

R&D REVIEW

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*Linking Australian Science,
Technology and Business*

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Business R&D spotlight

The **Australian Bureau of Statistics (ABS)** has released new data on Australian business expenditure on R&D (BERD) and business innovation activity. In addition, the **Australian Government** has released a discussion paper outlining a new R&D Tax Credit scheme, which will replace the current R&D Tax Concession in July 2010.

According to the ABS data, BERD in 2007-2008 was \$14.4 billion, increasing by 15% in current price terms from 2006-07. The development was welcomed by the Minister for Innovation, **Senator Kim Carr**, although he cautioned that this momentum could be difficult to maintain through the global recession.

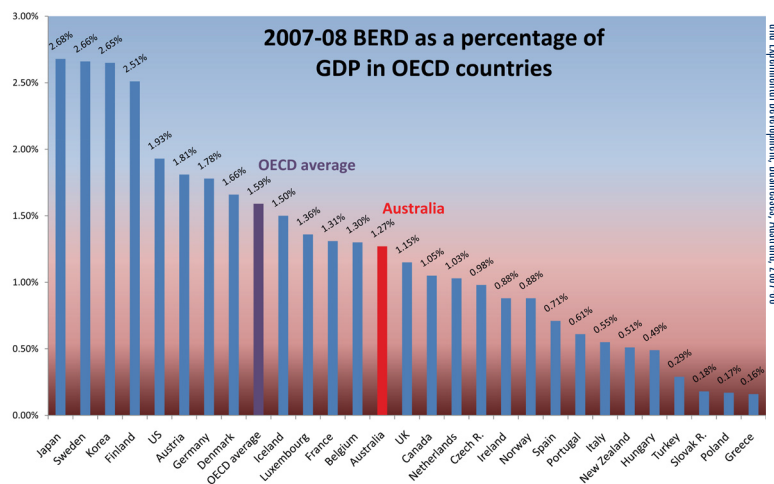
"BERD as a proportion of GDP in 2007-08 was 1.27%. Australia is closing the gap, but is still below the OECD average of 1.59%," **Senator Carr** says.

The increase in BERD followed a 5 year trend. Between 2003-04 and 2007-08 BERD grew at an average annual rate of 17% in current price terms and has also steadily increased as a percentage of GDP, from 0.92% in 2003-04 to 1.27% in 2007-08.

Australia's BERD/GDP ratio is still below the OECD average of 1.57% despite its above average growth. It is noteworthy, however, that there are large differences in BERD across the OECD member countries. For example, since 2004-05 Australia's BERD/GDP ratio has surpassed that of the UK, Canada, the Netherlands or New Zealand. Australia's BERD was in 2007-08 similar to that of countries such as France (1.31%) and Belgium (1.30%), while a significant gap still persists with countries traditionally strong in innovation such as the US (1.93%), Sweden (2.51%), Finland (2.51%) or Japan (2.68%).

These differences may reflect the fact that investment in R&D is very much dependent on the type of industry and business structure.

In 2007-08, as in previous years, the sectors Manufacturing and Mining were the largest contributors (30% and 23%, respectively) to total Australian BERD. The ABS data also show that investment in R&D depended strongly on the size of the business. Most of BERD (70%) was contributed by larger sized businesses (>200 employees). It is here notable that businesses with a majority foreign ownership, which make up only 1.5% of all Australian businesses but 22.3% of larger businesses,



contributed 36% to BERD and had the largest increase in research investment.

A relationship is also apparent between size and other important indicators such as innovative activity and IT uptake in Australian businesses.

A recent ABS survey of business characteristics found that 45% of all businesses were innovation-active by implementing new or improved goods or services, operational processes, organisational process or marketing methods. The proportion of innovation-active businesses increased significantly with the size of the business from 37% for businesses with 0-4 employees to 71% for businesses with more than 200 employees.

Business size is also an important determinant of IT uptake and particularly of web presence. While only 36% of Australian businesses are presented on the Web this figure is strongly associated with the large proportion of smaller sized businesses in Australia as larger businesses are presented on the Web to almost 95.8%.

Such dependence of the ability to innovate and invest in R&D on the size of companies is an important consideration in the new R&D Tax Credit scheme which the Government has outlined in a discussion paper

currently open for comments until 26 October 2009. In the paper it says “the new R&D tax incentive intentionally redistributes support in favour of small and medium sized businesses which are more responsive to fiscal incentives.” The reforms are specifically designed to support R&D activity with potential ‘spillover’ benefits for the broader community, in firms – usually smaller sized businesses - that unsupported would not get sufficient benefits from the activity to justify an investment.

Replacing the current R&D tax concession, the reforms will have two core components: a non-refundable 40% Standard R&D Tax Credit; and a 45% Refundable R&D Tax Credit for companies with a turnover of less than \$20 million; these measures translate to a benefit which is comparable to tax deductions of 133% and 145%, respectively.

In the case of refundable tax credits, even when the company tax liability is zero, the 45% credit on R&D spending could be used to offset other tax liabilities or received as a cash refund. Larger companies, however, would not have these benefits, although unused Standard Credit can be carried forward to reduce future income tax liabilities.

An important measure of the new scheme will be to tighten the criteria for eligible R&D which the Government says is required to set free funds for the more generous yet also more targeted credit scheme. Eligible ‘core’ R&D is currently defined as systematic, investigative and experimental, and involves either innovation or a high level of technical risk. New eligibility criteria will require ‘core’ R&D to be both innovative and technically risky which, according to the paper, is more likely to create spillover benefits.

With the new scheme, only companies (generally as defined by Tax law) will have access to credits, provided they are incorporated and conduct the R&D in Australia. However, eligibility will not depend on the location of the IP ownership.

► **More information:** ([ABS](http://www.ABS.gov.au)) www.ABS.gov.au; ([Tax Credits](http://www.treasury.gov.au)) www.treasury.gov.au

Road to cleverness

In December 2008 the **House of Representatives Standing Committee on Industry, Science and Innovation** released its final report into research training and research workforce issues in Australian universities.

The report complemented the *Review of the National Innovation System* and the *Higher Education Review* undertaken in 2008. The

Australian Government has now released its response to the 38 recommendations which the committee made in several key areas including:

- meeting Australia’s current and future workforce needs;
- maintaining the quality, competitiveness and reach of Australia’s research training system; and
- facilitating transitions and providing career pathways beyond the formal research training experience.

The response to the recommendations includes a number of actions already in place or outlined in the 2009-10 Budget.

Key measures are:

- an intent to develop a research workforce strategy to 2020;
- an increase in stipend and number of **Australian Postgraduate Awards** (APA);
- a commitment to increase indexation for research block grant schemes from 2012, including the **Research Training Scheme** (RTS) and student scholarships;
- a new **Researchers in Business** scheme for researchers in the academic sector to work in a business environment and a **Super Science Fellowship** scheme to support researchers in areas of identified national research strength.

However, 23 of the 38 recommendations were either not supported (12), deferred to other bodies such as state governments or universities (5) or are under further examination (6).

Recommendations not supported include:

- Recommendation 2 – an increase of funding for research and development by raising incrementally the Gross Expenditure on Research and Development (GERD) as a percentage of GDP over a ten year period until it equals the **OECD** average;
- Recommendation 4 – that the Government funds the full cost of each Higher Degree by Research program at Australian universities;
- Recommendation 11 – an increase in the funding pool of **ARC** and **NHMRC** grants for a minimum 40% success rate of applicants;
- Recommendation 32 – the Government waives the Fringe Benefits Tax incurred by businesses or institutions that employ staff undertaking HDRs;
- Recommendation 35 – a quota of 10% of **ARC** and **NHMRC** successful grants to be allocated to early-career researchers who are first-time awardees.

► **More information:** www.innovation.gov.au

Clever bill

The *Higher Education Support Amendment (2009 Budget Measures) Bill 2009* has passed both houses amending the *Higher Education Support Act 2003*. Deputy Prime Minister **Julia Gillard** says the bill will bring “historic changes” with a shift to student centred funding arrangements.

From 2012, a demand driven system of Commonwealth supported student funding will see universities “funded for every eligible student they teach, rather than through a system of rationed place”, says Ms Gillard. “From 2012 there will be no cap on the number of places universities will be able to offer to students.”

The bill includes provisions to increase the indexation of government university funding and changes addressing Australia’s skills needs; the broader public interest; and the quality of education. As a specific

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measure, an independent **Tertiary Education Quality and Standards Agency** will be established through which universities accepting quality targets can receive \$90 million in 2011, and for meeting these targets up to \$135 million in 2012.

Further measures aim to improve access to higher education by lower socio economic status (SES) students and include:

- \$108 million over four years for a program linking universities with low SES schools and vocational education and training providers.
- \$325 million over four years for universities to expand enrolment of low SES students, and improve completion and retention rates.

► **More information:** 1300 363 079

Triple focus

The **CSIRO** has officially opened its WA **Australian Minerals Research Centre**. It will focus on developing economic, environmentally and socially sustainable processes for Australia's minerals industry.

Established to facilitate increased collaboration between public research groups and industry, the centre will form a 'collaborative hub' in minerals research by housing more than 80 CSIRO staff, the headquarter of the **Parker Cooperative Research Centre for Integrated Hydrometallurgy Solutions**, and research staff from **Direct Nickel and Nalco**.

Western Australian Minister for Mines and Petroleum **Norman Moore** says the centre will provide a significant boost to hydrometallurgy research and help address the short and long-term needs of the industry. Hydrometallurgical techniques – which use wet processes to recover metals from ores, concentrates or other metal-bearing materials – are used to produce commodities including alumina, cobalt, copper, gold, nickel, rare earths and uranium.

► **More information:** www.csiro.au

Dancing with the stars

An international panel of expert astronomers has chosen 10 projects that will make use of **CSIRO's Australian SKA Pathfinder (ASKAP)** telescope in its first 5 years of operation from 2013.

The projects will take advantage of ASKAP's huge survey speed and large field of view, says acting director of the **Australia Telescope National Facility Dr Lewis Ball**. They will represent 131 institutions and 363 unique authors from Australia and New Zealand (33%), North America (30%), Europe (28%), and the rest of world (9%).

The projects will use 75% of ASKAP's time for large surveys, each needing more than 1500 hours to complete. They include:

- an **Evolutionary Map of the Universe (EMU)** – a deep survey for

star-forming galaxies and active galactic nuclei, designed to trace the evolution of star-forming galaxies and massive black holes through the history of the universe; and

- the **Widefield ASKAP L-Band Legacy All-Sky Blind Survey (WALLABY)** – a survey for galaxies containing neutral hydrogen gas over 75% of the entire sky aimed at improving our understanding of galaxy formation.

Other projects will study variable and transient radio sources, the interstellar medium of our own galaxy, magnetic fields in space, and pulsars.

► **More information:** www.atnf.csiro.au

The future of making something

Initiated in 2007, the new **Future Manufacturing National Research Flagship** has been launched by Minister for Innovation **Senator Kim Carr**. Running on a budget of \$36.2 million it aims to deliver significant impact to Australian manufacturing, with its research themes including biomedical manufacturing, cleantech manufacturing, flexible electronics and nanosafety.

In his speech launching the centre, Senator Carr pointed out that Australia's manufacturing industry is currently facing great challenges with its contribution for national GDP down from 12% a decade ago to now 9%. At the same time, however, manufacturing revenues, output and productivity have risen steadily over the past two decades, Senator Carr says.

The flagship will focus on creating the transformational technologies Australian industry needs to become environmentally and economically sustainable, he says.

► **More information:** <http://minister.innovation.gov.au>

Nuclear honeymoon

The **Australian National University (ANU)** and the **Australian Nuclear Science and Technology Organisation (ANSTO)** have signed a Memorandum of Understanding (MoU) to collaborate across research fields including key accelerator facilities, future energy sources and nuclear non-proliferation.

"The potential of this partnership demonstrates the value of Commonwealth institutions working together for the betterment of all Australians," says ANU vice-chancellor **Professor Ian Chubb** who believes that both organisations have infrastructure and facilities available that if shared could bring greater benefit to the nation. The partnership will develop a national strategy to coordinate use and development of a heavy-ion accelerator and ion source technology, he says. In addition, it will undertake collaborative activities that enhance educational programs in nuclear physics, nuclear engineering and materials science.

► **More information:** www.ansto.gov.au

SKA crazy

In further support of the Australia-New Zealand bid for the **Square Kilometre Array (SKA)**, the Minister for Innovation, Industry, Science and Research, **Senator Kim Carr**, has announced a new \$4 million **CSIRO Murchison Radio Observatory Support Facility**, which will directly link Geraldton based researchers with the \$80 million **Pawsey High Performance Computing Centre for SKA Science** to be built in



Perth.

The Geraldton facility is planned to be completed in 2011.

"Geraldton's unique position means that it can serve as a major link between the proposed SKA base at Boolardy Station in WA's Mid West and Perth," Senator Carr says. Winning the SKA project is expected to bring enormous economic and scientific benefits to Geraldton and WA more broadly.

The SKA is a large-scale, new-generation radio telescope with a discovery potential that is 10,000 times greater than current instruments. A decision on the final site is expected in 2012.

► **More information:** <http://minister.innovation.gov.au>

Quest for the Grail?

The **US National Institute on Aging**, part of the **National Institutes of Health of the United States**, will provide \$50 million for an international trial to find out whether low-dose aspirin prolongs a healthy life in people aged 70 and over.

The study will be led by **Professor John McNeil** at **Monash University** and **Professor Richard Grimm** at the **US Berman Center for Outcomes and Clinical Research**.

The grant includes \$25 million for Australian researchers and follows earlier NHMRC funding of \$3.5 million to develop a research protocol, trial study procedures and for initial recruitment.

Over 5 years, the trial will enrol 6500 healthy individuals in the US and 12,500 in Australia making **ASPREE** the largest prevention trial ever undertaken in Australia

According to Professor McNeil, it will investigate whether potential benefits to the elderly of consuming daily aspirin, such as improved cognitive and cardiovascular function, are offset by known significant side effects.

► **More information:** Robyn Woods, robyn.woods@med.monash.edu.au, 03 9903 0345



Bubble research

The new \$10 million **Cavitation Research Laboratory** at the **Australian Maritime College** in Launceston is one of only a few maritime experimental laboratories in the world to test the hydrodynamic behaviour of structures submerged in flowing water, such as submarines, ship hulls and underwater vehicles.

The hydrodynamic research will help students undertaking maritime studies at the **University of Tasmania** as well as organisations such as the **Defence Science and Technology Organisation (DSTO)** and Australian industry to address technology and performance issues that might arise in current and future ship design.

The DSTO intends to use the facility for experiments that will support the development of Australia's future submarine, the **Air Warfare**



Destroyer, minehunter vessels, patrol boats, amphibious craft and other maritime platforms.

► **More information:** 1300 363 079

Fair go or wishful thinking?

