a shared responsibility between government, community and industry, and to thinking more holistically about managing risk along a "continuum of quarantine": pre-border, border and post-border. Australia has made some progress in addressing both these aims, but the recent horse flu incursion highlighted to the Beale review team "...in a specific and tangible way, the impact of the failure to achieve shared responsibility".

The proposed changes fall into four main areas that are "intended to increase Australia's overall biosecurity effort".

1. *Stronger working partnerships* between the Commonwealth, states, territories, industry and the community, including a new agreement between the Commonwealth, states and territories to manage a seamless biosecurity continuum.
2. *New governance arrangements.* Under these, the Federal Government will retain responsibility for setting policy, but a new statutory authority will be formed in July 2010 based on AQIS, Biosecurity Australia and parts of the Product Integrity, Animal and Plant Health Division of the Department of Agriculture, Fisheries and Forestry (DAFF) to undertake the day-to-day biosecurity operations. An independent commission would make the science-based decisions on market access requests, and to ensure the integrity of the system, the role of Inspector General of Biosecurity would be created. Meanwhile, the Minister would be responsible for setting the overall biosecurity policy framework within which the commission and authority conduct their business.
3. *Changes to operational focus.* These include a move to a 'risk-return' approach so resources are targeted to secure the biggest possible reduction in the risks posed by pests, as well as increased emphasis on the quarantine continuum approach including increased pre-border measures to help keep pests and diseases from reaching the border in the first place; and increased monitoring and surveillance efforts post-border to detect and deal rapidly with incursions.
4. *Increased resources:* The proposal here is to increase the base funding for biosecurity arrangements by about $260 million per annum, including an increase in information technology and business systems infrastructure.

The report notes that the importation of live samples of exotic disease pathogens such as Foot and Mouth Disease (FMD) for use in laboratory diagnostic research and capacity building is vital, and recommends that importation of FMD into high security containment in Australia should be permitted. However, the livestock industry is quite nervous about this proposal, and the Government's in-principle agreement to this recommendation should not be interpreted as the final word. Meanwhile, plans are underway for CSIRO to work collaboratively at facilities in Thailand on FMD diagnostics.

The report is vocal on the central role for research in managing biosecurity risks. Research capacity to protect the natural environment

from biosecurity threats is particularly lacking, and chronically underfunded – something the review team argues should be addressed by government. The review team also states that:

- researchers should have access to data from biosecurity authorities to be able to analyse the nature of the existing and emerging threats and our response to them;
- there should be a national set of research priorities for biosecurity; and
- the new National Biosecurity Authority must ensure that Australia has sufficient laboratory capability to manage incursions of national significance (noting that there are skill shortages in critical areas such as taxonomy, microbiology and entomology).

Taken as a whole, these proposed changes represent a return to the directions set in 1996 by the Nairn report. They represent a real opportunity to tackle a threat to our natural environment and agriculture that is growing and shifting constantly.

Saving the future

Carbon Pollution Reduction Scheme

Against the backdrop of a global financial crisis, Prime Minister ***Kevin Rudd*** has announced "one of the largest and most important structural reforms to our economy in a generation" – the introduction of a Carbon Pollution Reduction Scheme (CPRS) to commence in 1 July 2010.

In the long term, the Government is committed to reducing carbon pollution by 60% from 2000 levels by 2050.

In the medium term, carbon pollution would be reduced by not less than 5% below 2000 levels, and up to 15% if there are comparable international agreements. By comparison, since 1995 Australia's emissions have increased by around 1% per year. Assuming projected population growth of 45% over the 1990-2020 period, the 5-15% target would equate a per-capita reduction of 34-41% over this period.

The CPRS will be the primary mechanism to meet Australia's emission reduction objectives complemented by an expanded Renewable Energy Target investment in renewables and carbon capture and storage and initiatives on energy efficiency.

The CPRS will employ a 'cap and trade' emissions trading mechanism by which carbon emitted by liable entities is traded as a commodity in the form of carbon permits. The Government will release a limited number of permits each year. Most of the permits will enter the market by auction, which will require firms to compete in the purchase of permits they require. Additionally, certain categories of firms will receive free permits as transitional assistance to adapt to the CPRS.

The number of permits issued will be determined by the cap on aggregate emissions set by the Government for all the covered types and sources of emissions. The yearly caps will be specified for at least five years in advance. Emitters of greenhouse gases need to acquire a permit for every tonne of greenhouse gas they emit. The quantity of emissions produced by firms will be monitored, reported and audited, and at the end of each year, each liable entity will need to surrender a permit for every tonne of emissions that they produced in that year.

An important notion is that there is no limit on emissions from individual sectors, firms or facilities – the limit applies to all covered emission sources.

Permits will be personal property and can be traded and banked indefinitely. The price of the permits will be determined by market forces but there will be a cap of $40 per tonne of CO_2 equivalent (CO_2-e) at the start of the scheme, rising at 5% per annum. The initial price is expected to be around $25 per tonne of CO_2-e.

The scheme will involve mandatory obligations for around 1000 entities and cover around 75% of Australia's emissions across a broad sectoral range spanning stationary energy, transport, fugitive, industrial processes, waste and forestry sectors. Initially, the scheme will not cover emissions from agriculture.

The Australian Government will provide substantial assistance to emissions-intensive, trade–exposed industries (EITE industries) by allocating free carbon permits. Firms with activities of at least 1000 tonnes or 2000 tonnes CO_2-e per million dollars of revenue will receive free permits to cover 60% or 90%, respectively, of average emissions in their industry. The rate of assistance per unit of output will be gradually reduced over time.

At the start of the scheme, the total level of assistance to EITE

cartoon: adapted from Mark Eliott

industries will be 25% of total carbon pollution permits (35% if agriculture is included) rising to around 45% by 2020 if agriculture is included in the scheme after 2015.

The outlined assistance presents a significant increase from proposals outlined in the July 2008 CPRS Green Paper.

The Government also announced a $2.5 billion Climate Change Action Fund to smooth the transition to a low pollution economy. Operating in four streams the fund will be:

- informing business and community service organisations about the operation of the Scheme;
- supporting investment in energy efficiency and low emissions technologies in businesses;
- providing structural adjustment provisions for Workers and Communities;
- assisting the coal mine sector to adjust to the CPRS.

Assistance to the most emissions intensive coal-fired electricity generators will be provided through an Electricity Sector Adjustment Scheme which will deliver a fixed allocation of free permits - worth approximately $3.9 billion – to be provided over five years.

Renewable Energy Target scheme

The Government also released draft legislation for a 20% Renewable Energy Target (RET) by 2020, which will amend the current Mandatory Renewable Energy Target. The *Renewable Energy (Electricity) (Amendment) Bill 2008* would legislate for a target of 45,000 gigawatt-hours (GWh) of electricity to be sourced from renewable sources, like solar, wind and geothermal in the year 2020.

The legislation includes new Solar Credits that will provide incentives for the installation of micro-generation units, primarily household solar photovoltaic (PV) systems.

The Solar Credits will allow owners of solar panels to earn five credits (called Renewable Energy Certificates, or RECs) for each mega-watt hour of solar energy produced by their solar panels. These RECs will act as an upfront capital cost subsidy worth around $7,500 for purchasers of solar PV systems. According to Minister for Environment, Heritage and the Art ***Peter Garrett***, Solar Credits would provide multiple RECs for new micro-generation systems – primarily solar panels – up to 1.5 kilowatts. The credits would assist with up-front costs, providing a multiple of five times the value of RECs from the next financial year, and would phase down to 2015-16.

Legislation to implement the RET scheme will be in place by mid-2009.

▶ More information: (CPRS) www.climatechange.gov.au/whitepaper/summary/index.html; (RET) www.treasurer.gov.au

Dr Hugh Saddler
ADJUNCT PROFESSOR, AUSTRALIAN NATIONAL UNIVERSITY

Defects in the target: nRET

Prior to the 2007 election, the Labor Party's commitment to increase the share of Australia's electricity generated from renewable sources to 20% by 2020 was a key component of its strategy to reduce Australia's greenhouse gas emissions, second only to the introduction of an emissions trading scheme. Now in power, Labor announced details of how it proposes to meet this commitment - at a low key press conference in Brisbane two days after the highly publicised launch in Canberra of the emissions trading scheme (called the Carbon Pollution Reduction Scheme, CPRS), and just eight days before Christmas.

The Government proposes to amend legislation of the current scheme to boost renewable electricity generation, the Mandatory /Renewable Energy Target (MRET), and to change its name to national Renewable Energy Target (nRET). Implemented by the Howard Government, the MRET aimed for an increase of 9.5 TWh, equal to about 4% of total electricity generated in 2007, in the annual quantity of renewable electricity generated between 2001 and 2010.

In fact, almost no legislative changes will be made in moving from MRET to nRET, other than to insert an additional target of 45 TWh, to be achieved by 2020, and to specify the lesser year by year targets culminating in the final 45 TWh. The major legislative changes concern the treatment of small scale (rooftop) photovoltaics, which are likely to contribute less than 1% of the nRET target, yet received almost all the media coverage. However, the much larger issues are the potential for failure of the scheme to meet its main objectives, because it is keeping all the bad features of the old scheme, as well as the good ones.

To understand why this is so, it is helpful to look at the achievements, and failures, of the MRET.

The MRET creates a separate, higher priced wholesale market for renewable electricity, which operates alongside the much larger and lower priced wholesale electricity market, dominated by coal fired generation. This mechanism allows the market to bring emerging technologies to full commercial status, with the discipline of competition to prevent excess profits. While criticized by many for picking winners, the MRET instead chooses the very broad and indubitably important category of renewable energy, and then allows the play of market forces to determine which of many possible renewable generation technologies will be successful.

Far from being the result of considered policy making, inclusion of solar water heaters is the outcome of a messy last minute compromise made when the original MRET was legislated.

The winner picked by the MRET market was wind. The great success of the scheme was to allow the market to discover that Australia had a much larger wind energy resource than had previously been thought. The result was a boom in wind farm construction as Australia benefitted from rapid technical advances in the world wide wind generation industry, and improvements in designing and building wind farms flowing from the experience of doing so. Learning by doing is here an important consideration in longer term cost benefits.

Unfortunately, a fundamental design defect in the scheme meant that the boom was followed by a bust, with factories shutting down and investors moving to other countries. The defect is so-called unlimited banking, which allows generation in excess of the low target requirement in early years of the scheme to be held and used in later years when the target is higher. As a result, over-building in early years is encouraged, increasing the likelihood of a later bust.