The **Australian Research Council (ARC)** has released a consultation paper on its peer review system. The agency proposes a number of changes in response to pressures affecting the system such as the increasing number of proposals and workload of potential peer reviewers; concerns about transparency and feedback provided through current processes; and the changing nature of increasingly interdisciplinary research. Proposed changes include:

- implementing a revised assessor structure – by changing the role and composition of the three currently employed assessor levels 'peer reviewers', 'panel reviewers' and 'interdisciplinary leaders';
- introducing new processes for assigning proposals to assessors – by introducing a 6-digit Field of Research code to be used in combination with keywords selected by assessors and applicants; and
- developing alternative ranking proposals.

A particular point addressed by the paper is the current assessment of track record, which according to the ARC paper, "may not adequately encourage assessors to consider the merit of proposals in the context of the employment conditions of participants." This may unfairly bias against researchers with teaching responsibilities or who had career interruptions, early-career-researchers, and researchers working in high-risk research areas.

The paper proposes replacing the concept of 'Track Record' with 'Research Opportunity and Performance Evidence (ROPE)' and seeks feedback on a number of alternative arrangements to overcome potential unfair bias in the selection of 'Discovery Projects'.

In addition to the consultation, the ARC says it will critically examine existing processes; review the processes used by equivalent overseas research funding agencies; and seek expert input from members of an external reference group convened specifically for this purpose.

Submissions will close 19 October 2009.

► **More information:** www.arc.gov.au/pdf/peer_review.pdf

The time has come...

The **Australian Research Council (ARC)** has announced the timeframe for the full **Excellence in Research for Australia (ERA)** initiative evaluation process. The ARC is responsible for implementing the new research quality and evaluation system, which is currently in trial with the clusters *Physical, Chemical and Earth Sciences (PCE)* and *Humanities and Creative Arts (HCA)*.

"Submissions to the full ERA will begin in June 2010," says ARC chief executive officer **Professor Margaret Sheil**. "This timeframe will give Australian universities sufficient time to prepare their submissions to the full ERA evaluations, which will evaluate all eight ERA discipline clusters."

Submission guidelines will be released in December this year.

► **More information:** www.arc.gov.au

'Men of steel'

The members of the new **Steel Industry Innovation Council** have been announced by Minister for Innovation **Senator Kim Carr**.

The council will be chaired by **Mark Paterson**, secretary of the **Department of Innovation, Industry, Science and Research**.

“The Council will advise me on appointing a Steel Supplier Advocate to forge connections within the steel supply chain and between Australian steel producers and fabricators and major project proponents,” says Senator Carr. “It will also advise the **Australian Government** on ways to use programs like **Enterprise Connect** and the **Industry Capability Network** to assist the industry to become more creative, productive and globally competitive.

Other members include:

- **Mr Paul O'Malley**, managing director and chief executive officer, **BlueScope Steel Ltd**;
- **Mr Geoff Plummer**, managing director and chief executive officer, **OneSteel Ltd**;
- **Mr Paul Howes**, national secretary, **Australian Workers' Union**;
- **Mr Julius Roe**, national president, **Australian Manufacturing Workers' Union**;
- **Mr Don McDonald**, chief executive officer, **Australian Steel Institute**;
- **Dr Steve Morton**, group executive, Manufacturing, Materials & Minerals, **CSIRO**;
- **Professor Lyndon Edwards**, **Australian Nuclear Science Technology Organisation**; and
- **Professor Gerard Sutton**, vice chancellor, **University of Wollongong**.

► **More information:** <http://minister.innovation.gov.au>

Helping hand

The latest round of **Commercialising Emerging Technologies** (COMET) funding of \$70,400 will support a further 14 Australian projects to bring their new innovations to the market.

Innovative projects receiving funding include:

- **Sustainable Freshwater Technologies**, NSW, which developed a water purification system that injects compressed air into grey house water and combined with the project's vortex system, eliminates fungus and legionella;
- **SBBM Enterprises**, Tasmania, for a process to reuse and recycle electronic equipment such as computers, printers and mobile phones;
- **GRID Services**, Queensland, which developed new attachment tools for use from both sides of small and light helicopters improving safety and productivity for power line stringing, cleaning and maintenance of electrical transmission wires;
- **EVRsafe Solutions**, South Australia, which developed a toxic gas detection system for residential and commercial buildings that can activate alarms and exhaust fans, open doors and windows as well as report and monitor.

► **More information:** www.ausindustry.gov.au



Street vision

The **Australian and Victorian Governments** have released an *Automotive Australia 2020 vision* report which identifies the trends, drivers, needs and capabilities of the Australian automotive industry and outlines the following vision:

“Australia’s automotive industry must achieve recognition as a strategic element of the global automotive industry to be attractive to global companies and their investors. Australia must have a sustainable, profitable vehicle manufacturing industry with global reach that maximises opportunities in local and international markets. The industry must be bigger, more productive, and provide more jobs in the manufacturing and supply sectors. This can be achieved through leveraging existing strengths and building new capabilities.”

The report marks the first of six phases to develop a comprehensive technology roadmap, the **Automotive Australia 2020 Project**. Managed by the **Cooperative Research Centre for Advanced Automotive Technology** the project will identify and map the industry’s capabilities and needs to 2020 and beyond.

The six phases include (1) establishing a vision; (2) defining an immediate domestic and long-term future global market need; (3) understanding national capability; (4) identifying key tactical and strategic opportunities; (5) strategic opportunity roadmap development; and (6) prioritisation.

► **More information:** <http://minister.innovation.gov.au>

Taxing endeavour

Over 90% of reef life is believed to be unknown to science.

The **CRReefs** project, which is led by the **Australian Institute of Marine Science** (AIMS) and partner organisations in the US, aims to systematically survey life on Australian reefs. It is one of 17 programs of the **Census of Marine Life** (CoML), which started in 2000 as a global effort to assess and explain the diversity, distribution and abundance of marine life by 2010. The Australian arm of CRReefs is funded with \$3.4 million over four years by **BHP Billiton**, through a deal negotiated by the **Great Barrier Reef Foundation**.

In a major boost for the project, five scientists from Australian museums and other research organisations recently received a total of \$2.7 million to join the project. The funding is comprised of grants worth collectively \$1.2 million, provided through the **Australian Biological Resources Survey** (ABRS) and CRReefs, with additional cash and in-kind contributions from the scientists’ host institutions.

Many hundreds of species have been discovered on previous CRReefs expeditions. The projects supported with the new funding will aim to add to this tally. The awarded researchers include: **Dr Fred Gurgel** (**University of Adelaide**); **Dr Niel Bruce** (**Queensland Museum**); **Dr John Hooper** (**Queensland Museum**), **Dr Pat Hutchings** (**Australian Museum**) and **Dr Robert Adlard** (**Queensland Museum**).

► **More information:** Julian Caley; 0439 472 148, j.caley@aims.gov.au



Unidentified Polychaete of the Serpulidae family (Ningaloo Reef 2009 expedition)
image: Gary Cranitch.

Proteins destined for Mitochondria are translocated through an outer and inner mitochondrial membrane, facilitated by complex multi-component transporter TOM (outer) and TIM (inner)
(adapted from NIH by Elwinmedia)

Cool innovation

Researchers at **James Cook University** supported by the **Queensland Fire and Rescue Service** have developed the CoolMe Vest, which can be worn under the suit of fire fighters or emergency workers significantly reducing their heat stress and recovery times in extreme heat conditions.

Each vest is a disposable, single-use item made of recyclable materials.

Fire fighters wearing protective suits can experience temperatures up to 50°C, lose up to two litres of fluid within 30 minutes, and require up to two hours recovery time before they are ready for redeployment, says co-developer **Dr Glen Deakin**, a lecturer in sport and exercise science. The vest reduces the recovery period to 30 minutes, and reduces fluid loss, core temperature and thermal discomfort, he says.

“It’s simple and affordable technology, similar to the chemical cold packs many people carry in their first-aid kits,” Dr Deakin says.

He believes the vest will be used by a range of emergency services, the military and in industrial settings.

The researchers have formed a company **GRW Industries** to explore the commercial potential of the product, which has a patent pending.

► **More information:** www.jcu.edu.au

Liquid silk

Scientists at **CSIRO Entomology** hope their research into how insects produce silk will ultimately lead to products that assist the transition of Australia’s manufacturing industry to a bio-based economy.

The world of insect silks is surprisingly complex. Not only do different insects produce different silks but individual species can produce more than one type of silk. Because of their toughness, durability and performance in water and solvents, the artificial production of silk could give rise to advanced biopolymers for specific purposes.

Investigating the silk of the common Australian green lacewing *Mallada signata* the CSIRO research discovered and fully sequenced two fibrous proteins which are “folded up like panels in a concertina door”, as CSIRO’s **Dr Tara Sutherland** describes it. The silk, she says, is very strong with a high lateral stiffness and great elasticity.

The female lacewing produces the silk as a liquid, rapidly drawing it out as it hardens in seconds, and then places an egg at the tip of thread. Being produced as a liquid which solidifies in air makes it easier to produce the silk compared to the complex process in moths and spiders. And while the silk of bees and ants is chemically easier to produce, lacewings silk is simpler to fabricate, and this understanding could bring scientists a step closer to the production of artificial insect silks.

► **More information:** www.csiro.au

Evolution clever enough

A concept still hard to believe for some sceptical minds: Darwin’s theory of evolution. Particularly controversial is how evolution could have led within our cells to structurally highly complex multi-component

machines, where each part is contributing a partial function or structural element. An international research group, including **Monash University** and the **University of Melbourne**, has published in the journal *PNAS** evidence indicating they evolved according to Darwin’s theory and without the need of ‘intelligent design’.

According to Monash **Professor Trevor Lithgow**, the research shows that simple ‘core’ machines were established in the first eukaryotes by drawing on pre-existing proteins that had previously provided distinct, simplistic functions.

The study used as a model the TIM complex, which transports proteins into mitochondria (see figure) and is believed to have been derived from bacteria engulfed by early eukaryotic cells. The TIM complex, however, is not present in bacteria but, the researchers found, has evolved from bacterial components. In *Caulobacter crescentus* bacteria, which are presumed similar to the bacterial ancestors of mitochondria, they found proteins related to components of the TIM complex yet not part of similar protein transport machines.

The work, says Professor Lithgow, describes a perfect example of the ideas of evolutionist Francois Jacob who saw evolution as a “tinkerer, cobbling together proteins of one function to yield more complex machines capable of new functions.”

► **More information:** **Trevor Lithgow, 0418 173 177**

Fruitful concept

Fifty first-year students at the **University of Sydney** have designed and built a novel electric concept car, the ManGo, a four-wheel drive with a motor in each wheel. The car lacks axles, differentials and gear boxes, and therefore is “nimble, light and inexpensive to run”, according to **Associate Professor Michael Roberts**, who conceived the project.

He says the wheel motors of the ManGo will be three times more efficient than a petrol engine. In addition, further boosting the car’s efficiency, its motors are used as brakes recovering electrical energy to recharge the battery, also eliminating the need for mechanical brakes.

It makes the car simple to build, he says, as the mechanics have been replaced with software and inexpensive electronics.

Built within five months using bits of plywood, foam and fibreglass the project is only at the prototype stage, requiring additional engineering before becoming a marketable vehicle. However, Associated Professor Roberts says the project highlights the relative simplicity of electric car technology when compared to petrol engine vehicles and low barriers to entry for the emerging industry.

► **More information:** **Sarah Stock, 0419 278715**

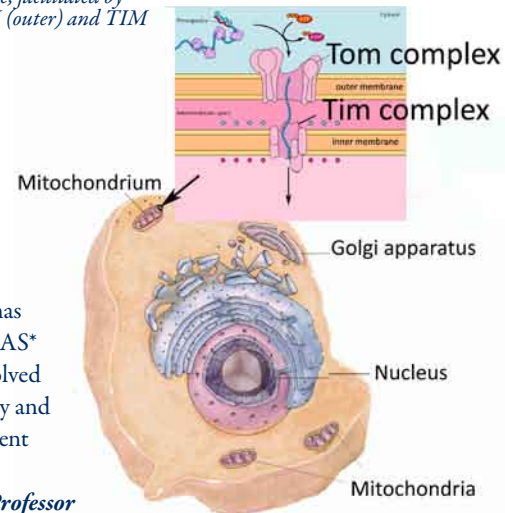
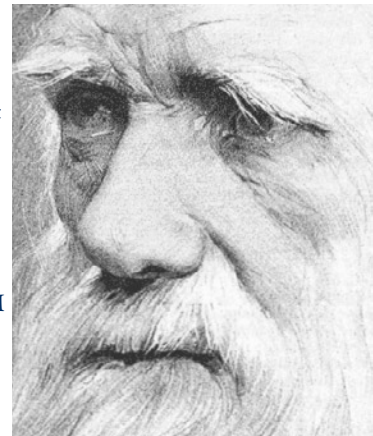


photo: Holly Trueman



Vulnerable specialists

Species specialised and therefore more restricted to a habit may be less able to adapt to climate change and therefore are more at risk of extinction due to a less varied genetic make-up. Researchers from **Monash University** and the **University of Melbourne** have published a study in *Science* in which they examined vinegar fly (*Drosophila*) species that are restricted to tropical areas or in widely distributed environments. They found that flies restricted to tropical environments had a narrower set of genes for traits such as tolerance to drying (desiccation) and cold resistance, in effect preventing adaptation.

Monash's **Dr Carla M. Sgro** says the result is an important piece of the evolutionary puzzle. Adaptation is a physiological or behavioral change that makes an organism better suited to its environment. Since adaptations usually occur due to a change (or mutation) in a gene, species with a more varied set of genes are likely to have a greater ability to adapt, he says.

"Our new findings indicate that a species' range is closely linked to the amount of genetic variation in important traits such as stress resistance," Dr Sgro said. "In effect, we now have a genetic explanation for why species are restricted – they just don't have the genes needed to adapt to different environments." Habitat specialists make up most of the global biodiversity. The inability to adapt could therefore affect many species, such as insect groups and potentially other groups such as mammals and fish as well.

► **More information:** [Carla Sgro, 03 9902 0332, 0438 057 597](#)

Flight instructor locust

Researchers at the **University of New South Wales (UNSW)** and **Oxford University** have used high-speed digital video cameras to capture how the wings of locusts flying in a wind tunnel change their shape. The information obtained was used to create a computer model of the airflow and thrust generated by the complex flapping movement.

Published in *Science*, the study reveals the aerodynamic characteristics of one of nature's most efficient flyers – information that may lead to the development of miniature robot flyers for use in situations such as search and rescue, military applications and inspecting hazardous environments.

Dr John Young, a senior lecturer at the **Australian Defence Force Academy (UNSW@ADFA)**, says biological systems, optimised over millions of years, often outperform what can be achieved artificially.

Insect wings have a complicated shape featuring twists and curves, and ridged and wrinkled surfaces. The computer model was used to run modified simulations of locust wings where some features of the complicated wing structure were removed, such as the wrinkles and curves. These still produced a lift but much less efficient, requiring much more power for flight. This suggests, says Dr Young, that while insect-like micro-air vehicles with the high lift of insect wings may be relatively easy to achieve, the flying efficiency of locusts, which can fly extremely long distances on very limited energy reserves, will require detailed design of the deforming insect wing.

► **More information:** [Peter Trute, 02 9385 1933, p.trute@unsw.edu.au](#)



Image: Mahamad Karim, CNN Free Documentation License 1.2

HIV reservoir brain

Astrocytes, the most abundant cell type in the brain, support the normal functioning of brain neurons. A number of studies of patients with HIV have suggested they are also involved in the development of neuropathogenic symptoms caused by HIV, such as HIV-associated dementia (HIVD), which is the most common cause of dementia under the age of 40. However, until now they were not thought to play a significant role as it was believed astrocytes are rarely infected by the virus.

Applying advanced and highly sensitive technology, a study published in the *Annals of Neurology** by scientists from **Monash University** and the **Burnet Institute** found that infection of astrocytes is, however, extensive in patients with human immunodeficiency virus (HIV) associated dementia. This supports previous findings that, for example, in patients rapidly progressing into HIVD some types of astrocytes increasingly undergo cell death (apoptosis). It was therefore speculated that the death of astrocytes leads to neuronal dysfunction.

The new findings also identify an important viral reservoir in the brain, which has to be taken into account in the design of strategies to eradicate the HIV virus.

Monash's **Professor Steve Wesselingh** says that beyond the insight into HIV-associated dementia the research is also significant for the general understanding of Alzheimer's.

► **More information:** www.monash.edu.au/news; *www3.interscience.wiley.com/cgi-bin/fulltext/122267211/PDFSTART

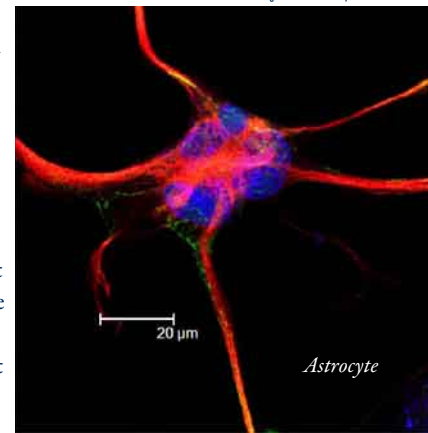


Image: Nathan S. Ivey at TNPRC

Astrocyte

It's all in the genes

An international study led by Australian researchers at **Westmead Millennium Institute** and the **University of Sydney (USYD)** and also involving **WEHI** researchers have found that inherited differences in a specific interferon lambda gene impacts on how patients chronically infected with Hepatitis C (HepC) virus respond to standard treatment.

The current treatment with interferon-alpha and ribavirin is expensive and can have serious adverse effects. In addition, it is unsuccessful in 50-60% of cases. With the findings published in *Nature Genetics**, obtained by screening more than 800 patients treated for chronic HepC, it is now feasible to develop a genetic test selecting those patients that are more likely to respond.

USYD's **Dr David Booth** says that a similar principle, where subtle differences in the make-up of our immune system determine susceptibility to disease or response to treatment applies to other diseases such as multiple sclerosis. "Finding each of the few genes that have such an impact gives science an edge in the eventual prevention or control of many of the major diseases of humankind," he says.

Dr Booth says the study provides a valuable new lead into the role of interferon lambda in HepC infections, and suggests that a combination therapy with interferon-alpha and gamma could be more effective than the current standard treatment option.

► **More information:** www.usyd.edu.au

Genes telling the story

A study by the **University of New South Wales** and colleagues in the US suggests that sampling the genomes of just a few dominant species could predict the types of microbes that thrive in specific marine environments. It may also reveal insights into the impacts of climate change on biodiversity in the world's oceans.

The study published in *PNAS* compared the genomes of two common ocean bacteria, one living in nutrient-rich waters and growing rapidly, the other living in nutrient-poor waters growing more slowly. The bacteria from nutrient-rich waters were found to have many selective transporter proteins to quickly absorb plentiful nutrients while those from nutrient-poor waters have fewer but highly efficient transporter proteins to extract what little nutrition is available. Other differences in genes concerned nutrient and energy usage and resistance to infecting viruses.

The researchers believe that knowledge from a few key genes could predict what sort of environment an individual species evolved in. In addition, the genomes of a small number of species should provide insights into the dynamics of whole marine ecosystems. UNSW **Professor Rick Cavicchioli** says that comparing strategies of the dominant organisms should reveal the carbon flux going through the environment which will allow researchers to monitor the health of the marine ecosystem, including the impact of global warming.

► **More information:** Rick Cavicchioli BH 02 9385 3516, AH 0411 390 132

Women's menace: HPV

Human papillomavirus (HPV) is thought to be involved in a number of cancers, such as some head and neck tumours, based on a tendency of the virus to oncogenically transform human epithelial cells. Confirming results from previous studies, researchers of the **University of New South Wales** (UNSW) found Human papillomavirus (HPV) is also present in a significant number of breast cancers. Published in the *British Journal of Cancer**, the study implicates a causal role of HPV in many breast cancers and that in addition to preventing cervical cancer vaccinating women against the virus may also prevent some forms of breast cancer.

Using genetic probes the team detected high-risk HPVs in 39% of non-invasive ductal carcinoma in situ (DCIS) cancers and (21%) of more serious invasive ductal carcinoma (IDC) breast cancer specimens.

HPV as a cause of breast cancer has been controversial despite numerous scientific reports having found high-risk types of HPV in breast tissue and breast cancer specimens. However, these studies had varying results, with the prevalence of HPV-positive breast cancer ranging from 4-86%, and have been clouded by difficulties in detecting the virus in breast specimens and criticisms that because of the sensitivity of the genetic probe technique used - polymerase chain reaction (PCR) - positive detection of HPV could have been the result of contaminated specimens.

To avoid these problems the researchers used in situ PCR, which not only provides evidence of the presence of HPV genetic material but also its location in the nuclei of human breast cancer cells. They also recorded additional characteristic 'telltale' changes linked to HPV, which the authors claim further validates the results.

► **More information:** Noel Whitaker, n.whitaker@unsw.edu.au, 0404 236 953; *Heng et al. (2009) *British Journal of Cancer*, September 2009



HPV-infected cells revealing "telltale" changes such as enlarged nuclei. Photomicrograph: Ed Uthman.

Feverish prospect

Chloroquines (CQ) were 'wonder drugs' used to treat malaria before the malaria parasite increasingly developed resistance, caused by a mutation in a parasite protein. Discovered almost 10 years ago, it remained unclear how the protein causes the marked reduction in the amount of CQs accumulated in resistant parasites.

Published in *Science*, a study by researchers from ANU now demonstrates that the mutant protein but not the native protein transports the drug away from its site of action inside the parasite's internal digestive compartment.

The parasite resides in red blood cells, there feeding on haemoglobin but having to detoxify the accumulating iron. CQs switch off the parasite's ability to convert toxic iron into a harmless crystal which effectively poisons the parasite, says lead author **Dr Rowena Martin**.

By isolating and producing both mutant and native protein in unfertilized frog eggs they showed that only mutant protein transports chloroquine across membranes. In the mutant parasite this causes chloroquine 'to escape' from the cell's digestive system, Dr Martin says.

Now researchers are able to focus on developing forms of chloroquine that cannot be shifted anymore from its site of action by the mutant, which could lead to a renaissance of potent quinoline antimalarial drugs - much needed in the absence of an effective vaccine and the occurrence of resistances to alternative drug options.

► **More information:** <http://news.anu.edu.au/?p=1648>

Found treasures

A team of 18 Australian researchers have discovered 850 new species of invertebrate animals - including various insects, small crustaceans, spiders and worms - living in underground water, caves and 'micro-caverns' amid the harsh conditions of the Australian outback.

Over four years, the team led by **Professor Andy Austin** (University of Adelaide), **Dr Steve Cooper** (SA Museum) and **Dr Bill Humphreys** (WA Museum) surveyed underground water, caves and micro-caverns across arid and semi-arid Australia.

Professor Austin says that the survey discovered a completely new component to Australia's biodiversity.

"It is a huge discovery and it is only about one fifth of the number of new species we believe exist underground in the Australian outback."

That the presence of so many species are hidden away underground or in caves could be the result of past climate change, as 15 million years ago central and southern Australia was much wetter with a flourishing diversity of invertebrate fauna living on the surface. 1-2 million years ago the continent became drier and species may have taken refuge in isolated habitats, where they evolved in isolation from each other.

Exciting scientifically, the newly found biodiversity poses also challenges for conservation. "Many of these species are found in areas that are potentially impacted by mining and pastoral activities," Professor Austin says.

The research was presented at the recent *Darwin 200: Evolution and Biodiversity conference*.

► **More information:** www.adelaide.edu.au/news/news35801.html



A new woodlice species whose distribution is restricted to mound springs in South Australia.

image: University of Adelaide

World at a tipping point

Human activities – largely resulting from our reliance on fossil fuels and industrialised forms of agriculture – have now reached a magnitude that may trigger irreversible environmental change to the planet. It has become critically important to define what levels of human-caused change are ‘safe’ and which are ‘unsafe’, and to stay within these boundaries to ensure continued social and economic development.

In a paper published this month in the prestigious journal *Nature*, 28 of the world’s leading environmental scientists conclude that humanity needs to act now to avoid threats to human well-being caused by irreversible damage to the Earth, its climate, natural resources and life-

change, declining world fisheries, emerging diseases and antibiotic resistance are all examples of intertwined global challenges that are outpacing the capacity of existing institutions.

The core of the



As a starting point they [the researchers] propose ten boundaries which should not be exceeded to avoid crossing dangerous tipping points.

supporting systems.¹

The scientists propose a safe upper limit of 350 parts per million (ppm) of CO₂ in the atmosphere – a level already exceeded since 1987. The researchers also propose that safe boundaries be set for other critical planetary systems. As a starting point they propose ten boundaries which should not be exceeded to avoid crossing dangerous tipping points. These include the rate of species extinction, the amount of nitrogen and phosphorus in fertilisers, use of fresh water, the clearing of land, ozone depletion, aerosol pollution of the atmosphere and chemical contamination.

They caution that transgressing a safe boundary of 350 ppm for atmospheric CO₂ for too long will increase the risk of dangerous climate change, including the loss of major ice sheets, accelerated sea level rise and abrupt shifts in coral reef, forest and agricultural systems.

The increasing level of CO₂ in the atmosphere and ocean has already caused major damage to coral reefs worldwide over the past 25 years. Allowing it to increase to 450 ppm or higher would be hugely irresponsible and detrimental to millions of people in developing countries who depend on coral reefs for food security and their livelihood.

Man-made climate change is now beyond dispute, and in the run-up to the UNFCCC climate negotiations in Copenhagen in December 2009, international discussions on targets for climate mitigation have intensified. A consensus is building on trying to contain the rise in global mean temperature to no more than 2 °C above the pre-industrial level, on top of the 0.7 °C rise that has already occurred. Business as usual, leading to a doubling of atmospheric CO₂ compared to pre-industrial levels, is likely to cause a catastrophic increase of 6 °C. According to the latest IPCC data on climate change so far, we are now tracking closely along this worst-case scenario.

In a second paper, a Policy Forum published in *Science* this month, an international team of economists and scientists argue that coping with global changes requires new institutions and a global governance system that is currently missing.² Energy, food and water crises, climate

problem is inducing cooperation in situations where individuals and nations will collectively gain if all cooperate, but each faces the temptation to free-ride on the cooperation of others.

While there are signs of emerging global action on issues such as climate change, there is widespread inaction on others, such as the destruction of the world’s forests to grow biofuels or the emergence of pandemic flu through lack of appropriate animal husbandry protocols where people, pigs and birds co-mingle.

The threat of climate change to coral reefs, for example, has to be tackled at a global scale. Commonwealth and State efforts to save Australia’s Great Barrier Reef will inevitably fail unless there is a global solution to global warming and ocean acidification. We need to choose between cheap and dirty energy versus more expensive greener alternatives that won’t destroy the world’s coral reefs.

The *Science* paper acknowledges that the main challenge is getting countries to agree to take part in global institutions that are designed to prevent destructive human practices.

This would involve all countries drawing up standards designed to protect the earth’s resources and systems, to which they would then feel obligated to adhere. They conclude that to address common threats and harness common opportunities, we need greater interaction amongst existing institutions, and new institutions, to help construct and maintain a global-scale social contract.

The institution of the nation-state has undoubtedly helped to improve the average well-being of people, but at the cost of reduced global resilience caused by the demands and activities of more and more people who are increasingly affluent. Better designed, global-scale institutions are urgently needed such that countries are better off participating than not participating. The major powers must be willing to enforce agreements – but legitimacy will depend on acceptance by numerous and diverse countries, and non-governmental actors such as civil society and business.

¹Rockström, J., et al. (2009) *Planetary Boundaries: A Safe Operating Space for Humanity*. *Nature* 461, 472-475.

²Walker, B., et al. (2009) *Looming global-scale failures and missing institutions*. *Science* 325: 1345-1346.

The core of the problem is inducing cooperation in situations where individuals and nations will collectively gain if all cooperate, but each faces the temptation to free-ride on the cooperation of others.

Reform the patent system

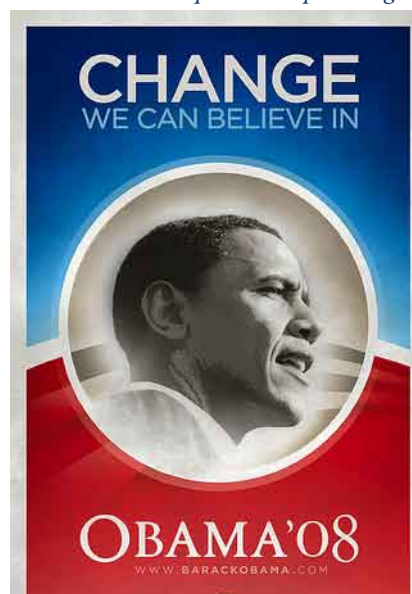
Campaigning to become United States President, Barack Obama vowed to 'Reform the Patent System'. He pledged:

"A system that produces timely, high-quality patents is essential for global competitiveness in the 21st century. By improving predictability and clarity in our patent system, we will help foster an environment that encourages innovation. Giving the Patent and Trademark Office (PTO) the resources to improve patent quality and opening up the patent process to citizen review will reduce the uncertainty and wasteful litigation that is currently a significant drag on innovation. As president, Barack Obama will ensure that our patent laws protect legitimate rights while not

*stifling innovation and collaboration."**

It will be interesting to see whether Obama can realise this platform of 'Change', now that he is an occupant of the White House.