....the legacy of the proposed nRET in 2020 is likely to be lots of wind farms and solar water heaters, but no significant geothermal or solar thermal capacity and no capability for these technologies to continue to grow Australia's renewable generation ...

Had the target been larger, the bust would have been less severe, but in fact the target is more than 20% smaller than it appears. This is the share taken by a technology which does not even generate electricity – solar water heaters. Far from being the result of considered policy making, inclusion of solar water heaters is the outcome of a messy last minute compromise made when the original MRET was legislated. It is the second major defect being carried over into the new scheme. What is worse, its damaging effect will be greatly amplified because the number of solar water heaters installed each year may increase by as much as five- or tenfold, because of a completely separate policy commitment to phase out residential off-peak electric water heaters.

With unlimited banking and the retention of solar water heating, the long queue of near ready to build wind farm projects and a regulation driven boom in solar water heaters means that these two technologies are likely to swamp the scheme. This could be disastrous for other highly promising, but slightly less mature technologies, notably hot rock geothermal and concentrating solar thermal generation, because when they are ready to scale up, in perhaps four or five years from now, there may be no space for them within the target. This possibility was clearly spelled out in the discussion paper on nRET design, which the Government released last year.

The press release accompanying the scheme launch says it will "[help] us build the low-pollution economy and jobs of the future" and "[drive] investment in renewable technologies like wind, solar and geothermal energy". In fact, because of its design defects, the legacy of the proposed nRET in 2020 is likely to be lots of wind farms and solar water heaters, but no significant geothermal or solar thermal capacity and no capability for these technologies to continue to grow Australia's renewable generation as the support provided by the nRET falls away. This would be bad energy policy, bad economic policy and bad for our prospects of reaching the Government's long term target for greenhouse gas emissions reduction.

photo: Gary Mee, courtesy Georgia Tech, US

Prostate cancer is the focus of research at the new Australian Protate Cancer Research Centre in Queensland. The image depicts a prostate visualised by magnetic resonance technology.

Men's new hope

Queensland University of Technology (QUT) has been awarded an **Australian Government** grant of $7.5 million to establish the **Australian Prostate Cancer Research Centre - Queensland**. The centre will initially be housed at **Princess Alexandra Hospital** (PAH) and ultimately in the $300 million **Translational Research Institute** which is due to open in Brisbane in 2012. It will perform clinical trials and also work in partnership with the **Australian New Zealand Urogenital Prostate** (ANZUP) **Clinical Trials Group**. Focus areas of research will be to:

- identify new ways to detect the presence of prostate cancer and reliably differentiate between slow growing and aggressive forms of the disease;
- develop new drug therapies that target the molecular mechanisms that allow prostate cancers to resist current drug treatments; and
- identify accurate markers that will assist in predicting treatment response.

Professor Colleen Nelson will co-direct the centre along with ***Professor Judith Clements*** and ***Professor David Nicol*** (PAH).

▶ More information: **Astra Dadzis, 07 3138 2361, astra.dadzis@qut.edu.au**

Sustainable institute

The **University of Melbourne** has launched the **Melbourne Sustainable Society Institute** (MSSI), which will conduct inter-disciplinary research on issues surrounding the sharing of resources between humans and their physical environment, particularly in the areas of agriculture, sustainable cities, risk and resilience including climate change and water. MSSI aims to address the socio-economic aspects of environmental change as well as the biological and physical issues. The institute will also host the university's new federally-funded research network *Social, Economic and Institutional Dimensions of Climate Change Adaptation*.

▶ More information: **Annie Bolitho, 03 83449151, 0407648603**

Green expertise hub

The **University of Adelaide** has established a new research institute, the **Environment Institute**, which will bring together expertise in water, climate change, economics, marine research, energy technology, natural resource management and ancient DNA. The institute is headed by leading water policy expert ***Professor Mike Young*** and includes two Federation Fellows, ***Professor Alan Cooper*** and ***Professor Barry Brook***, who was recently named one of the top 10 young scientists in Australia.

▶ More information: **www.adelaide.edu.au/news/news30981.html**

Forensic partners

A new agreement between **Flinders University** and **Forensic Science South Australia** will see the **South Australian Government** provide $200,000 in funding annually to the university to boost its forensic science research profile across the Schools of Biological Sciences and Chemistry, Physics and Earth Sciences. A particular focus will be to explore new frontiers in DNA testing. The partnership will also be used to establish the SA Justice Chair in Forensic DNA Technology at the university.

▶ More information: **Charles Gent 08 8201 2965, charles.gent@flinders.edu.au**

Atomic insight

One of the world's most powerful electron microscopes (EM), the double aberration corrected Titan 80-300 cubed transmission EM, worth over $9 million, is now the star of ten high-performance microscopes at the newly opened **Monash Centre for Electron Microscopy** (MCEM). The Titan is one of only four microscopes of this type in the world and the first outside of North America.

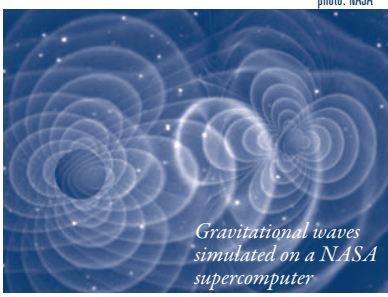
According to its director, ***Associate Professor Joanne Etheridge***, the new facility will allow scientists to gain a deeper understanding of the atomic structure of a wide range of materials. MCEM supports a wide variety of disciplinary and interdisciplinary research projects, covering topics including corrosion, catalysis, optics, superconductivity, alloys, ceramics, polymers, biomaterials, microelectronics and nanotechnology.

▶ More information: **Tim Mitchell, 03 9905 4840, 0437 457780.**

Gravitating observations

A three-way partnership of the **Australian Research Council**, the **Australian National University** and the **University of Adelaide** has dedicated $2.4 million for a project in the new astronomical field of observing ripples in the curvature of space-time. The **Advanced Laser Interferometer Gravitational-wave Observatories** (LIGO) project will be the first observatory capable of frequent observation of the known sources of gravitational waves. The seven-year project will see technology installed at **LIGO observatories** in Washington and Louisiana in the USA and cost around US$200 million. Australia is the third international partner of the project and the local funding will be spent in Australia building and installing deliverables for Advanced LIGO.

photo: NASA



Gravitational waves simulated on a NASA supercomputer

▶ More information: **David McClelland, 0261259888, Jesper Munch, 0883033526**

No sugar babies

The **Honda Foundation** will contribute $500,000 towards establishing a dedicated pandemic influenza research facility as part of a five-year commitment to **Griffith University**'s **Institute for Glycomics**.

It is Australia's only multi-disciplinary biomedical research institute dedicated to research on carbohydrates and carbohydrate-related pathways used by many significant diseases, such as various cancers, malaria, and influenza, to establish and spread. Certain carbohydrates can also be used to develop anti-influenza drugs that will successfully treat influenza by immobilizing the virus and preventing it from spreading further.

▶ More information: **www.griffith.edu.au**

Biosecurity focus

A new $13 million PC3 biosecurity laboratory at **James Cook University**'s Townsville Campus will focus on faster diagnosis of diseases such as Anthrax, Foot-and-Mouth Disease, Avian Influenza and Hendra virus. The laboratory is part of the **Queensland Government**'s Biosecurity Strategy and its 2020 Beef Plan, which will fund new and improved biosecurity and a network of world-class beef research facilities.

▶ More information: **http://cms.jcu.edu.au/news/current/JCUPRD_041906**

Cool wins

Coolshield International Pty Ltd, a Gold Coast based construction company, won the inaugural Gaia Award gold medal at Dubai's annual BIG 5 Construction Trade Show for Solasteel, a pre-coated water-based acrylic coating for metal sheeting. The award recognises efforts to develop environmentally friendly products and services for the building and construction sector.

Solasteel is a pre-coated steel building product that reflects solar radiation from buildings, cutting the need for air conditioners and other high energy cooling equipment.

Coolshield also won two silver awards for its Solacoat Heat Reflective Coatings and Solacoat Pavement Coatings. Another silver medal went to Brisbane company **Australian Innovative Systems Pty Ltd** for their Autochlor patented automatic salt water chlorine generator.

▶ **More information: http://ats.business.gov.au/News/NewsProfile.aspx?ID=33**

Defensive cash flows...

Chemring Australia Pty Ltd has been awarded $1.8 million from the Geelong Investment and Innovation Fund, a collaborative initiative between the **Commonwealth**, the **Victorian Government** and **Ford Australia**. The grant is expected to create 40 full-time jobs and inject $18 million into the local economy.

Chemring Australia, a subsidiary of UK-based **Chemring Group PLC**, has recently also received a 10 year, $160 million contract to supply countermeasures and pyrotechnics for the defence sector.

▶ **More information: www.pm.gov.au/media/index.cfm**

.... and flows

The **Defence Materiel Organisation** has signed a contract with **Anspec Pty Ltd** for the supply of pharmaceuticals and medications to the **Australian Defence Force** (ADF) valued at $93.5 million over five years.

The ADF will transition to the new contractual arrangement from 1 January 2009. The new arrangement consolidates 28 individual contracts for the individual supply, warehousing and distribution of ADF pharmaceuticals and medications.

▶ **More information: Defence Media Liaison: 02 6265 3343, 0408 498 664**

Catching the wave

A Memorandum of Understanding (MoU) has been signed between **Carnegie Corporation** and the **Department of Defence** to investigate the feasibility of using wave energy to generate electricity and desalinated water for **HMAS Stirling** at Garden Island in Western Australia.

Carnegie holds a research licence with the West Australian **Department of Planning and Infrastructure** to deploy monitoring equipment at a test site west of Garden Island where it will assess the wave energy potential and trial its ocean wave energy technology.

According to Minister for Defence ***Joel Fitzgibbon***, the MoU is a step towards testing the potential of new, renewable energy technologies such as wave power. "The $435 million Renewable Energy Demonstration Program (REDP) ... aims to stimulate more than $1 billion worth of investment in renewable energy technology, with the private sector contributing at least $2 for every $1 provided by the program," he says.

▶ **More information: http://minister.ret.gov.au/TheHonMartinFergusonMP/Pages/mediacentreresearch.aspx**

Shrinking wounds

The final report of the Australian clinical trial of eight venous ulcer patients treated with **Tissue Therapies**' VitroGro® twice a week has shown a reduction in median wound area from 9.2 to 5.2 square centimetres in 24 days. The trial, which was originally designed as a safety study, had five females and three males enrolled, with a median age of 74 years.

The reduction in wound area was highly statistically significant, Tissue Therapies states, although in four patients VitroGro® treatment started at the same time as a compression therapy, currently the best practice treatment for venous ulcers, and their healing results could therefore not be solely attributed to VitroGro treatment. Eleven adverse events were recorded during the study but none were attributed to the VitroGro® treatment.

Patient recruitment is proceeding to plan in Toronto, Canada, for a human trial of VitroGro® for the treatment of diabetic, venous and pressure ulcers. Results from the trial, which will be under the direction of international wound care expert, ***Professor Gary Sibbald***, are expected in the first half of 2009.

▶ **More information: www.tissuetherapies.com/**

Across the skin

Two clinical trials involving **Phosphagenics'** drug delivery system TPM have been completed.

In one trial, the TPM system was used to deliver insulin transdermally to patients with Type 1 diabetes without the use of a device. The clinical results of the trial met both primary end points of evaluating the efficacy of transdermal insulin in lowering glucose in patients with Type 1 diabetes and its safety and tolerability.

Phosphagenics decided to conduct the trial in order to establish the viability of its current formulation in delivering insulin across the skin and into the systemic circulation of Type 1 diabetic patients. The company will now optimise its TPM/insulin formulation using a diabetic animal model. In addition, Phosphagenics will conduct a market research study among clinicians to determine the best form for the final commercial product. This may take the form of a gel, a patch, a spray or other device.

A second, Phase I clinical trial has demonstrated the safety of using the TPM system for a topical delivery of the pain relief drug, lidocaine, a well known topical anaesthetic.

The trial also showed that the patented TPM/lidocaine formulation (5% lidocaine) significantly increased the amount, rate, and depth of lidocaine penetration into the skin compared to a leading commercial product, Xylocaine®. These parameters are normally expected to produce a local analgesic effect. Despite the increase in dermal drug delivery, TPM/lidocaine did not increase the plasma lidocaine concentration compared to Xylocaine® after 6 hours.

The open label, single centre study, led by ***Dr David Foster*** at the **University of South Australia**, involved 11 healthy adult volunteers and incorporated secondary endpoints of safety and tolerability.

▶ **More information: www.phosphagenics.com/main/home.htm**

Slow target

A research team led by ***Associate Professor Gil Mor*** at **Yale University** has found that **Novogen Limited**'s mTOR inhibitor NV-128 has a high level of potency against cancer stem cells.

mTOR pathways play a role in the survival of rapidly dividing cells

in established tumours. In addition, published research indicates that they guarantee survival in cancer stem cells, which are slowly dividing undifferentiated cells that can regenerate tumours rapidly after their surgical or chemical removal. Cancer stem cells could represent a promising target for improved cancer control, as they are now recognised as the underlying mechanism by which tumours recur and metastasise after primary treatment.

NV-128 is a potent inhibitor of the mTOR pathway and Novogen is now aligning its research priorities for NV-128, and other related pipeline compounds, to look specifically at their activity in cancer stem cells. This presents a unique opportunity to develop NV-128, and other potential derivatives, not only for use as a therapeutic agent in established cancers, but also to target the stem cells which lead to cancer recurrence.

▶ More information: www.novogen.com/

Dosing complete

ATL1103 is a second generation antisense drug designed to block the growth hormone receptor (GHr) and a potential treatment for growth (acromegaly) and sight (diabetic retinopathy) disorders. According to its manufacturer, **Antisense Therapeutics Ltd.,** ATL1103 is currently well advanced in mouse and primate toxicology studies with dosing now complete. A report on the study, which will follow a post dosing monitoring period, is expected for the second half of 2009.

The toxicology program for ATL1103 is being undertaken to a standard to support an **Investigational New Drug** (IND) application for a clinical trial with the **US Food and Drug Administration** (FDA) and to allow the flexibility of applying to clinical trial regulatory authorities in other countries.

▶ More information: www.antisense.com.au/_home.asp

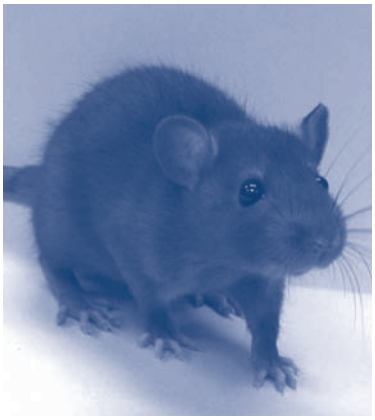
Rheumatic start

In December, **Arana Therapeutics Limited** announced that it had commenced its international multi-centre Phase II dose ranging study in rheumatoid arthritis (RA). Recruitment of the 200 patients is expected to take approximately 12 months with the formal results of the study available in mid-2010. Study ART621/221 is an international, multicentre, randomised, double-blind, placebo-controlled study, designed to establish the efficacy of ART621 in RA.

The study will be conducted in Australia, the US, New Zealand, Czech Republic, Poland, India, Malaysia and Argentina.

▶ More information: www.arana.com/news_media.htm

Knocked rats



A paper published in the prestigious journal *Cell* appears to be the first in which germ-line transmission from rat embryonic stem cells (ES) has been definitively demonstrated, according to **Stem Cell Sciences plc**. The technology described in the paper is licensed exclusively to SCS from the **University of Edinburgh** and was developed by ***Professor Austin Smith*** and his team, now at **Cambridge University**. It is expected to allow the generation of consistently pure and stable rat ES cells, from which drug discovery assays as well as genetically modified animals can be created for academic, medical and pharmaceutical research.

Physiological processes and metabolic functions in the rat more closely mimic those of the human than do other model organisms such as the mouse. Yet studies such as defining drug action or the genetic basis of disease using rats have been hindered by the lack of sophisticated, precision genetic engineering, such as that achievable via ES cells in mice. Specific cell culture conditions now allow researchers to obtain authentic rat ES cells which can be precision engineered and then used to generate a completely novel range of rat models. This technology can be used to generate both knock-out rat models, in which the effect of gene deletion is studied, as well as knock-in models, which involves the insertion of genes, perhaps human genes, in a precisely defined manner.

▶ More information: www.stemcellsciences.com/

Lesion news

Actinic keratosis on the head

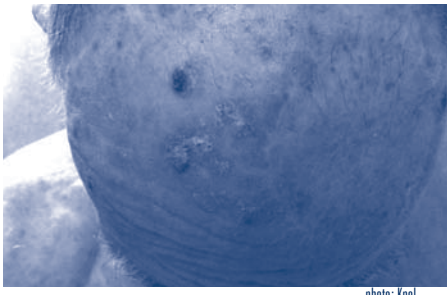


photo: Knol

PEP005 (ingenol mebutate) Gel is a lead product candidate of **Peplin, Inc.** for the treatment of actinic (solar) keratosis (AK), a common pre-cancerous skin condition caused by sun exposure. The face is the most common area for sun damage and the most common area for AK's, which can develop into skin cancers if left untreated.

The Phase IIb actinic (solar) keratosis (AK) dose ranging clinical trial (PEP005-015) was designed to evaluate the safety and efficacy of PEP005 Gel for the treatment of AK lesions on the head. The results demonstrated a clear dose response relationship with four out of the six treatment groups achieving statistically significant clearance of AK lesions when compared with vehicle. The complete clearance rates ranged from 15.6% to 42.3% across the six active treatment groups. At all concentrations investigated (0.005%, 0.010% or 0.015%) the PEP005 Gel demonstrated a favourable safety profile and was well tolerated; side effects comprised primarily of transient, short term, local skin responses at the treatment site. There were no drug-related serious adverse events reported.

Peplin has also completed enrolment of its 250 patient pivotal Phase III US and Australian AK trial, also known as REGION-I. The trial aims to replicate the safety and efficacy demonstrated in earlier studies of PEP005 Gel, for AK lesions on non-head treatment areas, which include the trunk and extremities. Peplin expects to announce the results of REGION-I, a multi-center, randomized, double-blind, parallel group, vehicle- controlled clinical trial, in the first half of 2009.

It will be conducted at Australian and US sites under a Special Protocol Assessment with the **US Food and Drug Administration** (FDA), with complete clearance rate of AK lesions within the assigned treatment area being the primary efficacy endpoint. The secondary efficacy endpoint will be the partial clearance rate of AK lesions within the treatment area.

REGION-I is the first of the planned Phase III trials for PEP005 Gel for AK, which include a Phase III clinical trial for patients with AK lesions on the head in 2009.

▶ More information: www.peplin.com/

Chemosensitising prospects

Novogen Limited's subsidiary, **Marshall Edwards, Inc.** has been granted an Investigative New Drug (IND) approval by the **US Food and Drug Administration** (FDA) to undertake clinical studies with triphendiol as a chemosensitising agent in combination with gemcitabine.

Triphendiol (NV-196) had been granted orphan drug status by the FDA for pancreatic cancer and cholangiocarcinoma in January 2008 and for treatment of stage IIb-IV malignant melanoma in February 2008. It is broadly cytostatic and cytotoxic against most forms of human cancer cells *in vitro*, and has been shown to cause cell cycle arrest (or stop cells increasing in number) and to induce apoptosis (or initiate programmed cell death) in various cancer cell lines. Currently being developed as an orally-delivered chemosensitising agent, Triphendiol is intended for use in conjunction with standard chemotoxic anti-cancer drugs for the treatment of late stage pancreatic cancer, cholangiocarcinoma, and melanoma.

The IND approval will enable a Phase Ib study of triphendiol in combination with gemcitabine in patients with unresectable, locally advanced or metastatic pancreatic and bile duct cancers.

▶ More information: **www.novogen.com/**

Compelling evidence

Medidur is a tiny intravitreal insert designed to be administered by an eye care professional using a proprietary 25-gauge inserter in a minimally invasive, outpatient procedure. The application has been licensed to **Alimera Sciences** and is in pivotal Phase III clinical trials for the treatment of diabetic macular edema (DME), a potentially blinding disease that affects over 1,000,000 people in the US. If approved by the **US Food and Drug Administration**, Alimera will market the product under the name Iluvien™.

Announced by Australian based company **pSivida Corp** in December, Medidur™ delivery technology is now used in a clinical trial to treat a form of dry-Age related Macular Degeneration (dry-AMD). This pilot study is designed to assess the safety and efficacy of Iluvien in patients with bilateral geographic atrophy (GA) secondary to dry-AMD and will compare two doses of Iluvien with a sham injection.