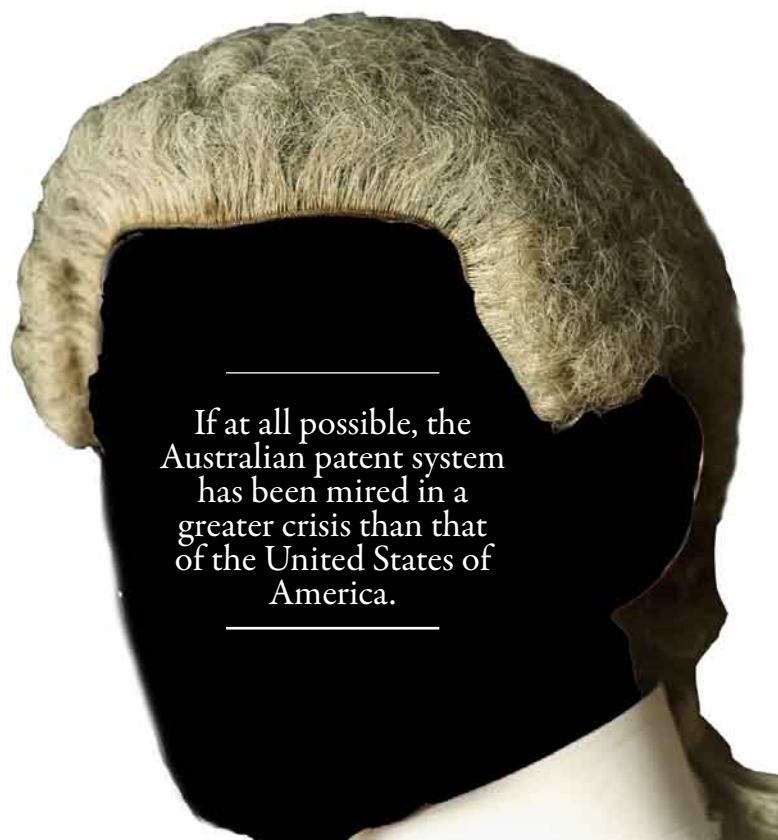
In their recent book, *The Patent Crisis and How the Courts Can Solve It*, Dan Burk and Mark Lemley lament that attempts to reform the patent system in the United States have foundered, partly because of the intervention of various special interest groups:



"Congress has spent the last four years, from 2005 to 2008, in an ultimately futile effort to reform the patent system." The pair lament: "Reform proposals have come and gone; advanced and retreated; merged and coalesced; multiplied, divided, and vanished at every conceivable stage of the legislative process'. Burk and Lemley note the highly politicised nature of the legislative conflicts over patent law reform: "The debates between protagonists and opponents of various amendments have been fierce and protracted."

In the face of such legislative gridlock in patent law reform, the Supreme Court of the United States has been a saving grace, with a number of decisions to improve the operation of the patent system. This year, the Supreme Court is reviewing the scope of patentable subject matter in the matter of *In Re Bilski*. The 2007 Supreme Court ruling in *KSR Inc. v Teleflex Inc.* raised the threshold for the test of an inventive step, emphasizing the need to attribute creative and innovative abilities to a person skilled in the art. This decision has since been applied productively in the context of biotechnology patent applications by the Court of Appeals for the Federal Circuit in the matter of *In Re Kubin*.

The 2006 Supreme Court decision in *eBay v. MercExchange* on the need for discretion in the grant of injunctions has been a useful policy tool in responding to the threat of patent trolls.



If at all possible, the Australian patent system has been mired in a greater crisis than that of the United States of America.

If at all possible, the Australian patent system has been mired in a greater crisis than that of the United States of America. IP Australia has tended to be insular in respect of public policy issues – such as those relating to public health, access to knowledge, climate change, and traditional knowledge. The agency has been slow to respond to public controversies over the quality of granted patents – such as the controversial non-coding DNA patents held by Genetic Technologies Limited.

The Australian Law Reform Commission's minimalist recommendations on gene patents have gone unheeded. The Advisory Council on Intellectual Property has proven to be ineffectual at initiating patent law reform. In contrast to the Supreme Court of the United States, the High Court of Australia has been largely indifferent to the pathologies of the patent system.

Five years after the report of the Australian Law Reform Commission inquiry into gene patents and human health, the Senate Community Affairs Committee has been prompted to investigate gene patents by further controversies over Genetic Technologies Limited. The inquiry has attracted a moderation of attention – with 69 submissions, and 6 days of hearings. The Committee will report back to Parliament on the 26th November 2009.

The Senate Community Affairs Committee has received a spectrum of submissions. At one extreme, abolitionists such as Luigi Palombi and his legislative ally, Senator Heffernan, have demanded a prohibition on the patenting of human genes. At the other extreme, companies like Pfizer and Genetic Technologies Limited have denied that there is anything like a crisis in patent law, and have sought to ward off calls for reform.

Sensitive to criticism, IP Australia has suggested a modest range of reforms to the patent system. Some of the agency's ideas have merit – such as lifting the threshold for an innovative step; and making utility a standard for an examination. Unfortunately, though, IP Australia's proposal for an experimental use defence is an embarrassing travesty. The sole purpose test would make the experimental use a Clayton's defence of no practical use to anyone. IP Australia, though, has also shied away from reforming the dysfunctional system of compulsory licensing and Crown Use in Australia. Outrageously, the Australian Parliament has still not met its international obligations about establishing an effective mechanism for the export of essential medicines to tackle public health crises.

A number of academics – most notably, Dianne Nicol, Jane Nielsen, Charles Lawson, Joshua Sarnoff, Andrew Christie, and Peter Drahos – have made a range of constructive suggestions as to how to improve the quality of patents granted by IP Australia.

Faced with the polarised opinions of stakeholders, there is a terrible temptation that Australian Parliament will do nothing in respect of patent law reform. That would be a tragedy. There is a great opportunity for the Australian Parliament to reform both the procedure and the substance of the patent system to ensure that IP Australia grants high quality patents. Moreover, there is scope for fixing the dysfunctional public interest mechanisms in the patent system – such as experimental use, compulsory



licensing, and crown use. The patent system needs to be more responsive to public policy concerns about health-care, access to knowledge, climate change, and traditional knowledge.

It will be an important test of the leadership of Prime Minister Kevin Rudd and Innovation Minister Kim Carr to see whether they can modernise Australia's patent system.

**http://obama.3cdn.net/780e0e91ccb6cdbl6e_6udymvin7.pdf*

REJOINDER

Paul D. R. MacLeman
CHIEF EXECUTIVE OFFICER, GENETIC TECHNOLOGIES LIMITED

Genetic Technologies no 'rogue' company

In August the ARDR published a commentary 'Human gene patents: we need them...' by Dr Julian Clark from the Walter Eliza and Eliza Hall Institute. In his piece, Dr Clark writes: "No doubt, recent unreasonable actions by companies exercising their patent rights have eroded equity of access to genetic tests. Most prominent and widely reported are the attempts by Australia's Genetic Technologies (GTG) to restrict genetic tests for the BRCA1 mutation patented by US company Myriad. Let's be clear, it is critical that breast cancer patients have fast and cost effective access to such tests. However, Australia's response to the actions of few 'rogue' companies must not jeopardise its standing in the international community and compromise its role in developing new therapies, or ability to access cutting-edge therapies." Below a response by the chief executive officer Genetic Technologies, Paul MacLeman:

In August in the Australian R&D Review Julian Clark of the Walter and Eliza Hall Institute astonishingly called Genetic Technologies a "rogue" company. This was in the context of genetic testing. This cannot be left without a response.

Genetic Technologies is Australia's leading provider of genetic testing, servicing large numbers of physicians, forensics labs and retail consumers.

As part of our oncology service offering, the Company some years ago moved to offer BRCA breast cancer gene testing. As there was a granted patent for BRCA mutation identification and interpretation issued in Australia, Genetic Technologies followed the orthodox procedure and acquired a license to the patents from patent-owner Myriad Corporation. That is, we conformed to existing rules and laws.

Before Genetic Technologies began offering BRCA testing, some medical institutes were taking up to four years to provide results to high risk women patients.

Genetic Technologies entered the market with a turn-around time of 2 weeks. As part of this license Genetic Technologies pays a substantial annual lump sum royalty to Myriad.

Other organisations such as medical institutes are conducting these

tests and choosing to not pay royalties. Most existing test providers are acting as quasi-commercial pathology providers, receiving fees for these services and do not pay royalties. They are charging about the same as Genetic Technologies and so are earning bigger profit margins on the tests.

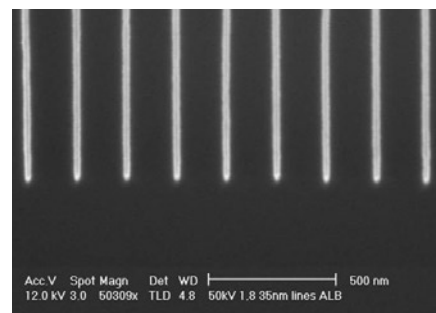
However the real commercial pathology providers are also operating by the rules and are not blatantly breaching patents. The private sector is playing by the rules and trying to do the right thing.

Hypocritically many of the large publicly funded medical institutes have patents on other biological materials such as antibodies which they rigorously enforce and charge royalties for access.

If the gene patents rights were to be removed in Australia, Genetic Technologies would benefit in not having to make royalty payments to Myriad. We would therefore be on a level competitive playing field with the large medical institutes.

How anyone can judge Genetic Technologies' conduct in all this as "rogue" is hard to comprehend. Conventional use of rogue might more readily apply to those that are flaunting the rules rather than those abiding.

Electron beam lithography: shown is a test pattern. The distance separating the lines is in the nanorange
image: Ohio State University



Alternative fuel hub

The WA Centre for Research into Energy for Sustainable Transport (CREST) has been launched at Murdoch University, and will, under the leadership of Murdoch's Professor David Harries, bring together the State's leading researchers in alternative transport fuels and technologies.

The collaborative research hub, which will be run in a partnership between Murdoch and Curtin Universities, aims to fast-track the creation, testing and commercialisation of clean, alternative fuels. Its research will include:

- oil depletion reviews and alternative transport fuels development;
- development and testing of sustainable transport fuels for WA;
- development of hybrid transport fuels;
- testing and evaluation of vehicles using sustainable fuels;
- stationary applications of alternative fuels and conversion systems;
- economic and lifecycle analysis of alternative fuels and transport systems;
- demonstrations of sustainable transport systems including fuel cell cars, plug-in electric vehicles, biodiesel fuelled vehicles;
- postgraduate education of future researchers of sustainable transport fuels; and
- the provision of information and training for potential users of sustainable transport fuels and systems.

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



Big solutions needed

Deakin University and the Fiji School of Medicine have jointly established the Pacific Centre for the Prevention of Obesity and Non-communicable Diseases (C-POND).

The centre will focus its research on the Pacific region, which has the highest and growing prevalence of obesity in the world. Some countries register more than 90% of adults as either overweight or obese. Non-communicable diseases are also on the increase—type 2 diabetes, for example, affects nearly one in two adults in some Pacific countries.

Over the past five years, the two institutions have collaborated on the Pacific Obesity Prevention in Communities (OPIC) project – a large scale program aimed at adolescents in New Zealand, Fiji, Tonga and Australia. This work has provided the platform for C-POND research.

Future C-POND projects will, in the first instance, centre on analysing and disseminating the results of the OPIC study.

► [More information: Prof. Boyd Swinburn 0407 539 941, boyd.swinburn@deakin.edu.au](mailto:Prof.Boyd.Swinburn@deakin.edu.au)

Nanotech power

Unique in Australia, a new multi-million dollar electron-beam lithography (EBL) tool, capable of ultra-high resolution patterning at very high speeds and placement accuracy, will be housed in the currently constructed Melbourne Centre for Nanofabrication (MCN) near Monash University's Clayton Campus.

The centre is expected to be launched in March 2010. MCN interim director Dr Abid Khan says the machine will help scientists and engineers develop the next generation of micro technology by giving them the ability to write and etch words and symbols on a range of surfaces to a size less than 10 nanometres.

MCN aims to be Australia's open access, multi-scale, multi-disciplinary micro and nanofabrication hub, which will also attract international teams of researchers due to its proximity to the Australian Synchrotron, says Dr Khan. The centre will support research and prototype advances in areas such as environmental sensors, medical diagnostics, micro and nano actuators, novel energy sources and biotechnology devices, he says.

In addition to the EBL, the purpose-built facility will also host state-of-the-art nanofabrication tools including high resolution dual-beam focussed ion beam microscopy, optical and nanoimprint lithography, deep reactive ion etching, plasma and thermally assisted material deposition, and confocal microscopy.

► [More information: Samantha Blair 03 9903 4841, 0439 013 951.](mailto:Samantha.Blair@monash.edu)

SA merger

The University of South Australia's Division of Information Technology, Engineering and the Environment (ITEE) will combine the Mawson Institute and the Applied Centre for Structural and Synchrotron Studies (ACeSSS) to form an expanded Mawson Institute. The merger aims to build a science research force with broader reach and capacity in the fields of advanced manufacturing, materials and structural analysis. The new institute, jointly funded by state (\$8 million) and university (\$6 million), is expected to work across a broader range of disciplines, tap into a larger pool of researchers and facilities and gain access to a wider range of funding sources.

New projects starting in 2010 will include advanced manufacturing materials and environmental engineering to deliver high quality drinking water; the use of motion capture and anthropometric data for ergonomically designed vehicle packages; the development of manufacturing processes for improved pigment performance and the development of improved strategies for mitigation against acid rock drainage, a serious environmental concern.

The institute will work with 62 local and international partners, from cooperative research centres, leading industry bodies and manufacturers to national and international universities and synchrotrons worldwide.

► [More information: www.unisa.edu.au/news/2009/150909.asp](http://www.unisa.edu.au/news/2009/150909.asp)

Geotechnical engineering centre

In a joint initiative with Monash University, the Victorian Government will provide \$3.25 million over five years to establish a new Geotechnical and Hydrogeological Engineering Research Group (GHERG) at the university's Churchill campus.

The group will include seven research and technical staff, as well as several PhD research students. Utilising the skills and knowledge of industry experts and other Monash academics, the group will foster research and innovation in coal geotechnical engineering and hydrogeology, particularly in the areas of mine stability, mine monitoring systems and interpretation, and ground subsidence. It will also have the capability to review and develop a systems modelling approach to planning, involving issues such as mine water quality, quantity, contamination, ground subsidence, safety risks and the potential effects of bushfires.

► [More information: Tim Mitchell 03 9903 4830, 0437 457 896.](mailto:Tim.Mitchell@monash.edu)

Public benefit

The **CSIRO** and **Centrelink** have entered a research alliance, in which the **Australian Government** will commit \$25 million for improvements in Centrelink's service delivery. Human Services Minister **Chris Bowen** says CSIRO's research capabilities will help Centrelink better predict and test which services work best for different groups of people and plan the most relevant and suitable interventions for people in need of support.