"The impetus for this study was the results of experiments conducted in two animal models of retinal degenerations. In both of these models, a miniaturized version of Iluvien demonstrated protective effects on the spontaneous degeneration which occurs in these animals," says ***Raymond Iezzi***, **Wayne State University School of Medicine**. "These results were considered compelling enough to warrant a human study, especially for a condition for which there is no approved treatment."

▶ More information: **www.psivida.com/news/ASXAnnouncements.asp**

African promise

Virax Holdings Limited has vaccinated the first trial participant in its clinical trial in South Africa of its HIV Immunotherapeutic vaccine, VIR201. The trial is funded by a global coalition of multinational and South African companies via contributions to a donor syndicate.

According to chief executive officer, ***Dr Larry Ward***, the trial in a country at the front-line of the battle with HIV/AIDS is a major milestone for the development of VIR201 and its underpinning technology, Co-X-GeneTM.

The Phase I/IIa trial involves 140 participants recruited from clinical sites across four provinces in South Africa and is designed to assess the safety, tolerability and immunogenicity of VIR201 in two HIV infected groups: participants who have never received antiretroviral treatment (ART treatment naïve); and participants currently on a stable antiretroviral treatment regime (ART experienced).

To boost the immune response compared to that observed in prior clinical testing, an increased dose of a more highly purified VIR201 vaccine is being utilised. A comprehensive immune monitoring program will also be undertaken to measure and compare antibody and T-cell immune responses generated in both participant groups.

According to Dr Ward a previous Australian trial with VIR201 did not measure an immune response correlated to a suppressed viral load, yet such data could enhance prospects for the further development and commercialisation of VIR201.

▶ More information: **www.virax.com.au/**

Name change

As from 5 December 2008, **Solbec Pharmaceuticals Ltd** will be listed on ASX as: **Freedom Eye Limited** (ASX Code 'FYI'), a move motivated by the company's strategy to move forward into the cash flow positive healthcare sector and planned acquisitions of a number of profitable ophthalmology day surgery practices in the Australasian region. The domain names www.freedomeye.com and www.freedomeye.com.au have been reserved, and the company's website will be updated in due course.

The company's change is in name only, and the company's registered place of business remains unchanged.

▶ More information: **www.solbec.com.au/news.asp?ID=430**

Power position

The **US Patent and Trademark Office** has advised **Tissue Therapies Limited** that its core VitroGro® patent *Growth Factor Complex* has been granted. The acceptance of this core patent in the family of VitroGro® intellectual property (IP) in the US follows the prior granting of VitroGro® patents in Australia, New Zealand and South Africa.

Chief executive officer ***Dr Steven Mercer*** says that the patent enhances the commercial value of the company and its negotiating position with prospective commercial partners. "A granted US patent is one of the important prerequisites for a partnering arrangement to commercialise a novel biomedical technology, such as the VitroGro® wound healing technology," he says.

▶ More information: **www.tissuetherapies.com/**

Self screening

Following the recent alliance with **Copan Italia Spa**, a leading manufacturer of specialised and fully CE certified flocked swabs, **Polartechnics Limited** has now signed a three year strategic alliance with **Healthscope** subsidiary **Gribbles Pathology** to provide the pathology services for Polartechnics' new self-sampling product, CerviScreen.

Polartechnics will sell CerviScreen to Gribbles which will distribute to its client network. Gribbles is comprised of 43 NATA (National Association of Testing Authorities) accredited laboratories and currently is servicing over 40 affiliated medical centres. It will perform the required specialised pathology analysis for the product and is also undertaking an in *vitro study* that will assist in regulatory submissions for CerviScreen in Australia (TGA) and Europe (CE) to allow for direct to consumer sales.

Polartechnics has developed CerviScreen in line with International

Government Policies to reduce the prevalence of Sexually Transmitted Infections (STI's) both in Australia and worldwide. These infections include *Chlamydia*, *Gonorrhoea* and *Trichomoniasis*, all of which can be sampled by CerviScreen for analysis.

▶ More information: www.polartechnics.com.au/IRM/Content/Index.htm

Expanding licenses

Genetic Technologies Limited's newly-elected board of directors has reaffirmed the importance of expanding the global GTG licensing programme, in order to make its patented inventions widely available and to generate significant additional revenues for the company.

GTG has now granted a license to its non-coding patents to the German company **TIB MOLBIOL Syntheselabor GmbH**. TIB MOLBIOL produces and sells various reagent kits and components for advanced genetic testing. The full consideration payable to GTG under the formal 'Settlement and License Agreement' has now been received by the company.

This is the 39th commercial license to the non-coding patents granted by GTG, and the 5th such license to be granted to parties located in Europe. Other similar opportunities are now being actively pursued worldwide by GTG personnel.

▶ More information: www.gtg.com.au/

Selling to the top

Stem Cell Sciences plc has signed a further licence to its Internal Ribosome Entry Site (IRES) technology to an undisclosed licensee, a major research-based international pharmaceutical company. This follows the recent signing of an IRES licence in November 2008 with a European company that provides genetically modified rat and mouse models for medical and pharmaceutical research for $750,000 over the next six years.

SCS' IRES technology enables researchers to monitor the activity of a particular gene of interest in living cells or tissues without blocking the normal function of the gene. In particular, IRES is important for evaluating the success of gene knock-outs or knock-ins in stem cells, crucial for the successful creation of transgenic mouse and rat disease models.

Chief executive officer ***Dr Alastair Riddell*** says he expects similar announcements over the coming months.

▶ More information: www.stemcellsciences.com/

Exclusive use

Animal health companies **Merial**, a joint venture between **Merck & Co., Inc.** and **sanofi-aventis,** and **Imugene** have signed a comprehensive agreement allowing Merial to obtain exclusive use of the Imugene vector technology. Merial will progress vaccine candidates through the product development process to global sales and fund all product development and trial costs. Additional vaccine candidates will be evaluated for proof of concept and if successful will also progress into the product development process.

The alliance commenced on 31 December 2008 and Imugene has received an initial payment of US$2 million ($2.9 million) for reimbursement of past research fees. Further research and licensing payments continue for up to a total of six years which allows Merial to assess and commercialise any vaccine candidates developed using the Imugene technology. After this period, Merial will become the exclusive global sublicensee to the Porcine and Fowl Adenoviral Vector Delivery Systems (PAV & FAV) platform technology.

Under the agreement, the Poultry Productivity Enhancer previously sublicensed to Merial will now be progressed with other FAV vectored vaccine candidates researched by Imugene and additional vaccine candidates to be disclosed by Merial. In addition, Merial will sub-license any vaccine product using FAV or PAV vector technology that is to be commercialised and pay sublicense fees (in addition to the above fees) for each vaccine product, and milestone payments upon first registration for sale of each product. Further income will be generated by royalties on sales.

▶ More information: www.imugene.com/investor_announcements.asp

You make it there...

Regenerative medicine company **Mesoblast Limited** has received the 2009 Frost & Sullivan Emerging Company Award in the US Soft Tissue Repair market, which is is presented each year to the company that has emerged as a significant participant within its industry.

According to Frost & Sullivan, Mesoblast has outstanding management, superior market growth, exceptional customer service, and the ability to combine technology and successful strategic initiatives.

Frost & Sullivan industry analyst ***Aarti Shetty*** says Mesoblast has made its own niche using first-of-a-kind adult stem cell technology. "The company's strength lies in the uniqueness of its offering, which is a markedly different approach from other manufacturers in the market."

▶ More information: www.mesoblast.com/

Big bikkies

IBA Health Group Limited's **iSOFT Health** division has signed a contract with the **Western Australian Department of Health** (WA Health) for a pharmacy management solution and support services worth up to $14 million. With an up to ten year contract, which includes license revenue and support, the centrally-managed solution from iSOFT will streamline pharmacy services at 21 public hospitals across Western Australia. The i.Pharmacy solution will provide consistency in managing medications and offers clinical decision support to assist with the prevention of medication errors at the point of dispensing.

i.Pharmacy, which is already installed at 250 sites throughout Australia, will assist WA Health in implementing a series of pharmaceutical reforms, including on-line PBS processing.

▶ More information: www.ibatech.com/html/

Meeting objectives

As part of its ongoing collaboration with **GlaxoSmithKline** (GSK), **Arana Therapeutics Limited** has successfully optimised a second molecule using its EvoGene™ technology. Provision of the final report triggers a payment to Arana under the terms of the collaboration agreement between the two companies. According to Arana's research, the improved molecule has met all of its objectives required to be eligible for a success based payment.

With the optimisation of a developmental biopharmaceutical, GSK will be responsible for all subsequent development, with Arana eligible to earn milestone payments if the product progresses through pre-clinical testing and subsequent clinical development, and potentially to earn royalty payments on the sale of all commericalised products incorporating the optimised molecule.

▶ More information: www.arana.com/news_media.htm

Data hub

The **New South Wales** (NSW) **Government** has pledged $2.8 million over three years for the development of the **Institute for Transdisciplinary eResearch Services and Technology,** (INTERSECT), which will coordinate expertise in eResearch across NSW universities and relevant public and private sector research agencies. It will be led by ***Dr Ian Gibson***, a former divisional general manager with **Canon**'s Sydney-based R&D facility **CiSRA**.

INTERSECT has been established by a consortium of NSW universities, the **Securities Industry Research Centre of Asia-Pacific** (SIRCA) and the NSW Government to promote eResearch technologies and skills. Minister for Science and Medical Research ***Jodi McKay*** says the INTERSECT collaboration will support the storage, sharing and analysis of data in a range of research areas including climate change modelling, disease research, minerals exploration, and on-line education.

Participating universities are the **University of Sydney**, **University of New South Wales**, **Macquarie University**, **The University of Newcastle**, **Southern Cross University**, and **The University of Technology**, **Sydney**.

▶ More information: **Hayley Thomas, 0427 299 446**

Some take to the stars....

In support of its bid for the Square Kilometre Array (SKA) radio-astronomy project, the **Western Australian** (WA) **Government** will provide an additional $4 million for the purchase of Boolardy Station, 300 kilometres north-east of Geraldton. If WA wins the SKA project, Boolardy homestead will become base for the accommodation and support facilities serving a giant SKA observatory 40 kilometres away.

To further boost the bid, the **Australian** and **WA Governments**, and **CSIRO** have together developed a strategy that aims to build Australia's expertise in the radio astronomy field and to have a site and the necessary support arrangements planned and ready. The Australian Government is meanwhile funding the construction of the new Pathfinder telescope, which will be one of the world's foremost radio telescopes and an important test-bed for SKA technology.