The research will make use of bulk data and information derived from the six million Centrelink customers and of CSIRO's expertise in complex systems analytics, information technology, mathematics, statistics and socio-economic modelling.

The CSIRO will focus on three research areas: The Human Services Ecosystem, Place Based Services and Technologies for Human Service Delivery.

► [More information: minister.innovation.gov.au](http://minister.innovation.gov.au)

Chatty defence

BAE systems has been awarded a contract valued at \$94 million for the construction of three new Satellite Communications Earth Terminals at the **Australian Defence Satellite and Communications Station** near Geraldton in Western Australia.

Minister for Defence Personnel, Materiel and Science **Greg Combet** says the contract includes five years of support for the new terminals and an enhanced network management system to enable the terminals to be controlled remotely from HMAS HARMAN in Canberra.

The capability will significantly enhance the wideband strategic communications support available to Australian forces overseas, says Mr Combet. "This facility will dramatically increase the amount of data that will be able to be provided over the **Wideband Global Satellite (WGS) System** that Australia accesses, through a partnership with the **United States Department of Defence**," he says.

► [More information: www.minister.defence.gov.au](http://www.minister.defence.gov.au)

Green first

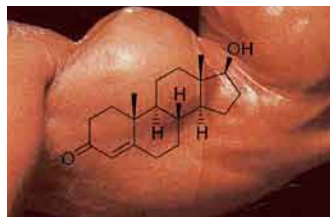
IP Australia is offering green innovators priority in processing patent applications of environmentally friendly technologies.

Richard Marles, Parliamentary Secretary for Innovation and Industry, says the initiative will provide speedy access to Australia's strong intellectual property system and help businesses protect their valuable assets. "Patent applications can currently take more than a year to process, and innovators need to know that green technology can be fast-tracked to the front of the queue. Accelerating the examination process could reduce the waiting time for applications to between four and eight weeks.

► [More information: http://minister.innovation.gov.au/Marles](http://minister.innovation.gov.au/Marles)

Men helper

The **US Food and Drug Administration (FDA)** has agreed to a **New Drug Application (NDA)** by **Acrux** for its **AXIRON™** product. This



follows a pivotal Phase III open-label trial completed in July, the results of which are yet to be released.

The trial involved four months of treatment with AXIRON and will be considered successful in the event that more than 75% of patients will be found having testosterone levels within the normal range following treatment with AXIRON.

The company announced that a safety extension study has also completed. The study comprised 52 patients who received an additional two months of treatment to monitor skin safety following six months of continuous use.

If approved by the FDA, AXIRON is expected to enter the testosterone therapy market in early 2011.

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

Gut restriction

Patrys Limited's natural human antibody product PAT-SM6 effectively prevented colon cancer metastases in a series of preclinical animal studies, the company says and plans to test PAT-SM6 in a first-in-human clinical trial this calendar year.

Independent researchers treated 19 animals with PAT-SM6, which decreased the median number of tumours spreading from the colon to the liver by approximately 50% compared to a control group. One of the lead investigators, **Dr Christoph Otto**, says this result indicates a great potential of PAT-SM6 in preventing colon cancer metastases as in most cases it is the spread of colon cancer to other organs that ultimately kills the patient. He adds that products with such therapeutic potential are high in demand as currently approved cancer treatments are largely ineffective at preventing metastases.

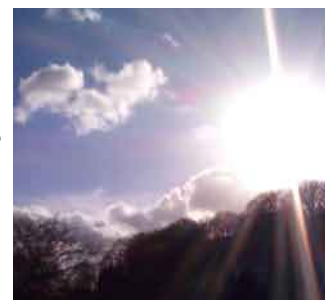
The study adds to previous reports by Patrys that PAT-SM6 prevented the spread of gastric cancer in preclinical animal studies.

► [More information: Daniel Devine \(CEO\), info@patrys.com](mailto:Daniel.Devine@patrys.com)

Blogging start-up

Clinuvel has launched new media channels and a reinvigorated approach to communications. The company has recently created a blog to help keep people abreast of company and research news, and discuss news and issues on the topics of light, skin, UV, photoprotection and beyond.

► [More information: www.clinuvel.com/en/blog/](http://www.clinuvel.com/en/blog/)



Nosy progress

In the past month, **BioDiem Ltd** had a series of announcements regarding its intranasal Live Attenuated Influenza Vaccine (LAIV) technology.

The company has completed recruitment in its Phase 1 trial of the SCH 900975 product, which is based on three attenuated (weakened) influenza viruses manufactured by **Schering-Plough's** human vaccine business unit **Nobilon**. It is the first-in-human trial to investigate safety, tolerability and immunogenicity in adult men and women. While the trial is yet to be analysed, a Phase II trial is already planned for 2009/2010 to coincide with the next northern hemisphere influenza season.

BioDiem has licensed the majority of LAIV rights to Nobilon, which produces the vaccine by advanced cell culture manufacturing, thus

rendering the vaccine production independent of chicken eggs.

In a separate development, the **Institute of Experimental Medicine (IEM)**, the originator of the LAIV technology, has executed a development and collaboration agreement with US-based nonprofit global health organization **PATH** to develop a prototype pandemic LAIV for use in developing countries. The agreement aims to demonstrate that the cold-adapted master virus (A/Leningrad/134/17/57 -H2N2 type) will be safe and produce an immune response in humans. The plan includes the generation of a set of live, attenuated cold-adapted virus vaccines against avian influenza subtypes with potential to cause a pandemic outbreak in humans.

In a third development, the **WHO**, following relevant agreements with BioDiem and Nobilon, has signed sub-licences under its **Global Pandemic Influenza Action Plan** with the **Government Pharmaceutical Office (GPO)** of Thailand and the **Serum Institute (SI) of India Ltd** to manufacture influenza vaccines in eggs. Under the agreement these organisations are obliged to distribute the vaccine in the public sector of their own countries, and the public sector of certain other developing countries free-of-

charge or at low cost. According to BioDiem chief executive officer **Julie Phillips**, the WHO use of the LAIV technology will not interfere with the commercial development of cell based manufacturing by Nobilon/Schering Plough.

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

Well tolerated

Progen Pharmaceuticals Limited has completed a Phase I monotherapy dose-escalation study assessing the maximum tolerated dose (MTD) of its cell proliferation product PG11047 as a single anti-cancer treatment for patients with advanced solid tumors. The drug is a polyamine analogue interfering with the cell division process and may induce cell death in tumours.

In the trial, PG11047 was well tolerated by all 46 patients which established an MTD of more than twice the dose used in other early-stage clinical trials, including trials for patients with multiple myeloma and prostate cancer.

Progen chief executive officer **Justus Homburg** believes this could pave the way for Phase II clinical development efforts. "The recent results support the conclusion that PG11047 will have a much larger therapeutic window than previously thought," he says.

Progen also announced on schedule recruitment for its PG11047 Phase Ib combination study, which will build on pre-clinical studies where PG11047 showed a significant additional anti-cancer effect when combined with approved anti-cancer products.

Data from both Phase I studies will then be used to guide Phase II development.

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

Disc repair wonder

Mesoblast Limited says the preclinical trial of its adult stem cells in 36 sheep was "highly successful" in treating degenerative intervertebral disc disease, the leading cause of low back pain. A single low-dose injection of its allogeneic or 'off-the-shelf' adult stem cells into severely damaged intervertebral discs resulted in dramatic reversal of the degenerative process, regrowth of disc cartilage, and sustained normalization of disc

pathology, anatomy and function.

Six months following the injection the discs were indistinguishable from healthy non-degenerated discs in their histopathology, cartilage content, height, and structure. This compared to controls which were not treated or injected with hyaluronic acid resulting in significantly reduced disc height, disordered disc structure, disrupted histopathology, and reduced cartilage content.

Mesoblast intends to rapidly proceed with a clinical program aimed at commercial registration of the biologic disc repair product.

The results of the placebo-controlled, randomised trial were recently presented at the World Congress on Osteoarthritis, OsteoArthritis Research Society International.

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

Clearing the view

pSivida Corp. has begun to enrol a pilot study named FAVOR (Fluocinolone Acetonide for Vein Occlusion in Retina) which will assess the safety and efficacy of Iluvien®, an injectable intravitreal implant, in patients with macular edema (swelling of the macula), a common complication of retinal vein occlusion (leakage of blood due to occlusion of retinal veins).

Retinal vein occlusion, a common disorder of the retina, is one of the leading causes of blindness after diabetic eye disease and age-related macular degeneration (AMD). The trial will compare two daily doses (0.23 and 0.45 micrograms) of Iluvien®, which will be injected into the patient's eye with a 25-gauge needle leaving a self-healing wound.

Iluvien is already in a pivotal Phase III trial for the treatment of Diabetic Macular Edema (DME), for which the 24-month top-line data are expected to be reported in December of this year, with an NDA expected to be filed with the FDA for approval early in 2010.

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

On the pulse

Sunshine Heart has given an update on the first four patients implanted with its C-Pulse device, which is currently tested in a US Feasibility Study. The device implantable, non-blood contacting heart assist system reduces the symptoms of Class III heart failure

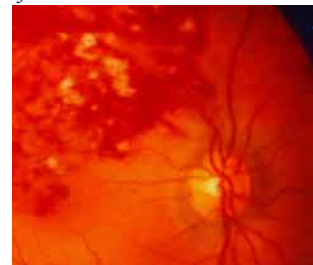
through the use of a counterpulsation technology. The system can be turned off and disconnected at the patient's convenience.

According to chief executive officer **Don Robrbaugh**, the four patients that have received the implant have shown visible signs of improved circulation and were able to successfully disconnect from the device.

If the trial is successful, the company will request CE Mark approval to market C-Pulse in the EU and other international countries that honor CE Mark label claims for device safety. In addition, the company will seek US **Food and Drug Administration** approval for a larger randomized US pivotal study to support the submission of a marketing application for C-Pulse in the US during the second half of 2010.

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

An example of retinal vein occlusion with leakage of blood. The condition can lead to macular edema with loss of vision.



The C-Pulse Cuff. An implanted non-blood contact pump

Anticipated need

Clinuvel Pharmaceutical Limited has received European regulatory approval to begin a second Phase III clinical trial CUV029 of its photoprotective drug afamelanotide in patients with Erythropoietic Protoporphyrin (EPP), a rare metabolic disorder. The multicentre trial is to further evaluate afamelanotide as a treatment option to reduce the severe phototoxic reactions caused by EPP.

CUV029 will be a confirmatory trial for the still ongoing first European and Australian Phase III trial CUV017, which is expected to be completed by the last quarter of 2009. Clinuvel's chief scientific officer **Dr Hank Agersborg** says that although a second Phase III trial was not requested, the parallel planning of an additional trial is the most cost-efficient way and forward management he has been involved in. "It stands in contrast to traditional waiting for the regulatory verdict when being asked to generate more clinical data after regulatory review. Our approach translates to a potential 12 month gain in development."

In 2008, afamelanotide was granted orphan drug status for the treatment of EPP by the **European Medicines Agency, Swissmedic** and **US Food and Drug Administration**.

► **More information:** www.clinuvel.com/en/

Almost there

ChemGenex Pharmaceuticals Limited has completed its **New Drug Application (NDA)** submission to the **FDA** for **OMAPRO™** (omacetaxine mepesuccinate). The drug was shown to have clinical benefits for patients with chronic myeloid leukemia (CML), who have failed treatment with imatinib, the first-line standard of care, and are positive for the oncogene Bcr-Abl T315I.

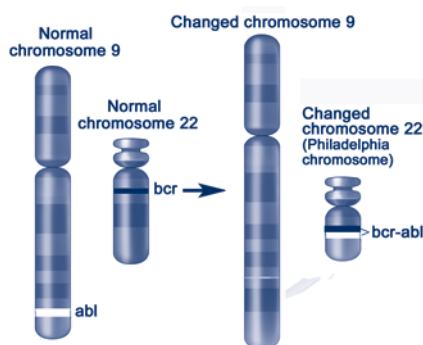
The T315I mutation is frequently observed in advanced phase patients with CML relapsing on imatinib therapy. These patients produce an abnormal tyrosine kinase not effectively targeted by tyrosine kinase inhibitors (TKI) such as imatinib or second generation TKIs including dasatinib.

The activity of OMAPRO™ is, however, independent from tyrosine kinase inhibitors (TKI) by inhibiting the production of short-lived oncoproteins that are upregulated in leukemic cells. The drug has received Orphan Drug designation in the US and in the EU, and also fast track status from the FDA.

"If approved, OMAPRO™ would be the first treatment specifically indicated for CML T315I patients, many of whom have no therapeutic options," says senior vice president and chief medical officer **Adam R. Craig**.

The FDA priority review is expected to require approximately six months. Subject to approval for marketing, the launch of OMAPRO™ would then be scheduled for mid-2010.

► **More information:** www.chemgenex.com/wt/home/index



Most CML patients have a mutation called the Philadelphia chromosome: Break off pieces from chromosome 9 and 22 recombine. A bcr-abl oncogene is formed on chromosome 22, which codes for a tyrosine kinase (TK) that is constantly produced causing the cancer. Further point mutations in bcr-abl such as T315I can then render the kinase resistant to TK inhibitors

Breathless hope

Pharmaxis' second pivotal Phase III clinical trial of Bronchitol for the treatment of cystic fibrosis has now passed its recruitment target of 300 subjects. The first efficacy data from the trial is expected to be available during the first half of 2010.

This trial is the second of two trials in cystic fibrosis required by the **US Food and Drug Administration (FDA)**, before a marketing application can be submitted in the US. When complete, more than 600 cystic fibrosis patients will have been recruited into the two Bronchitol Phase III clinical trials.

The trial is taking place across 58 sites in seven countries and is a double blind, placebo controlled, randomised study comparing 400 mg of Bronchitol twice a day to placebo. It includes a 26-week efficacy and safety component, with an optional 26 week open-label Bronchitol safety extension.

The primary efficacy end-point is the change in lung function from baseline as determined by FEV1 (forced expiratory volume in one second) over 26 weeks. Approximately two thirds of the subjects entering the study were being treated with recombinant human DNase, which is used to reduce sputum viscosity by cleaving extra-cellular neutrophil-derived DNA.

This trial is being conducted under the FDA's Special Protocol Assessment (SPA) scheme. Pharmaxis has received Orphan Drug Designation and fast track status from the FDA for Bronchitol.

► **More information:** www.pharmaxis.com.au/

Vaccination frenzy

Early September, **CSL** published preliminary data on its pandemic (H1N1) 2009 influenza A vaccine in the *New England Journal of Medicine*. The study found 95% of the 240 participating healthy adults achieved antibody levels correlating with the prevention of influenza infection after a single unadjuvanted 15 mcg dose.

Dr Alan Hampson, chair of the **Australian Influenza Specialist Group** says the achieved protection with a single dose of vaccine means that available vaccine supplies will go much further than might have been anticipated. The study also identified a significant proportion of the population, including younger people with pre-existing immunity to the virus, possibly due to exposure to related viruses in the past, or to H1N1 09 this year.