The WA Government will also contribute $20 million to establish and operate a new **International Radio Astronomy Research Centre** (IRARC) in Perth with a branch at Geraldton. The IRARC will be an equal joint venture between **University of Western Australia** (UWA) and **Curtin University of Technology** with its administrative office at UWA and research being conducted at both campuses. The centre will be run by UWA's ***Professor Peter Quinn***, a Premier's Fellow in Astronomy, as centre director, together with deputy directors ***Professor Steven Tingay*** and ***Professor Peter Hall***, both leading radio astronomers based at Curtin and ***Professor Lister Staveley-Smith***, also a Premier's Fellow in Astronomy, at UWA. The head of the **Environmental Protection Authority**, ***Bernard Bowen***, will chair the overseeing governing board.

▶ More information: **Alan Robson, 08 6488 2809, Peter Quinn, 08 6488 4553**

...some look around

The South Australian Premier's Science and Research Fund will provide grants totalling $3.7 million over three years to five major projects with a strong focus on climate change and water. The projects include:

- $1.2 million to a project led by ***Professor Wei Zhang***, **Flinders University** and ***Dr Sasi Nayar***, **South Australian Research & Development Institute** (SARDI) to pioneer a sustainable South Australian biofuels industry based on microalgae, which will involve the development of a proof-of-concept facility;
- $1.3 million to a project led by ***Professor Wayne Meyer*** at the **University of Adelaide** to identify climate change vulnerability and adaptation options for South Australian landscapes;
- $1.1 million to a project led by ***Professors Rob Short*** and ***Simon Beecham***, **University of South Australia** to address the variability in the quality of water sourced from the Murray-Darling Basin with new technological approaches;
- $198,000 for a project led by ***Dr Ruth Marshall***, **Hampstead Rehabilitation Centre** to develop an integrated program of research that will support the use of exercise to promote neural recovery in patients with spinal cord injury; and
- $25,000 seed funding for a project led by ***Associate Professor Nesimi Ertugrul***, University of Adelaide for the development of a business plan and a path to market of a high-efficiency, small-scale wind turbine system for stand-alone and grid-connected applications.

▶ More information: **www.ministers.sa.gov.au/news.php?id=4097&page=7**

Longer lasting energy

photo: Nagyman

Giant Buddha statue in Seoraksan (Mt.Seorak), Gangwon-do, South Korea

Researchers at the **University of Wollongong**'s Intelligent Polymer Research Institute have been chosen as the first funding recipients of a joint technology program between the **New South Wales** (NSW) **Government** and the South Korean province of Gangwon.

According to Minister for Science and Medical and Research ***Jodi McKay***, the Intelligent Polymer Research Institute and Korean researchers will use nanotechnology to develop a new high-performance energy storage device. The University of Wollongong team will be led by ***Professor Gordon Wallace***, a leading Australian nanotechnology researcher, who won the Chemistry category of the inaugural NSW Scientist of the Year Awards in September of last year. The researchers want to create a new hybrid device capable of storing and instantly generating large amounts of energy that can also be recharged many times.

The NSW Government is supporting this research project through its Department of State and Regional Development to help drive innovation and develop high technology links with Gangwon.

▶ More information: **Lee Davelaar 0418 269 508**

Big animal brother

A new animal health database is being rolled out across **New South Wales**. The **NSW Department of Primary Industries** is working with

the recently established **Livestock Health and Pest Authority** to implement the new database BioSIRT for managing livestock health.

BioSIRT, which stands for Biosecurity, Surveillance, Incident Response and Tracing, keeps records of the disease status of properties, has mapping capability and can be quickly accessed through the Internet, according to Minister for Primary Industries ***Ian Macdonald***. The use of BioSIRT by the Livestock Health and Pest Authority will provide a state-of-the-art biosecurity surveillance capability to help them manage endemic diseases such as foot rot, he says.

A pilot project to configure the database and test it for routine use in animal health management is underway. The application was developed through a national project initiated by the **Primary Industries Ministerial Council** and supported by Minister Macdonald.

▶ More information: **Phil Bevan, 0429 458 053**

Good banking

A new tissue processing and storage facility has opened at the **Austin Hospital in Heidelberg** as part of the **Victorian Cancer Biobank**, a not-for-profit consortium established in 2006 with a $7 million grant from the **Victorian Government**'s Science, Technology and Innovation Infrastructure Grants Program.

The Victorian Cancer Biobank is now one of the largest multi-centre collection facilities of its kind in the world, collecting tissue and blood from donors at 19 public and private hospitals in metropolitan Melbourne. More than 6,000 people have donated their tissue and blood to the Biobank since October 2006 and over 24,000 biospecimens have been supplied to cancer researchers throughout Australia. The various tissue samples can be accessed by researchers across the globe as they work to increase understanding of cancer.

▶ More information: **www.premier.vic.gov.au**

Cancer cornerstone

A new $5 million cancer research facility, the **Australian Cancer Research Foundation Centre for Therapeutic Target Discovery**, has been launched in the Victorian Parkville precinct. Victorian Health Minister ***Daniel Andrews*** says the facility is complementing the $150 million Victorian Cancer Action Plan 2008-2011, launched by Premier ***John Brumby*** in December 2008.

The funding of the centre was provided by the **Australia Cancer Research Foundation** (ACRF), a philanthropic organisation supported by public and corporate donations, which funds research and finances facilities to complement those provided by state and federal governments. Researchers using the facility based at the **Walter and Eliza Hall Institute of Medical Research** (WEHI) will primarily focus on breast and bowel cancer and cancers of the blood.

The grant of $5 million is the largest ever awarded by the ACRF and was awarded to a consortium of leading Melbourne cancer research institutes including the WEHI, the **Royal Melbourne Hospital**, the **Royal Women's Hospital**, the **Ludwig Institute for Cancer Research** and the **University of Melbourne**.

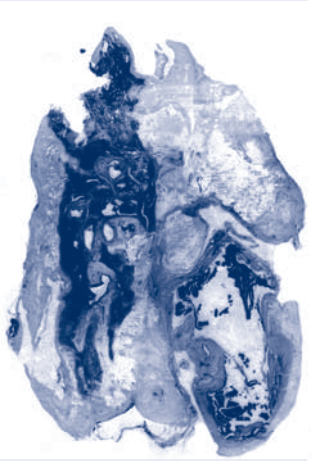
ACRF chairman ***Tom Dery*** says the centre is potentially forming a scientific cornerstone of the first comprehensive cancer centre established in Australia, where clinicians, diagnosing and treating cancer patients, will work closely with scientists researching the disease.

According to Mr Andrews, the centre aims to identify the key cellular components and processes within tumours and cancer cells that make cancer such a potent killer. "A major focus of the centre will be identifying ground-breaking new drug targets," he says.

▶ More information: (Mr Andrews) **www.premier.vic.gov.au/minister-for-health**; (ACRF) **www.acrf.com.au**

Asbestos action

The world's first stand-alone research facility dedicated to improving the prevention, early diagnosis and treatment of asbestos related disease has opened.



Once a very rare form of cancer but now seen more regularly: Meothelioma, an asbestos-related cancer of the lungs. The image shows lung tissue studded with carbon deposits.

The $12 million **Bernie Banton Centre**, named after Asbestos disease victim and campaigner ***Bernie Banton***, will be operated by the **Asbestos Diseases Research Foundation** (ADRF) and is located in the **Concord Hospital Research and Education Precinct**.

The **NSW Government** will contribute $8.5 million to this project, including $7 million from the **Dust Diseases Board,** to help construct the facility in partnership with the **University of Sydney** and the **ANZAC Research Institute**. The **Australian Government** will provide $5 million for final fit-out costs of the **Asbestos Disease Research Institute**, which will occupy the ground floor of the centre while the first floor will harbour the ANZAC Research Institute, NSW's fastest-growing medical research institute.

ANZAC Health & Medical Research Foundation chair ***Ms Felicity Barr*** says that having the two institutes together will not only allow the efficient sharing of resources, but also boost the research capacity of NSW and the **Concord Hospital** research hub.

The centre will be complemented by the ongoing work of the **National Research Centre for Asbestos-Related Diseases** (NRCARD), which links together 11 research centres around Australia. It will also work alongside the future **Centre of Research Excellence** into Asbestos-Related Disease, which will be established from 2010 with $2.5 million in federal funds.

▶ More information: **www.osmr.nsw.gov.au; www.pm.gov.au**

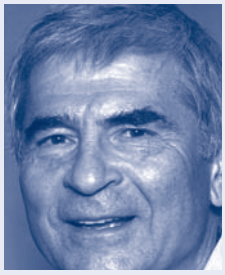
Cyclist's honour

A new centre for cancer research, the **LIVESTRONG Cancer Research Centre**, will open at **Flinders University** in 2011. Named after cyclist and cancer survivor/campaigner ***Lance Armstrong***, the centre will be located in the **Flinders Centre for Innovation in Cancer**. The centre will house more than 100 research and clinical investigators working collaboratively in orthodox medicine and in holistic methods of treatment to achieve more effective and faster results in cancer control.

Funding is being provided by the **Australian** and **State Governments**, the **Flinders Medical Centre Foundation** and public donations.

▶ More information: **Jull Bottrall, 0488 535 733**

WA stars



Jorg Imberger

Western Australia's Scientist of the Year for 2008 is **Professor Jorg Imberger**, director of the Centre for Water Research, University of Western Australia, and an internationally recognised authority in the field of physical limnology (the stratification and transport processes in lakes). Young Scientist of the Year is **Dr Ben Corry**, ARC Research Fellow at the University of Western Australia. Dr Corry is an expert in the field of molecular biophysics and has significantly advanced the understanding of biological ion channels - the proteins that regulate electrical signalling between cells. The Premier's Research Fellowships for 2008 went to **Professors Malcolm McCulloch** and **Shaun Collin**. Professor McCulloch, a geochemist currently working at the Australian National University, will head studies looking at climate change and coral reefs in a high CO_2 world. Professor Collin, a senior neurobiologist with the Queensland Brain Institute, will research the eco-physiological impacts of light and vision on biodiversity, sustainability and health.

Ben Corry

Chemistry wizards

Curtin University of Technology's **Professor Roland De Marco** has received the 2008 Royal Australian Chemical Institute (RACI) Analytical Chemistry Division's Lloyd Smythe Medal for his work in analytical chemistry. Dean of Research in Curtin's Faculty of Science and Engineering, Professor De Marco is internationally renowned for his research into the surface and interface analysis of electrochemical systems. Deakin University's **Associate Professor Kieran Lim** has been awarded the RACI's Division of Chemical Education Medal for 2008. Associate Professor Kieran Lim is known for his advocacy, development and research on the use of information and communication technologies in chemical education.

Fresh water guru

Jim Cox

Dr Jim Cox is the new water chief at the South Australian Research and Development Institute (SARDI). Dr Cox was previously a principal research scientist with the CSIRO and takes the reins from **Dr Gerrit Schrale** who retired last year after establishing the WRIC and its progressive research agenda in 2003.

Distinguished professor

Pioneer of cochlear implants **Graeme Clark** has taken up the first post of Distinguished Professor at La Trobe University in the quest for the next-generation hi-fi bionic ear. A Companion of the Order of Australia and Fellow of the Royal Society of London, Professor Clark has been honoured world-wide for his work on the multiple-channel cochlear implant or bionic ear. He joins La Trobe to establish the Graeme Clark Hearing and Neuroscience Unit in the School of Psychological Science, where he will conduct research with **Associate Professor Tony Paolini** and **Professor Edith Bavin**, and work with other specialist groups dealing with hearing, speech and language.

Reactive players

Dr Adrian Paterson has been appointed as the next chief executive of the Australian Nuclear Science and Technology Organisation (ANSTO). He is currently general manager, Business Development and Operations, at the Pebble Bed Modular Reactor Company in South Africa. Also appointed has been scientist and business woman **Ms Erica Smyth,** who will join the ANSTO Board. She has over 30 years experience in the mineral and petroleum industries and started work as an exploration geologist with BHP Minerals before becoming one of its principal geologists.

Sweet fellow

Pfizer Australia has awarded Monash University scientist **Professor Michael Cowley** a $1 million research fellowship to further his research into diabetes. Professor Cowley, from the Faculty of Medicine, Nursing and Health Sciences, was the sole winner of the five-year fellowship which will support the testing and development of a new diabetes therapy.

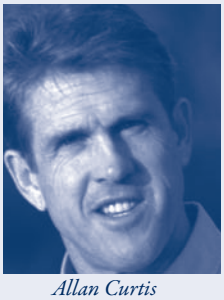
Michael Cowley

Sunshine head

Academic and author **Professor Noel Meyers** has been appointed professor and head of School of Science and Education at the University of the Sunshine Coast. Professor Meyers, formerly of the University of Tasmania and Queensland University of Technology, takes up his position in February.

Social CSU head

Professor Allan Curtis has been appointed as the new head of Charles Sturt University at Albury-Wodonga and will hold this appointment concurrently with his position as strategic professor at the University's Institute for Land, Water and Society. Professor Curtis joined CSU in 2004 as the inaugural professor of integrated environmental management.



Allan Curtis

Mass spawner

The Queensland Museum has presented a Medal to **Dr Carden Wallace** for her work on corals. She is responsible for a major coral collection housed at the Museum of Tropical Queensland in Townsville. Her research has led to many breakthroughs including the POL Prize for Environmental Research, awarded to Dr Wallace and a team from James Cook University for their discovery of mass annual spawning on the Great Barrier Reef.

Western Chief

Lyn Beazley

Professor Lyn Beazley has been reappointed Western Australia's Chief Scientist. A professor of zoology at the University of Western Australia and former leader of the WA Neurotrauma Research Program, Professor Beazley is well recognised for her work in mapping the pathways through the brain and central nervous system to better understand how to cure neurotrauma.

Rich runner up

Martin Green

University of New South Wales researcher **Professor Martin Green** has won the runner-up award in the world's richest science prize, the inaugural Zayed Future Energy Prize. Professor Green's prize was given in recognition of his research on high-efficiency third-generation solar cell technology.

ATSE head

The Australian Academy of Technological Sciences and Engineering (ATSE) has appointed **Dr Margaret Hartley** as its chief executive officer. Dr Hartley has wide experience in leading and managing Australia's chemical regulation policy framework, and developing and implementing related health policy. She was previously the principal scientific advisor in the Australian Government Department of Health and Ageing and the director of the Office of Chemical Safety.

Innovative chair

Sandra Harding

Professor Sandra Harding, vice-chancellor of James Cook University, is the new chair of the Innovative Research Universities (IRU) network for a two year term from 1 January 2009. The IRU Australia member universities – Flinders, Griffith, James Cook, LaTrobe, Murdoch and Newcastle – promote excellence through collaboration in research and education and share a long-standing commitment to social inclusion.

Hat collector

Tyrian Diagnostics Limited has appointed **Dr Merilyn Sleigh** to its board. Dr Sleigh joins Tyrian with a background in biological research with CSIRO and is currently a non-executive director of Clover Corporation, Mimetica Pty Ltd and the Rural Industries Research and Development Council. She is also a member of the Federal Government's Task Force developing a 10 year strategy for the pharmaceutical industry in Australia, and advises CSIRO and the Garvan Institute for Medical Research on research commercialisation.

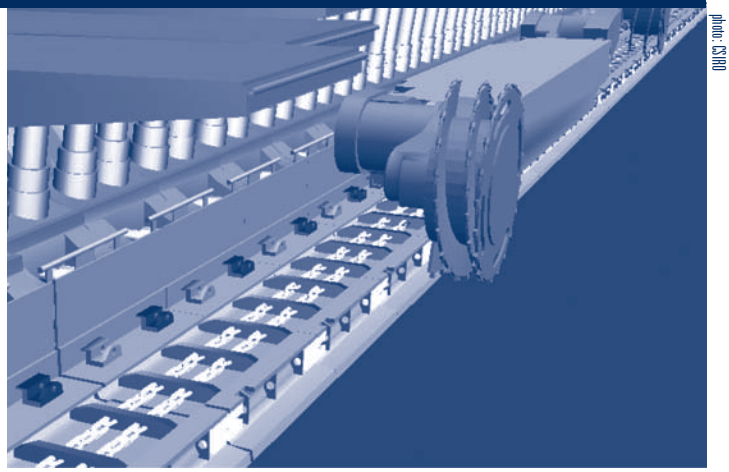


photo: CSIRO

Longwall automation was a successful Australian Coal Association Research Program project with CSIRO that has now entered the commercialisation phase.

Safe digging

The **Australian Coal Association Research Program** (ACARP) is providing $3 million to support nine research projects by **CSIRO** Exploration & Mining. "This new funding extends a long and successful history of collaboration between the industry and CSIRO to develop safer and more efficient technologies, such as the Longwall Automation project that has now moved from demonstration to commercialisation," says ACARP executive director ***Mark Bennetts***.

According to CSIRO's ***Dr Hua Guo***, theme leader of 'Sustainable Mininig Systems', a major project will be to develop navigation and automation systems for an underground 'continuous miner', a type of new, self-steering, remotely supervised mining equipment that will improve both safety and efficiency. The project is a natural progression from the previous longwall automation work, he says.

Other projects designed to improve safety and efficiency include improving dust control on longwalls, designing and building an intrinsically safe geophone for underground coal mining, reducing diesel exhaust emissions underground, estimating pit wall strength, reducing or eliminating dust in draglines, and measuring the performance of low-density explosives for open-cut mining. Projects to improve the environmental impacts of coal mining will improve gas drainage while reducing coal mine greenhouse gas emissions, and reduce the effect of longwall mining on groundwater systems.

▶ More information: **Hua Guo, 07 3327 4608, hua.guo@csiro.au**

Less energetic

According to a new report from the **Australian Bureau of Agricultural and Resource Economics** (ABARE), energy intensity of Australian industries in the major sectors manufacturing, services, agriculture, mining and construction is continuing to fall. The report found a decline of 0.9% a year between 1989-90 and 2005-06, which is in line with reports from other OECD countries.

In releasing *Trends in energy intensity in Australian industry*, executive director ***Phillip Glyde*** says Australia's economy is moving away from more energy intensive industrial activities to less intensive services activities. This structural shift has lessened the mainly growth driven increase in energy consumption observed for industrial and commercial sectors.

The decline in energy intensity in Australian industries is broadly in line with the target set by the **APEC** Leader's Declaration in Sydney 2007, which aims to reduce the energy intensity of industries in APEC member economies by at least 25 per cent by 2030, compared with the 2005 base year. However, the report also notes that the introduction of a Carbon Pollution Reduction Scheme could affect the pattern of energy consumption in Australia.

▶ More information: **Maree Finnegan, 02 6272 2260, mfinnegan@abare.gov.au**

Weedy money

Funded through the new **Australian Weeds Research Centre,** 28 weeds research projects across Australia, including in livestock grazing areas, wetlands and rainforests, will receive $2.5 million.

According to Minister for Agriculture, Fisheries and Forestry ***Tony Burke***, weeds are costing the national economy an estimated $4 billion each year. "In 2006-07 alone, Australian farmers spent more than $1.5 billion on weed control – more than the combined cost of pest control and land and soil management, " says Mr Burke. "The Weeds Research Centre is an opportunity for all governments, industry and the research community to work together to address this issue."

The new national Weeds Research Centre was announced in May 2008 and was welcomed by the former **Cooperative Research Centre for Australian weed management**.

▶ More information: **www.maff.gov.au/media/media_releases/2009**

Undeterred investment

Inpex Corporation, the operator of the Ichthys project off the coast of Western Australia, has awarded the contract for the Onshore Front End Engineering and Design (FEED) of its liquefied natural gas plant in Darwin to the **JKC Joint Venture** comprising **JGC Corporation**, **KBR** and **Chiyoda Corporation**.

FEED is a project development phase in which plans for the proposed LNG processing plant are defined, designed and evaluated in more detail by a contracted engineering company. According to Minister for Resources and Energy, ***Martin Ferguson***, the INPEX project is now the second Australian LNG project to be at FEED stage of development, with the Western Australian Gorgon project being the other.

The Ichthys project is a joint venture between Japan's INPEX Corporation (76%) and the French oil major **Total E&P** (24%) and estimated to yield almost 13 trillion feet of gas and more than 500 million barrels of condensate. Initially it is expected to produce around 8 million tonnes of LNG and 1.6 million tonnes of LPG per year, and further 100,000 barrels of condensate per day. The development will require capital expenditure of more than US$20 billion and in the first 5 years a workforce of more than 2000 people.