The Panvax H1N1 influenza vaccine was then approved by the **Therapeutic Goods Administration (TGA)** for use in adults and children 10 years of age and over, while approval for children less than 10 awaits additional data from a current paediatric clinical trial.

The TGA says that the side effect profile of the vaccine is similar to that of seasonal flu vaccines and may include short-lived side effects such as soreness at the site of injection, headache, mild fever, body aches and fatigue for a short time after vaccination.

Following TGA approval, the **Australian Government** is currently offering the vaccine free of charge to every Australian 10 years and over.

► **More information:** www.tga.gov.au/alerts/medicines/h1n1vaccine.htm

Milestone achieved

In a placebo-controlled trial by **Mesoblast's** US-based associate company **Angioblast Systems Inc.**, a second group of 20 patients have been enrolled and treated with a three times higher dose of Mesoblast's allogeneic adult

stem cell product Revascor™ than the first group.

In the trial, up to 60 patients suffering from congestive heart failure will be randomised to three groups receiving either a progressively increasing dose of Revascor™ or standard of care.

No cell or procedure-related adverse events have occurred in any of the 40 patients enrolled to date. Interim and final efficacy results will be reported when all patients meet the three and six-month endpoints.

Meeting clinical trial enrolment milestones on schedule continues to be an important objective of Mesoblast's equity-based investment in Angioblast. As a result of Angioblast's successful patient enrolment to date, Mesoblast's equity holding in Angioblast has now converted into 38.4% common shares.

► **More information:** www.mesoblast.com/

Little cash in bank but sold

Peplin, Inc. financial results for the year ended 30 June 2009 show a US\$17.7 million cash balance, which the company said it would use to complete Phase III clinical trials for its lead product, PEP005 (ingenol mebutate) Gel for actinic (solar) keratosis (AK).

Following this announcement, the company has entered, however, a definitive merger agreement with Danish company **LEO Pharma A/S** (LEO), a privately-held, global pharmaceutical company.

LEO will acquire all outstanding securities of Peplin for approximately US\$287.5 million (currently \$348.4 million) in cash. This represents a purchase price of US\$16.99 per common share of Peplin stock or \$1.03 per Peplin CHESS Depositary Interest (CDI).

In addition, LEO will provide Peplin with access to a loan facility that will fund ongoing operations until the transaction closes, which is expected to occur by the end of the calendar year.

The transaction is subject to approval of Peplin's stockholders and other customary closing conditions. Stockholder proxy materials will be distributed, and a stockholder meeting scheduled to approve the transaction, following any **US Securities and Exchange Commission** review of the proxy materials.

► **More information:** www.peplin.com/

Money maker

Prana Biotechnology has reached agreement to raise \$6 million for its R&D programs to promote its drug development pipeline and to maintain corporate activities.

Under the terms of the funding, Prana will issue 30 million ordinary shares ranking equally with the existing ASX listed ordinary shares (equivalent to 3 million ADRs on NASDAQ) at a price of 20 cents per share. The company will receive \$5.7 million net of all fees.

According to chief executive officer **Geoffrey Kempler**, the funds will provide the financial flexibility for the company to advance its lead Alzheimer's Disease compound PBT2 into the next clinical trial.

PBT2, has already completed a Phase IIa study in early Alzheimer's Disease patients and has demonstrated safety and tolerability. In addition, PBT2 showed significant improvement in Executive Function, an important aspect of cognitive performance. It also reduced the levels of a key protein associated with Alzheimer's Disease, Abeta, in the spinal fluid of patients.

► **More information:** www.pranabio.com/

Extended protection

Starpharma Holdings Limited has been granted a US patent specifically relating to the use of the active ingredient SPL7013 in VivaGel®, which protects against sexually transmitted infections (STIs). Any product presentation of SPL7013 is now protected in the US for an additional five years until 2024, with a possible further 12 month extension to 2025.

It is the third patent for VivaGel® to be granted in the US, and adds to the existing patent coverage for the product in 26 countries across all major markets.

VivaGel® is being developed as a condom coating in collaboration with **SSL International plc**. SSL markets the global brand Durex®, and holds approximately 40% of the global branded condom market. Following a deal announced in 2008, SSL has exclusive marketing rights for the VivaGel® coated condom.

Starpharma is also developing VivaGel® as a vaginal microbicide to prevent the transmission of STIs, including HIV and genital herpes.

► **More information:** www.starpharma.com/

Satisfied investor

Following completion of its Share Purchase Plan and a \$7 million placement to **Start-up Australia Ventures Pty Ltd, Bionomics Limited** will have raised a total of \$15 million. The resulting funds on hand will allow the company to continue the Phase II clinical trials development of its anti-cancer drug BNC105 and will enable Bionomics to continue with the Phase I clinical development of its drug for the treatment of anxiety, BNC210.

Bionomics has also satisfied one of the two outstanding conditions for Start-up Australia investing \$7 million in the company, which required Bionomics to raise a further \$5 million through private placements to institutional and sophisticated investors. This condition has been satisfied with the raising of \$5.8 million. The only remaining condition will be satisfied when shareholders approve the issue of shares to Start-up at a shareholder meeting to be convened as soon as possible.

► **More information:** www.bionomics.com.au/

Patent for cancer antibody

The **Republic of South Korea Patent Office** has granted **Prima BioMed** subsidiary **Oncomab Pty Ltd** a patent protecting the use of its cancer antibody antigen Cripto-1.

Cripto-1 is a protein found in high levels on the surface of many different kinds of cancer cells and is also found in the blood stream of cancer patients. The antibody works by binding to the Cripto-1 molecule and interfering with cell signalling, which results in the death of the cancer cell. The antibody may additionally be coupled to cytotoxic drugs to deliver an even more lethal combination of drug and cell signal to cancer cells.

Prima's Cripto-1 antibody was recently published in the British *Journal of Medicine*.

The new Patent number is 0909290 and is titled *Antibodies against Cancer*. It expires in March 2021. The patent has also been granted in Australia, New Zealand, China and the USA.

► **More information:** www.primabiomed.com.au

Vic goes clean in Japan

The Victorian State Government and the Japan Coal Energy Centre (JCOAL) have signed a Memorandum of Understanding to collaborate on clean coal technologies. Under the MoU, the Victorian Government and JCOAL will focus on high-efficiency next-generation power plants, coal gasification, carbon capture and storage (CCS), efficiency improvements for existing coal-fired power stations and coal to liquids.

Victorian Energy and Resources Minister *Peter Batchelor* has also signed a Letter of Intent on behalf of the Victorian Government with



The partnership will focus on clean coal technologies

Kyushu Electric Power Company (KEPCO) to collaborate on research and development.

“KEPCO will provide ¥20 million a year (about \$250,000) for the next three years for brown coal research and the development of high-efficiency power generation technologies using Victorian brown coal,” Mr Batchelor says, adding that some of the collaborative work will also focus on CCS.

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

Bridge builder

NSW Science Minister *Jodi McKay* has announced a \$1.4 million **Collaboration and Infrastructure Access Program** to build stronger relationships between universities and industry, ensuring business has access to cutting-edge research. Ms McKay says the initiative will result in more innovative use of research for developing and improving products, services and practices for NSW industry.

“The pilot program includes incentives such as vouchers of up to \$15,000 for companies to access public sector research equipment and grants of up to \$50,000 for research organisations to help them better engage industry,” says Ms McKay.

The program will be run by the independent, not-for-profit, **Australian Industry Innovation Xchange Network**.

► [More information: www.osmr.nsw.gov.au](http://www.osmr.nsw.gov.au)

First choice in Japan

The Queensland Government has signed an agreement with Japanese researchers to promote and further medical research collaborations between Queensland and Japan. The agreement between Queensland

Clinical Trials Network Inc. (QCTN) and the **Kurume Research Park** will improve the chance of Queensland companies to secure contracts for medical research and trials required to develop therapeutic products produced by members of the Kurume Cluster.

The Kurume Research Park Medical Cluster includes 4 medical schools, **Kurume University**, **Kyushu University**, **Fukuoka University**, and the **University of Occupational and Environmental Health Japan**.

► [More information: 07 3224 7332](http://www.premier.vic.gov.au)

Warming adapter

Victoria has a new \$5 million **Climate Change Adaptation Research Centre** which will be co-ordinated by the **University of Melbourne** with initial member universities **Monash University**, **La Trobe University** and **RMIT University**.

Professor Rod Keenan, former head of the **Department of Forest and Ecosystem Science** within the University of Melbourne, has been appointed director of the new centre. He says the centre aims to bring together expertise from Victorian universities to identify future risks, reduce uncertainties and analyse options for adapting to climate change.

“We will work closely with the Government and communities to identify the challenges posed by climate change and undertake research to inform Government policy and community responses. It is an important new research field, both locally and globally,” he says.

The research program for the centre will include annual forums to showcase research, a research grants program to complement the national adaptation effort, regional think tanks and a visiting fellowship program to draw on international expertise.

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

Jumping hurdles

The Victorian Government has set up a new \$500,000 **Biotechnology International Partnering Program**

(BIPP) to help Victoria's small-to-medium-sized biotechnology companies compete in global markets. It will provide grant assistance for eligible Victorian companies to attend recognised overseas biotechnology conferences and trade events.

Innovation Minister *Gavin Jennings* says the running and success of the BIPP will be evaluated after

12 months, which will include a survey of the companies involved. Companies will be able to use BIPP funding to pay for expenses, airfares and accommodation, conference entry, non-confidential pitching documents, exhibition stands and other promotional costs involved with the conference, he says.

Mr Jenkins says that the BIPP assistance aims to overcome some of the hurdles that Victorian biotechnology firms face in the international arena when they commercialise a product, a process relying heavily on partnering and licensing deals.

► [More information: www.premier.vic.gov.au/minister-for-innovation](http://www.premier.vic.gov.au/minister-for-innovation)



Lupin keeps growing in WA

Western Australia's **Department of Agriculture and Food's** (DAF) lupin breeding program will receive new funding of \$14 million over five years including \$9 million by the **WA Government** and \$5 million by the **Grains Research and Development Corporation**.

Agriculture and Food Minister **Terry Redman** says that since inception the program has developed new varieties that have increased yields of lupins, an important legume in WA farming systems, by two per cent each year.

The program aims to develop new lines that yield well, have good resistance to diseases and compete with weeds. According to DAF researcher **Dr Bevan Buirchell**, the program aims to provide farmers throughout the State with a choice of locally adapted lines. Three new lupin varieties are nearing commercial release in the next two years including a replacement of Tanjil for the Geraldton region, a high risk area for the disease anthracnose, a higher yielding replacement for Mandelup and another high yielding, high protein variety to replace Coromup.

► **More information:** 08 9213 6700



Healthy bay

The **Victorian Government** has launched the **Seagrass and Reef Program**, a comprehensive series of environmental research projects on reefs and seagrasses to help maintain the health of Port Phillip Bay and the state's coasts.

Funding of \$3 million for seagrass research and \$2.5 million for research into cool temperature reefs will be provided by the **Port of Melbourne Corporation** as part of the conditions of the **Channel Deepening Project**.

The program for Port Phillip Bay consists of four major initiatives:

- a Victoria-wide **Marine Biodiversity Science and Research Strategy** to identify research directions, funding priorities and improved co-ordination of research;
- a Victorian Marine Environmental Condition Assessment Framework to trial the monitoring and reporting of Victoria's marine biodiversity;
- a **Seagrass and Reef Marine Assets Framework** to enhance management of key marine assets such as seagrass meadows and reefs; and
- the **Port Phillip Bay Seagrass and Reef Research Studies** to target investment in a range of research projects to increase understanding of these specific communities including their biodiversity and links to other ecosystems.

► **More information:** www.premier.vic.gov.au/acting-premier

Pipe cleaner

The **NSW Heart Research Institute** has unveiled a new state-of-the-art facility which will support research efforts into the prevention of atherosclerosis. The **NSW Government** has committed \$4.5 million towards the new facility with the **Australian Government** providing

\$10 million.

Minister for Science and Medical Research **Jody McKay** says the Heart Research Institute is a member of the **NSW Cardiovascular Research Network**, a joint initiative of the NSW Government and the **Heart Foundation NSW**. The Network will help accelerate cardiovascular research efforts and fast track the translation of research outcomes into cures and therapies.

► **More information:** www.osmr.nsw.gov.au

Restoring local waterways

The **Queensland Government** is investing \$20 million over four years to reduce pollution loads and improve the health of waterways in South East Queensland. The investment includes \$8 million for a **Healthy Country** project which was launched by Queensland Minister for Primary Industries, Fisheries **Tim Mulherin**. The project supports communities, farmers and scientists to work together to improve water quality in South East Queensland catchments and Moreton Bay. Over four years the project will aim to reduce sediments and nutrients entering waterways locally and in Moreton Bay. The focus is on three priority catchments, Logan and Bremer Rivers and Lockyer Creek.

There are four sub-projects under the Healthy Country project with the **South East Queensland (SEQ) Healthy Waterways Partnership** providing the science and planning, SEQ Catchments undertaking waterway restoration, **Queensland Primary Industries and Fisheries** leading sustainable land management and **South East Queensland Traditional Owners Alliance** managing Traditional Owner engagement.

► **More information:** 07 3239 3120

Smart funding

The **Queensland Government's Smart Futures Fund's National and International Research Alliances Program** will provide a total of \$2.8 million for two research projects:

- **University of Queensland** (UQ) – \$1.9 million for an international project to develop a cheap solar cell made out of plastic as an alternative to the expensive and heavy crystalline silicon based cells. The **Organic Solar Cell Alliance** project involves UQ partnering with **James Cook University**, the **US National Renewable Energy Laboratory**, **CSIRO**, the **ARC Centre for Antimatter-Matter Studies** in Canberra and Cairns company **SolarSells**. UQ's **Professor Paul Burn** and **Associate Professor Paul Meredith** will lead the project.
- **James Cook University** (JCU) – \$1 million for a collaborative project that will investigate medical signposts to identify abdominal aortic aneurysm (AAA), which causes 1500 deaths a year. Collaborators are the **University of Adelaide**, **University of Western Australia**, the **University of Technology Sydney**, and the **University of Queensland** to develop biomarkers for the screening and monitoring of AAA. There are currently no biomarkers for the diagnosis and monitoring of AAA in clinical use.

► **More information:** (UQ) Prof Paul Burn 07 3365 3778, (JCU) Jim O'Brien 07 4781 4822

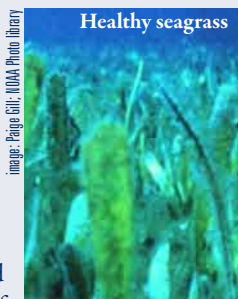


Image: Paige Gill, NOAA Photo Library

Healthy seagrass



image: adapted from NIH

NSW crack

Professor Stephen Simpson, from the University of Sydney, is the 2009 NSW Scientist of the Year. His research on locust swarming and human nutrition has advanced understanding of ageing and human obesity, with flow-on benefits for disease prevention and health provision.