According to Mr Ferguson, Australia is the third largest LNG exporter in the Asia Pacific region and the fifth largest in the world.

▶ More information: (Minister Ferguson) **Michael Bradley, 0420 371 744;** (Inpex) **www.inpex.co.jp/english/news/**

Hot savings

A new report by the **CSIRO** and the **Water Services Association of Australia** (WSAA) shows that the water supply of Australian cities will require more energy in future. This is due to increasing populations and the trend to develop new, more energy-intensive water sources such as desalination plants, reused water and more distant sources. However, according to CSIRO scientist and project leader ***Steven Kenway***, the study found that urban water services use relatively little energy compared to the energy needed to heat water for residential and non-residential purposes, which reduced by just 15% could offset all energy used by water utilities in 2006/07. According to the report *Energy Use in the provision and consumption of urban water in Australia and New Zealand,* total energy use to provide water could increase by up to 130% above 06/07 levels by 2030, based on current water consumption per person and assuming that

demand is met by a mix of desalination, recycling and new surface water sources. Yet urban water utilities, says Mr Kenway, would still only account for 0.3% of the total energy used by Australia's major cities, emphasising the need to save hot water. "Saving hot water represents a real win-win-win: it cuts energy and water use for consumers, reduces energy demand for utilities and helps households and utilities save money on energy and water bills," he says.

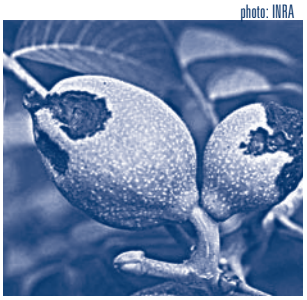
WSAA executive director ***Ross Young*** says the report demonstrates where the 'low hanging fruit' may be in terms of the greenhouse gas footprint of the urban water industry and households. He says that by installing a Water Efficiency and Labelling Standard (WELS) 3-star shower rose both water and hot-water-system energy consumption in households with high water use could be cut by 45% and replacing an old WELS 2-star washing machine with a 4-star front loading model could reduce energy use by more than half and save 10 kilolitres of water annually.

▶ **More information: Mr Kenway, 07 3214 2857, Steven.Kenway@csiro.au**

Sound investment

A new report by the **Council of Rural Research and Development Corporations' Chairs** (CRRDCC) has found an average return of $11 for each of the $540 million invested by the country's 15 **Rural Research and Development Corporations** (RDCs). The report, *Measuring economic, environmental and social returns from Rural Research and Development Corporations' investment,* is the most comprehensive evaluation of rural R&D ever undertaken in Australia and covers the first year of an ongoing evaluation on RDC investments. Key findings include:

photo: INRA



A project on the bacterial blight of walnuts by Horticulture Australia Limited is one of the highly successful projects identified by the CRRDCC report. The image shows young fruit with the bacterial blight disease

- $10.5 billion generated from 36 highly successful projects;
- $5.5 billion in industry benefits, and $5 billion in other benefits;
- RDC's portfolio returned $11 for each dollar invested;
- significant social and environmental benefits for all of Australia.

Enzo Allara, chair of the CRRDCC says the significant environmental and social benefits are often undervalued because they are difficult to measure, but that the report was able to quantify a number of direct public benefits.

▶ **More information: Fiona Dewar, 0413 556 069, fionad@coxinall.com.au**

Chippies delight

Applications have now closed for the first round of grants under the new **Forest Industries Development Fund** which will invest $9 million into Australia's forest industries. The funding will assist wood processors to upgrade operations, value-add to new or existing wood products and improve cost efficiencies along the value chain to reduce the current Australian trade deficit in forest products of around $2 billion per year.

The Forest Industries Development Fund is open to individual businesses and organisations involved in Australia's forest industries for projects which are industry-focused, innovative and commercially-viable, particularly those developed for the export market. The funding is part of a $20 million commitment by the **Australian Government** to address the industry's skills shortage, the illegally logged timber imports, and issues around climate change and improved market development.

▶ **For more information go to www.daff.gov.au/forestry/fidf or phone the Department of Agriculture, Fisheries and Forestry on (02) 6272-5079.**

Consolidated summary

The **National Water Commission** (NWC) has released the inaugural *National Water Commission Australian Water Markets Report 2007-2008* and called for the removal of remaining barriers to trade in water.

Chief executive ***Ken Matthews*** says the first ever consolidated national summary of water markets "extends beyond the Murray-Darling Basin and features trading summaries for each state and territory, as well as information about their various operational practices, pricing and governance arrangements."

The overall value of water market transactions for the year was approximately $1.68 billion, with almost all trading activity occurring in the Murray-Darling states. According to Mr Matthews, this shows that water trading has offered irrigators and other water users greater flexibly in responding to economic and climatic pressures.

The report also strengthens the case for reviewing the 4% per annum interim threshold limit on permanent trade out of irrigation districts, says Mr Matthews, welcoming **COAG**'s decision to develop a national system to register water access entitlements and allocations and record transactions. He further comments that there is a need to monitor the impacts of water trade in light of increasing water purchases by governments for environmental and urban needs.

The Australian Water Markets Report was produced with assistance from the **Allen Consulting Group** and funded under the **Raising National Water Standards Program**.

▶ **More information: www.nwc.gov.au**

Going Europe (again)

photo: UniServe Science

The native food industry has secured an export breakthrough as European regulators have agreed to end the classification of Lemon myrtle as 'novel food'. The **Rural Industries Research and Development Corporation** (RIRDC) had contributed to research showing that the herb was indeed used in EU countries before 1997. Around 60 tonnes of lemon myrtle, a tree native to the subtropical forests of Queensland, had been exported to Europe before it was listed as 'novel food' in June last year.

Lemon myrtle, which has leaves that are strongly lemon-scented, and impart a citrus-type flavour in sweet and savoury products, makes up half of Australia's native food industry. According to researcher and lemon myrtle producer Sibylla Hess-Buschmann, the EU decision will be a boon to the industry.

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

They keep ringing

Despite the 'Do Not Call' register, 55% of complaints received by the **Australian Communications and Media Authority** (ACMA) still stem from unwanted calls by telecommunications companies promoting phone plans and other related services.

ACMA has completed a round of formal investigations and, over the past 12 month, has issued four infringement notices to telecommunications companies. ACMA has accepted enforceable undertakings from **Dodo Australia**, **Astron Communications** and **People Telecom**. Formal warnings have also been issued to **Global Telelinks**, **Ezycall** and **m8Telecom**. A new campaign is on the way to improve telecommunications compliance that includes formal investigations, warnings, detailed letters putting individual providers 'on notice,' and an industry newsletter specific to the telco industry which provides practical advice about adhering to compliance requirements.

ACMA chairman ***Chris Chapman*** notes, however, that complex reselling arrangements and the use of offshore call centres has contributed to the level of non-compliance in the telecommunications industry.

▶ More information: **www.acma.gov.au**

Missing need(?)...

New research at **Charles Sturt University** (CSU) indicates that few Australian households have faith in the **Australian Government**'s planned investment of $4.7 billion into a **National Broadband Network**, one of the largest public infrastructure investments in Australia.

CSU Information technology lecturer ***Peter Adams*** surveyed over 600 households and found less than 20% of current broadband households felt the NBN will help them, while less than 17% of those without broadband could see a benefit. According to Mr Adams only 16% of householders surveyed intend to connect to broadband and 10% to upgrade their current internet connection in the next year.

Broadband is not a priority in the budgets of over 66% of both broadband and non-broadband households household, the survey found.

▶ More information: **news.csu.edu.au/director/latestnews/science.cfm**

...yet better connected

The **Australian Communications and Media Authority** (ACMA) and the **Australian Competition and Consumer Commission** (ACCC) have jointly released a report *Communications Infrastructure and Services Availability in Australia 2008* on the availability of broadband, fixed voice, mobile voice and mobile data in the community.

Key findings include:

- an increase in broadband subscribers by 1.1 million in the 12 months to June 2008 driven by growth in wireless broadband (47%) and DSL provided on unbundled services (33%);
- broadband connection speeds are rising with a 25% increase in subscribers using a 1.5 Mbps service, predominantly as a result of evolution from ADSL1 to ADSL2+ services;
- mobile services are evolving from second generation (2G) to third generation (3G) mobile with 8.55 million 3G services in operation at June 2008 (an increase of 88 %);
- the number of fixed lines remained stable in the year to June 2008 at 11 million fixed line services in operation. Alternatives to the standard telephone service (STS) for making fixed voice calls are emerging.

According to a report *Household Use of Information Technology, Australia 2007-08* released by the **Australian Bureau of Statistics** (ABS), an additional 800,000 Australian households signed up for broadband Internet during 2007-08 to a total of 4.3 million (52% of all households) at 30 June 2008, an increase of 22% to the previous year.

The ACT (68%) had the highest proportion of broadband households, while Tasmania (39%) and South Australia (42%) had the lowest. Other states ranged from 51 to 55%. Metropolitan areas had a considerably higher proportion of Broadband connections (57%) than other areas (43%) and higher income households had substantially higher rates of access than lower income households.

▶ More information: (ACCC) **Graeme Samuel, 03 9290 1812, 0408 335 555;** (ABS) **www.abs.gov.au**

Secure license

CSIRO has licensed a sophisticated analysis technology, which it has jointly developed with **Boeing**, to Australian company **Semantic Sciences** for the development of prototype software which analyses, crosslinks and queries huge datasets for use in counter terrorism.

The former CSIRO research team of Semantic Sciences' chief executive officer, ***Dr Daniel McMichael***, had previously two contracts from Boeing for the creation of a 'cognizant control room' as part of Project Wedgetail, Australia's airborne early warning and control program. This incorporated the first ever scalable whole-of-situation analysis capability, together with advanced operator action and speech monitoring with feedback. The research is addressing what intelligence analysts dealing with counter-terrorism regard as a 'needle-in-the-haystack' problem and is being financially supported by the **Office of National Security** within the **Department of The Prime Minister and Cabinet** through the Research Support for Counter-Terrorism program.

▶ More information: **www.csiro.au/news/Security-Software-Licensed.html**

Peek into the petabyte age

CSIROvision, **CSIRO**'s new ultra high resolution visualisation system, is a window to a near future world, the 'petabyte age'.

According to CSIRO group executive ***Dr Alex Zelinsky***, science is entering a new phase, where scientists move from lab experiments to analysis of huge datasets. "In the first six hours of operation of Australia's astronomy project, the **Australian Square Kilometre Array Pathfinder** in 2012, this instrument will generate more information than the entire history of radio astronomy," says Dr Zelinsky. "Our data requirements are growing exponentially, and for this reason CSIRO is investing in infrastructure to address the challenges for petabyte science."