Stephen Simpson

Sweet prize

University of Adelaide endocrinologist **Professor Michael Horowitz** has won the Kellion Award for his research on diabetes over a period of 27 years. He heads a team of researchers in the Centre of Clinical Research Excellence in Nutritional Physiology, Interventions and Outcomes, based within the University of Adelaide's School of Medicine.



Michael Horowitz

Fishy leader

Marine science expert **Associate Professor Bill Gladstone**, who is currently director of the University of Newcastle's research group Sustainable Use of Coasts and Catchments, will join the University of Technology Sydney in January 2010 as professor and head of the Department of Environmental Sciences.



Bill Gladstone

Clinical dean

Dr Maree Puxty has been appointed clinical dean of the Tablelands Clinical School at the University of New England (UNE). The Tablelands Clinical School is one of five clinical schools that are part of the Joint Medical Program offered by UNE in partnership with the University of Newcastle, Hunter New England Health and Northern Sydney Central Coast Health.

New VC research

Professor Sue Thomas has joined Charles Sturt University (CSU) as deputy vice-chancellor (Research). Having specialised as a researcher in the genetics and molecular biology of bacteria, she now manages the team that drives CSU research strategy. She will be based at CSU at Wagga Wagga. Her responsibilities include administering research and research training and she heads the University's Centre for Research and Graduate Training.



Sue Thomas

Bug's friend

Microbiologist and industrial biotechnologist **Professor Margaret Britz** has been appointed as the University of Tasmania's dean of science, engineering and technology. An internationally recognised microbiologist, Professor Britz plans to keep her hand in solving real-life problems in microbiology and food science at the university's Food Safety Centre and rekindle her earlier research in biofuels and microbial products from renewable resources.



Margaret Britz

Street wise

Emeritus professor Rod Troutbeck has won the Engineers Australia National Committee for Transport's (NCTR) Transport Medal for his contribution to transport in Australia. In his 15 years as principal research scientist at the Australian Road Research Board he established the effectiveness of safety barriers, the effect of longer vehicles in the traffic stream on drivers' overtaking behaviour, the performance of roundabouts and innovative video data collection techniques.

Sheepish pain reliever

The major prize in the 2009 Science and Innovation Awards for Young People in Agriculture, Fisheries and Forestry has been won by **Dr Leah Bradbury**, a vet at the University of Melbourne. She also won \$20,000 from the Department of Agriculture, Fisheries and Forestry for her research into the use of anti-inflammatory drug carprofen for long-term pain relief in sheep. She will use the award to expand her research to determine optimal timing and dosing levels for pain management in juvenile sheep.

CSIRO deputy

Dr Terry Cutler has been appointed deputy chairperson of the CSIRO board. Dr Cutler, who chaired the National Innovation System Review last year, has been on the CSIRO board since 2002. The deputy chairperson position became vacant when Professor **Suzanne Cory's** term expired in June.



Terry Cutler

Science dean

Professor Merlin Crossley will take up a position as new dean of science at the University of New South Wales in January 2010. Currently, he is professor of molecular genetics at the University of Sydney, where he has served as acting dean of science, director of research in the University's College of Sciences and Technology, and recently as acting deputy vice-chancellor (research).



Merlin Crossley

Healthy chair

Emeritus Professor John Hay is the new chair of the Queensland Institute of Medical Research Council. Formerly, he was vice-chancellor and president of Deakin University (1992-1995) and vice-chancellor of the University of Queensland (1996-2007).



John Hay

Chevron chair

Associate Professor Eric May, University of Western Australia, has been appointed Chevron chair in gas process engineering. Chevron has committed \$2.3 million to establish the chair, to fund postdoctoral researchers, and to fund scholarships to attract the best students into gas process engineering.



Eric May

Happy award

The Barossa Viticulture Technical Group has awarded SARDI plant and soil health scientist **Dr Belinda Rawnsley** the 2009 Geoff Knights Innovation award, providing \$10 000 to explore an innovative viticulture idea. Dr Rawnsley will examine soil biology indicators to assess vineyard soil health and provide information to growers in the region about how soil management decisions can be helped by soil biology assessments.

Reappointed leader

Professor Justin Beilby has been reappointed as executive dean of the Faculty of Health Sciences at the University of Adelaide until 2013. Since 2005 under Professor Beilby's direction, the Faculty of Health Sciences has attracted record research grants and expanded its student numbers significantly.



Justin Beilby

Story tellers

The 2009 Whitley Medal has gone to the authors and publisher of *Boom & Bust: Bird stories for a dry country*. The authors are CSIRO Australian National Wildlife Collection director **Dr Leo Joseph**, and **Libby Robin** and **Robert Heinsohn** from the Fenner School of Environment and Society, Australian National University. The publisher is CSIRO Publishing. The Whitley Medal is awarded by the Royal Zoological Society of New South Wales for publications dealing with the promotion and conservation of Australasian fauna.



Leo Joseph

It's all Gorgon now

The **Gorgon joint venture**, consisting of **Chevron** (50% and operator), **ExxonMobil** (25%) and **Shell** (25%), will proceed with the **Gorgon liquefied natural gas (LNG) project**. The venture partners announced their decision shortly after recent sales and purchase agreements with China's **PetroChina International Limited** and **India's Petronet LNG**, the conditional approval by Environment Minister **Peter Garrett** and the decision of **WA and Australian Governments** to accept long-term liability arising from the storage of CO₂, expected to become the world's biggest CO₂ geological storage project.

■ Coinciding with this development, **Chevron Australia** signed a Heads of Agreement with South Korean **Korea Gas Corporation (KOGAS)** for the delivery of 1.5 million tonnes LNG per annum. According to Minister for Resources **Martin Ferguson**, KOGAS is the world's biggest single buyer of LNG and may be in the market for additional 4mtpa of long-term supply.

The Gorgon project comprises 11 gas fields in the greater Gorgon area, an area estimated to have resources of 40 trillion cubic feet of natural gas. The development is expected to generate \$300 billion in Australian export earnings, \$40 billion of Government revenue, and may contribute in its first 30 years of operation \$65 billion to Australia's GDP.

► **More information:** www.pm.gov.au;

Drop wise

The **Australian Government** has released program guidelines for a new \$300 million on-farm irrigation efficiency grants program and is calling for proposals. The **On-Farm Irrigation Infrastructure Program** is funded through the \$5.8 billion **Sustainable Rural Water Use and Infrastructure** program and will be open to irrigators in the Southern Basin and the Lachlan River catchment.

Minister for Climate Change and Water **Senator Penny Wong** says the funding will support farmers investing in water-saving irrigation practices and technology. The program invites competitive bids to deliver cost-effective 'tranches' of on-farm investment from partners such as irrigation water providers, peak-industry groups and catchment management authorities. It will invest in more efficient irrigation systems in areas where a long-term economic and environmental benefit can be demonstrated.

► **More information:** www.environment.gov.au.

Clean trade

Australian individuals and businesses can now open accounts in the **Australian National Registry of Emissions Unit**, which will allow them to participate in the global carbon market trading Kyoto units. Minister for Climate Change and Water **Senator Penny Wong** says the registry will also be a crucial piece of infrastructure once a **Carbon Pollution Reduction Scheme** is introduced.

The **Australian Government** has also established Australia's **National Authority for the Clean Development Mechanism (CDM) and Joint Implementation (JI)**, which approves participation of businesses in CDM and JI projects under the Kyoto Protocol. Developed countries or authorised private entities reducing emissions in developing countries (CDM projects) or implementing emissions reduction projects in other developed countries (JI projects) will be able to trade generated carbon credits on international carbon markets. The authority will, however, not

approve participation in nuclear CDM or JI projects.

According to Senator Wong, these new measures will provide Australian businesses with new opportunities in the emerging global carbon market.

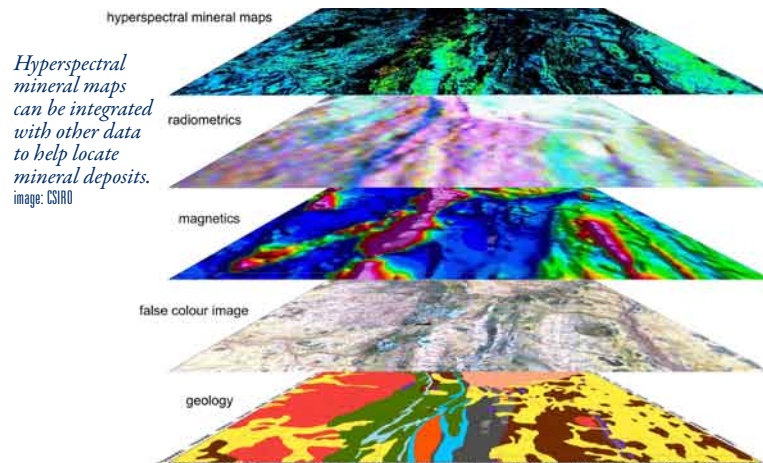
► **More information:** (National Registry), www.climatechange.gov.au/international/anre; CDM and JI projects), www.climatechange.gov.au/nationalauthority.html

Hyperspectral understanding

After having collaborated in a number of successful projects in the field of hyperspectral imaging, **CSIRO** has signed a Memorandum of Understanding with the **China Geological Survey (CGS)**, a non-profit government owned organisation research institution reporting directly to the **Chinese Ministry of Land and Resources**.

According to CSIRO, the partnership will assist Australian geological technologies entering or planning to enter the Chinese market and also help secure China as Australia's leading resource partner. CSIRO also hopes that the formal partnership will allow it to access data acquired by a Chinese hyperspectral satellite expected to be launched in the near future.

The collaborative projects with CGS, which is involved in remote



sensing research and applications, will initially focus on spectral sensing for minerals exploration and environmental monitoring, and then, at a later stage, also include additional exploration technologies such as geophysical and geochemical methods and mineral systems targeting.

► **More information:** www.csiro.au

Wet north - don't bet on it

Extending a previous study on sustainable yields and water availability in the **Murray-Darling Basin**, the **CSIRO** has now released a report on a **Northern Australia Sustainable Yields (NASY)** study.

NASY was commissioned by the **Australian Government** as part of a project on current and future water yields in various regions of Australia. Two further reports, the **Tasmanian Sustainable Yields** project and the **South West Western Australia Sustainable Yields** project will be completed in December 2009.

Funded by the **National Water Commission**, the NASY project complements programs for water investigation, analysis and management being undertaken by state and territory governments. It is part of the **Northern Australia Water Futures Assessment (NAWFA)**, a five-year program to develop an enduring knowledge base that will inform decisions about conservation and development of northern Australia's water



Image extracted from NASY fact sheet: <http://www.csiro.au/resources/NASY-factsheet.html>

The Northern Australia Sustainable Yields project catchments and reporting Divisions

resources, according to Parliamentary Secretary for Water **Dr Mike Kelly**.

Undertaken as a desktop study, the research generated new data through numerical modelling using existing data as a base.

Key findings for Northern Australia include:

- an extremely seasonal climate and annually water-limited landscapes;
- little or no rain for three to six months every year, and potentially high evapotranspiration rates;
- high rainfall during the wet season occurs mostly near the coast and year to year amounts can be highly variable;
- few river reaches with flow year-round which have often high cultural, social and ecological value;
- a potential for increased extractions of groundwater but aquifers rapidly fill during the wet season and drain through the dry season providing little opportunity for increased groundwater storage; and
- potential evapotranspiration is likely to increase whilst rainfall is likely to be similar to generally drier historical levels.

► [More information: www.csiro.au/partnerships/NASY-Fact-Sheets.html](http://www.csiro.au/partnerships/NASY-Fact-Sheets.html)

Selling points

According to the **Australian Bureau of Agricultural and Resource Economics (ABARE)**, Australia's export earnings from commodities increased in 2008-09 by an estimated 32% to \$197 billion but are predicted to fall again by 20% in 2009-10.

Export earnings for energy and minerals, which in 2007-08 achieved a record \$159 billion, are predicted to fall by 23% to 123 billion, still the second highest on record.

Australian farm export earnings are also forecast to fall marginally by 2.5% to \$31.1 billion in 2009-10, after a significant rise by 16% in 2008-09 to \$31.9 billion.

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

Smart power usage

The **Australian Government** has released a new report *Smart Grid, Smart City: A new direction for a new energy era*. Environment Minister **Peter Garrett** says the report is a crucial step in the \$100 million **Smart Grid, Smart City** initiative, a commercial-scale smart grid demonstration project the Government will implement in partnership with the energy sector.

Mr Garrett says that smart grids enable a two-way flow of information between energy suppliers and consumers. Linking all these energy data points, he says, creates a web of information so that energy can be delivered where and when it is required.

The report presents results of a pre-deployment study undertaken to inform the Government on the potential economic and environmental benefits of smart grid technologies. It says Australia will have to integrate information processing and communications into power systems to create a unified smart grid. This includes a suite of applications currently at

different stages of technical and economical maturity and categorised as grid-side applications, which include applications reducing line loss and improve fault detection and restoration, and customer-side applications, which assist end-users to manage their power usage.

According to preliminary analysis implementing smart grid technologies could deliver at least \$5 billion in gross annual benefits for Australia's society. However, the report also points out that the benefit of smart grids are largely unproven at commercial-scale and their adoption faces significant barriers, such as a lack of standards for applications in Australia and internationally. The report lists a series of recommendations for the implementation of the demonstration project, including the establishment of a standard working group to identify appropriate technology standards and a regulatory reference group to identify potential barriers for the broader smart grid adoption.

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

Clearing the water

The **Australian Government** has released the *Fishery status reports 2008*. It is the first joint independent evaluation of the biological and economic status of fish stocks and fisheries managed or jointly managed by the Government. The report draws on information from a range of sources, including fishing boat logbook data and independent data collected by scientists. Key findings include:

- 11 stocks have been removed from the 'uncertain' lists;
- 11 additional stocks are now classified as 'not overfished', including broadbill swordfish, silver trevally and ocean perch;
- four additional stocks are now defined as either overfished or subject to overfishing (including two new stocks of orange roughy).

Commonwealth fisheries generated \$288.5 million in 2007-08, accounting for 13% of Australian fisheries production.

► [More information: www.daff.gov.au/brs/fisheries-marine/info/fishery_status_reports_2008](http://www.daff.gov.au/brs/fisheries-marine/info/fishery_status_reports_2008)

Let it flow

The **Australian Government** has awarded ten new permits for petroleum explorations offshore Western Australian and the Northern Territory, bringing new investment worth \$158 million. The permits were selected from 17 bids for 18 areas available in the second closing round of the **2008 Offshore Petroleum Exploration Acreage Release**.