CSIROvision is based on and is extending the OptIPortal technology developed by the **University of California**, San Diego. It allows scientists to see images of over 100 million pixels and will be used to communicate to the general public, as a collaboration system when linked with other optiportals, as a visualisation device for researchers and as a test bed for developing enhancements to the optiportal technology.

▶ More information: **www.csiro.au/news/MediaCentre/whatsnew.html**

Higher Education reviewed

In its report on the Review of the Australian Higher Education (HE) System, an independent expert panel chaired by Emeritus Professor Denise Bradley concluded that while the system has great strengths, it faces significant, emerging threats which require decisive action – there is "urgent need for both structural reforms and significant additional investment," the panel says.

According to the panel, the sector has dramatically changed over the past 30 years – there are now 37 public and 2 private universities, and around 150 other providers of HE – and as public universities derive significant income from private sources the public-private divide is no longer sensible.

Australia is falling behind other countries in performance and investment in HE and the panel urges that Australia must increase the proportion of the population with HE qualification. This will require that attention is given in particular to disadvantaged groups, which are currently under-represented within the system because of the circumstances of their birth.

The review highlights that some of the difficulties, blockages and inefficiencies which derive from the structures of tertiary provision in our federal system are most evident in regional areas where thin markets may not be able to sustain a viable HE presence, and where the proportion of the 15-24-year age group is predicted to further decrease.

The panel further found the quality of the educational experience is declining, established mechanisms for assuring quality nationally need updating, and student-to-staff ratios are unacceptably high.

HE is now the third-largest export industry and the review notes that while a quarter of HE students are from overseas, they concentrate in a relatively narrow range of subject fields, in levels of study and by country of origin, and this poses significant challenges both to institutions and to the long-term viability of the industry.

There is also evidence that government provision of funds for underlying infrastructure to support research in universities is very significantly below the real costs. The review states this is leading to a pattern of quite unacceptable levels of cross-subsidy from funds for teaching, adversely affecting the quality of the student experience.

The review outlines 46 recommendations with an estimated cost of $5.745 billion over four years which are to achieve changes in the sector summarised as follows:

- National targets for attainment of degree qualifications and for participation of low socio-economic status students - 40% of 25-to 34-year-olds should attain at least a bachelor-level qualification by 2020 and 20% undergraduate enrolments in higher education should be students from low socio-economic backgrounds. The review proposes that access to Commonwealth funds should be available to a wider range of eligible providers but not be allocated to the institution. Instead they should follow students. Further, all qualified individuals should have an entitlement to undertake an undergraduate qualification unlimited in duration or value.
- Institutions will have freedom to enrol as many students as they wish;
- Funding for teaching, low socio-economic status students and provisions in regional and rural areas should be increased – the review recommends an increase of 10% to the base grants from the Commonwealth for teaching; that an additional $80 million per year is allocated to develop innovative, collaborative, local solutions to provision of higher education in regional and remote areas; and that a university with special expertise in provision of higher education across regional and remote Australia is considered.
- Levels of student financial support should be increased and eligibility should be made fairer based on need.
- A proportion of the funds provided to institutions should be allocated on the basis of performance against specific targets for teaching and equity.
- Funds for research should be increased to support the indirect costs of research.
- All higher education institutions, including universities, should be accredited – the review proposes a national system for accreditation of all HE providers, whereby targets relating to quality of teaching would be agreed at receipt of Commonwealth Government funds and some 2.5 per cent of teaching and learning grants would be subject to achievement of these targets.
- The Australian Government will assume the primary funding and overall regulatory responsibility for tertiary education and will establish an independent national tertiary education regulatory body.

ON THE RADAR & JOBS

On the Radar keeps you informed of upcoming reports & funding opportunities. For details of jobs and conferences: www.sciencealert.com.au

Events & Reports

The NHMRC will release their alcohol guidelines – due late February
More information: www.nhmrc.gov.au

The Government is to consider the NIS Review's recommendations and release a White Paper – expected early 2009
More information: www.innovation.gov.au/innovationreview/

Grants and programs

$2.5 million Textile, Clothing & Footwear (TCF) Small Business Program, Round 4 – submissions due 27 February
More information: www.ausindustry.gov.au

ARC Discovery Projects, funding commencing July 2010 – submissions due 4 March
More information: www.arc.gov.au

Eureka Prize for Excellence in Research by an Interdisciplinary Team – submissions due 1 May
More information: www.amonline.net.au/eureka/

Clean Business Australia is to help business and industry to tackle climate change. It has three elements:

- **Climate Ready ($90 over 4 years) supports small & medium sized Australian businesses to develop new technologies and services responding to climate change. Round 3 closes 12 March 2009 and Round 4 closes 25 June 2009**
- **Re-Tooling for Climate Change ($75 million over 4 years) supports small & medium sized Australian manufacturers to improve energy and/or water efficiency of production processes. Round 2 closes 16 February 2009 and Round 3 closes 1 June 2009**

More information: www.ausindustry.gov.au

2009 Prime Minister's Prizes for Science –Nominations close 8 May 2009
More information: 02 6276 1264

Conferences

AusTrauma 2009, Critical Care and Emergency Surgery Conference
12 to 14 February 2009, Sydney, NSW

Materials of the future, science of today: radical polymerisation - the next stage
15 to 17 February 2009, Parkville, VIC

29th Symposium on Sea Turtle Biology & Conservation
17 to 19 February 2009, Brisbane, QLD

WA Power & Gas 2009
17 to 19 February 2009, Perth, WA

Healthcare World Australia 2009
17 to 19 February 2009, Sydney, NSW

Health Facilities, Design and Development 2009
17 to 20 February 2009, Brisbane, QLD

Australasian oil and gas exhibition and conference 2009
17-19 February 2009, Perth, WA

Mining Export Infrastructure 2009
17 to 18 February 2009, Brisbane, QLD

Australian Assoc of Angel Investors. Funding Australian Innovation
18 to 20 February 2009, Brisbane, QLD

Brighter Deeper Greener - Geophysics in a Changing Environment
22 to 26 February 2009, Adelaide, SA

Sustainable Facilities Management
23 to 26 February 2009, Sydney, NSW

Urban Transport World Australia 2009
23 to 25 February 2009, Sydney, NSW

Functional Dairy Foods 2009
24 to 25 February 2009, Melbourne, VIC

Green Cities 2009
1 to 3 March 2009, Brisbane QLD

Outlook 2009 – a changing climate for agriculture
3 to 4 March, Canberra, ACT

Healthcare for Indigenous Communities
2 to 4 March 2009, Canberra, ACT

Managing Waste in a Changing Climate
4 to 6 March 2009, Launceston, TAS

Social Media and Cultural Communication
5 to 6 March 2009, Melbourne, VIC

2nd Annual IT Infrastructure & Operations Management Summit
10 to 11 March 2009, Sydney, NSW

FutureGAS 2009
22 to 24 March 2009, Brisbane, QLD

2009 Composites Australia Conference and Trade Show
12 to 13 March 2009, Gold Coast, QLD

IP Management in Practice Conference
16-18 March 2009, Sydney, NSW

GreenHouse 2009
23 to 26 March 2009, Perth, WA

Healthy Cities Conference 2009
25 to 27 March 2009, Gold Coast, QLD

ASID Scientific Meeting 2009
25 to 28 March 2009, Hunter Valley, NSW, Australia

Collaborating DownUnder 2009
26 to 29 March 2009 Sydney, NSW

Coal Seam Methane World Australia 2009
31 March to 1 April 2009, Brisbane, QLD

5th AustralAsian Cleantech Forum
31 March to 2 April, Melbourne, VIC

Waste 2009-Waste Avoidance & Resource Recovery Conference
1 to 2 April 2009, Coffs Harbour, NSW

LESANZ 2009 Inaugurial IP Conference
01 April 2009, Canberra, ACT

Shared Visions Disability Conference 2009
1 to 3 April 2009, Brisbane, QLD

Chronic Disease Management Australia 2009
6 to 8 April 2009, Sydney, NSW

Macquarie Arc Conference 2009
13 to 21 April 2009, NSW, Australia

GEOFLUIDS VI
15 to 18 April 2009, Adelaide, SA

EcoForum Conference & Exhibition
28 to 30 April 2009, Sydney, NSW

Smart 2009 Conference (Bridging the gap with innovation and new business strategy)
10 to 11 June 2009, Sydney, NSW

Generic Medicines Australia 2009
12 to 14 May 2009, Sydney, NSW

Heart Foundation Conference
14 to 16 May 2009, Brisbane, QLD

10th National Rural Health Conference
17 to 20 May 2009, Cairns, QLD

Going Green Expo
19 to 21 May 2009, Brisbane, QLD

RANZCP 2009 Congress: Living in Interesting Times
24-28 May 2009, Adelaide, SA

Face THE Facts

AUSTRALIAN R&D REVIEW

JOBS

	INSTITUTION	CLOSING DATE
Director, School of Biology	Australian National University - Senior Appointment | ACT	20 Feb
Director, John Curtin School of Medical Research	Australian National University | ACT	20 Feb
Lecturer - Biochemistry and Molecular Biology	University of Wollongong - Faculty of Science | NSW	01 Mar
Associate Professor - Environmental Health	University of Sydney - Northern Rivers University Dep of Rural Health | NSW	18 Feb
Lecturer/Senior Lecturer - Physiology	University of Sydney - School of Medical Sciences | NSW	11 Mar
Executive Officer - Australia New Zealand Melanoma Trials Group	University of Sydney - Australia NZ Melanoma Trials Group | NSW	22 Feb
Lecturer - Physics	Monash University - Experimental or Theoretical Physics | VIC	01 May
Director/Professor - Institute for Sustainable Solutions (USISS)	University of Sydney - Institute for Sustainable Solutions | NSW	22 Mar
Chair Of Nursing - Translational Research	University of Melbourne - Nursing and Social Work | VIC	22 Mar
Manager - Mass Spectrometry, Proteomics and Peptide Synthesis	University of Melbourne - Mass Spectrometry, Proteomics and Peptide Synthesis | VIC	20 Feb
Senior Ecotoxicologist	CSIRO Land and Water | NSW	25 Feb
Associate Professor of Engineering	University of Ballarat - Mt Helen Campus | VIC	22 Feb

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