The new permits include:

- four permits in the Roebuck Basin, WA, to **Carnarvon Petroleum Ltd** and **Finder Exploration Pty Ltd**;
- two permits in the Carnarvon Basin, WA, to **Woodside Energy Ltd**, and **Chevron Australia Pty Ltd** and **Shell Development (Australia) Proprietary Ltd**;
- two permits in the Bonaparte Basin, WA to **Goldsborough Energy Pty Ltd**;
- two permits in the Bonaparte Basin, NT, to **Finder Exploration Pty Ltd**, and to **Murphy Australia Oil Pty Ltd** and **Diamond Resources Australia Pty Ltd**.

The permits indicate that Australia remains a highly attractive and secure destination for offshore petroleum exploration, says Minister for Resources and Energy **Martin Ferguson**. Permit holders will be required to comply with the best practice environmental standards and be subject to stringent environmental approvals.

► [More information: http://minister.ret.gov.au](http://minister.ret.gov.au)

Ad-hoc networks

NICTA has entered a two-year collaboration with the **Institute for Infocomm Research (I²R)**, a member of Singapore's **Agency for Science,**

Technology and Research family. The partnership will develop and demonstrate a low-cost, temporary mobile wireless communications network, which will operate without the expensive infrastructure of traditional wireless networks requiring fixed access points. The proposed 'ephemeral'

networks would form as different devices (smart phones and mobiles) come within range, for example at large gatherings like rock concerts, and allow people to share data such as video footage between devices. The connective 'tissue' of the network would then vanish once the communication is complete.

NICTA Project Leader **Dr Roksana Boreli** says the proposed temporary mobile network would use existing wireless links like WiFi or Bluetooth and include a trust mechanism to secure new, 'ad-hoc' communications.

The proposed architecture would be suitable for a variety of future streaming, broadcast and unicast applications and promises potential savings in the areas of infrastructure and connection costs. It will be based on prior work by I²R co-project leader **Dr Robert Hsieh** on the Opportunistic Temporal-Pairing Access Network (OPAN) framework.

► **More information:** <http://nicta.com.au>

Submissions online

The 34 submissions on the **National Broadband Network** legislative framework, which the **Australian Government** received from a range of organisations and individuals, including telecommunications carriers, technology providers, state governments and industry groups, are now published online. The Minister for Broadband, Communications and the Digital Economy, **Senator Stephen Conroy**, says that the submissions identify a range of key themes for the Government to consider in the establishment of a non-conflicted, wholesale-only broadband provider.

"Key themes put forward in submissions include the need for effective access, equivalence and control arrangements. Submissions also discuss the types of services the National Broadband Network should provide, the role of the ACCC, ownership caps and related issues, and sell-down provisions."

► **More information:** Submissions online: www.dbcde.gov.au/nationalbroadbandnetwork; Tim Marshall, 0408 258 457

Connection trends

The **Australian Bureau of Statistics** has released data on internet activity in Australia as of June 2009. Key findings include:

- There are 8.4 million active internet subscribers in Australia.
- Digital subscriber line (DSL) connections accounted for 57% (4.2

million) of non dial-up connections, decreasing by 6% from 63% in December 2008.

- Mobile wireless subscribers had the next highest share, increasing by 51% from 20% of all non dial-up connections (1.3 million) in December 2008 to 27% (2 million) in June 2009.
- Northern Territory subscriber numbers continued with an upward trend increasing by 20% since December 2008 to 83,000.
- The general trend towards higher download speeds continued, with 57% of subscribers now using a download speed of 1.5Mbps or greater, compared with 51% in December 2008.

► **More information:** www.ABS.gov.au

Remote communication

The continual evolution and increasing sophistication of wireless technologies, and the rapidly growing and competing demand for spectrum from different users and services means that spectrum management has become increasingly challenging, says the **Australian Communications and Media Authority (ACMA)**.

The agency has announced two new measures to meet this demand.

The ACMA proposes to increase capacity for mobile telecommunications services in rural and remote Australia by providing service providers further spectrum in the 2 GHz band. The agency has released a respective discussion paper which is open for comment until 23 November 2009.

The agency has also released spectrum in the 3.6 GHz band to support the deployment of wireless access services, such as WiFi, WiMAX and IMT, in regional and remote Australia. A respective discussion paper was released earlier this year, the response to which is now available online.

► **More information:** www.acma.gov.au/WEB/STANDARD/pc=PC_311889

Secure innovation

Developed by the **Australian Centre for Visual Technologies (ACVT)** at the **University of Adelaide**, new network surveillance technology can automatically integrate data from thousands of security cameras in a video surveillance network into a single sensor. This could eliminate existing problems with huge information overloads.

The software is being commercialised by **Snap Network Video Surveillance Pty Ltd**, a university spin-out company. The company's chief technology officer **Dr Henry Detmold** says the technology will provide significant benefits to large-scale surveillance applications in Australia and internationally, which are currently limited by the inability of operators to recall the relationships between more than about 40 cameras in a network. "Snap automatically finds the relationships between all the cameras in a network. This allows a single operator to follow people throughout the whole network, in real time, and is scalable to many thousands of cameras."

ACVT Director and Snap co-founder **Professor Anton van den Hengel** says the technology has applications across the full spectrum of large-scale video surveillance, including airports and the 2012 London Olympics.

► **More information:** www.adelaide.edu.au



Mark Horsburgh

PRESIDENT-ELECT, LICENSING EXECUTIVES SOCIETY OF AUSTRALIA AND NEW ZEALAND (LESANZ)*

Innovation agenda: missing the point

In a country with an economy the size of Australia's we should be applying an 'Australia Inc' attitude to our nation's R&D and providing public funds to support early stage commercialisation.

In reality however, our leaders have missed the point when it comes to understanding how to support our innovators. This is made clear in the Government's response to Terry Cutler's review of our innovation system in the white paper titled *Powering Ideas: An Innovation Agenda for the 21st Century*.

This year's budget announcement of an \$8.58 billion package for science and innovation is a significant investment from the public purse, but one that has been misdirected to initiatives such as increasing the number of postgraduate positions. This will have no real impact on commercialisation for the foreseeable future.

The Government's white paper failed to understand that Australia is not in a deficit when it comes to local research and innovation. It's just that we lack viable funding systems to support the early steps on the path from innovation to commercialisation.

Adopting an 'Australia Inc' attitude would help to address this funding gap, but instead the white paper suggests we create an unduly competitive

Adopting an 'Australia Inc' attitude would help to address this funding gap, but instead the white paper suggests we create an unduly competitive environment, where only those technologies lucky enough to attract scarce private funding can have a chance at generating income for Australia.

environment, where only those technologies lucky enough to attract scarce private funding can have a chance at generating income for Australia.

The paper acknowledges that many good technologies have been commercialised off-shore, with Australia missing out on the economic benefit. Yet the solution proposed is bizarre, at best: to offer more research positions to generate more great research, so that even more world class Australian innovation is forced offshore in the search for commercialisation funding support. This seems counter-intuitive for a document that purports to set out a national agenda to improve our global innovation standing in the 21st century.

Surely the logical conclusion should be to seek a greater economic return from existing innovation sources, rather than increasing the competition for commercialisation resources. Additionally, we must ensure at least the existing sources of early stage support for commercialisation are maintained. Unfortunately, this has not been the case, with one of the first actions of the current Government being to cut the Commercial Ready grant scheme.

At a recent industry panel discussion hosted by the Licensing Executive Society of Australia and New Zealand* (LESANZ) in Brisbane there was unanimous consensus in condemning the decision to axe the Commercial Ready scheme. Venture capitalists on the panel stated that since the scheme was axed they had curtailed investments. The scheme provided matching funds that reduced the risk for commercial investment. Without the Commercial Ready funds the risk profiles for most investments were outside the bounds that the Venture Capitalists could accept. As a result, investment in early stage innovation significantly

The Government's white paper failed to understand that Australia is not in a deficit when it comes to local research and innovation. It's just that we lack viable funding systems to support the early steps on the path from innovation to commercialisation.



diminished.

This is where the concept of 'Australia Inc' would be most effective: cooperation between public funds contributed by government, and private funds, to provide the early stage investment needed for Australian innovation to get a fair chance at generating economic benefit for the country.

Unfortunately until now much of the debate has been ill-informed. Dr Terry Cutler has said there should not be "...arcane debates around the minutiae of intellectual property regimes; it is about ensuring that regimes designed to support innovation do not end up as barriers." He is half right. The debate should not be about the minutiae: it should not be about intellectual property regimes at all.

There is nothing of substance wrong with the intellectual property regime in Australia. It is world class. Rather, the debate should be about moving Australia's world class innovation along the path to world class commercialisation. It is this debate which is lacking in Australia and completely absent from the white paper.

Interestingly, the one initiative that does have potential to make a difference is the Government's proposed Commercialisation Institute.

There is nothing of substance wrong with the intellectual property regime in Australia. It is world class. Rather, the debate should be about moving Australia's world class innovation along the path to world class commercialisation.

At present the details are sketchy but early indications are that it will be yet another training and research organisation rather than the hands-on commercialisation driver that is required. Instead, we need the Commercialisation Institute to take a lead role in coordinating and directing government funds for commercialisation and to foster intimate engagement with private sources of equity. Only then, with close cooperation between private and public sources of funding for commercialisation, can 'Australia Inc' hope to turn a profit from Australian innovation.

**The Licensing Executives Society of Australian and New Zealand is the premiere association for the education and promotion of the commercialisation of innovation. The organisation will hold its next Annual LESANZ conference in Adelaide from 22-24th April 2010 (<http://lesanz.org.au/realmevents/annualconf.html>)*

For details of jobs and conferences: www.ARDR.com.au

On the radar

Closing dates for comments on the last two of IP Australia's discussion papers concerning IP reform is 16 Oct 2009.

More information: www.ipaustralia.gov.au

The ARC consultation paper on its peer review system is due 19 Oct 2009

More information: www.arc.gov.au

The Australian Government Tax credit scheme discussion paper is due for comment on 26 Oct 2009

More information: www.treasury.gov.au

Grants and programs

Note: For help finding research and industry grants try the Grant Finder database.

More information: www.business.gov.au/bep2005/grantfinder/grantfinderlist.aspx

The \$1.3 billion Green Car Innovation Fund is open for application.

Applications can be lodged at any time.

More information: Patrick Pantano, 0417 181 936

G08 2010 European Fellowships - applications close 30 October 2009.

www.g08.edu.au

NHMRC:

Australia-EU Collaborative Research Grants - close Dec 2009

International Collaborative Indigenous Health Research Partnership (ICIHRP) - Applications close Oct 2009

More information: www.nhmrc.gov.au

ARC:

Linkage Projects (Round 2; commencing July 2010) - close 18 Nov 2009

Australian Laureate Fellowships (for funding commencing 2010) - applications close 2 Dec 2009

ARC Centres of Excellence (for funding commencing 2011) - expressions of interest close 25 Nov

2009; applications open in Feb 2010 and close 19 April 2010.

ARC College of Experts

Closing date for nominations for 2010 appointments close Oct/Nov 2009.

More information: www.arc.gov.au/media/important_dates.htm

Clean Business Australia

Green Building Fund (\$90m over 4 years) aims to reduce the impact of Australia's built environment on green house gas emissions. Round 2 (Stream B) closes 12 Jan 2010.

Re-tooling for climate change: Round 5 closes 30 November 2009, Round 6 - open till 22 Mar 2010

More information: www.ausindustry.gov.au

Conferences

High-Throughput Genomic Technologies

18 - 21 Oct 2009, Katoomba, NSW, Australia

National launch by Senator The Hon. Ian Macdonald of new Lantana Weed of National Significance DVD

19 Oct 2009, Brisbane, QLD

The First International Workshop on Wireless & Mobile Networks Security (WMNS-2009)

19 - 21 Oct 2009, Gold Coast, QLD

2nd IEEE International Workshop on Data Mining and Artificial Intelligence (DMAI 2009),

19 - 21 Oct 2009, Gold Coast, QLD

FOSS4G 2009 - Free and Open Source Software for Geospatial

20 - 23 Oct 2009, Sydney, NSW

Policy to Practice - Achieving Better Environmental Outcomes

20 - 21 Oct 2009, Canberra, ACT

RANZCR / AIR / FRO / ACPSEM Combined Scientific Meeting 2009

22 - 25 Oct 2009, Brisbane, QLD

Australasian Radiation Protection Soc Conference

25 - 29 Oct 2009, Fremantle, WA

4th Annual IP Management, Commercialisation & Protection Conference

26th-28th October 2009, Sydney

Sustainable Development Conference 2009

26 - 30 Oct 2009, Adelaide, SA

Sustainable Economic Growth for Regional Australia (SEGRA) 2009

27 - 29 Oct 2009, Kalgoorlie-Boulder, WA

The Crawford Fund International Conference

27 - 28 Oct 2009, Canberra, ACT

Software & Systems Quality Conference Australia 2009 (SQC)

28 - 29 Oct 2009, Melbourne, VIC

Evidence Based Policy Making 2009

28 - 29 Oct 2009, Canberra, ACT

4th World Congress on Mental Health and Deafness

28-30 Oct 2009, Brisbane, QLD

Strategic Alliances for Sustainable Development

5 - 7 Nov 2009, Brisbane, QLD

Cycling Medicine Seminar

7 Nov 2009, Adelaide, SA

eResearch Australasia 2009

9 - 13 Nov 2009, Sydney, NSW

2009 APEN Conference (Australasia-Pacific Extension Network)

9 - 12 Nov 2009, Busseton, WA

Australian Birdfair In Leeton NSW

9 - 15 Nov 2009, Leeton, NSW

Genetically Modified Crops Coexistence Conference (GMC 09)

10 - 12 Nov 2009, Melbourne, VIC

2009 International Conference on Successes and Failures in Telehealth

10 - 11 Nov 2009, Brisbane, QLD

AHIA 2009 Conference (Australian Health Insurance Association)

10 - 12 Nov 2009, Melbourne, VIC

Australasian Road Safety Conference

11 - 13 Nov 2009, Sydney, NSW

Lecture: Life, death, and the anti-vaccination cult

13 Nov 2009, Canberra, ACT

2009 Asia Pacific Conference on Child Abuse and Neglect

15 - 18 Nov 2009, Perth, WA

Australasian College for Emergency Medicine 26th Annual Scientific Meeting

15 - 19 Nov 2009, Melbourne, VIC

Barks, Birds & Billabongs - Exploring the Legacy of the 1948 American-Australian Scientific Expedition to Arnhem Land

16 - 20 Nov 2009, Canberra, ACT

Mining the Isa

17 - 18 Nov 2009, Mount Isa, QLD

Children's Health Conference: Health Care for Kids: The People, The Map and The Measure

17 - 19 Nov 2009, Sydney, NSW

Influenza Congress USA 2009

18 - 20 Nov 2009, Westin Washington DC City Center, QLD

Learning Technologies Conference 2009

19 - 20 Nov 2009, Melbourne, VIC

Preloved Buildings Conference - sustainability for the existing building stock

19 - 20 Nov 2009, Melbourne, VIC

AIP Physics in Industry Day 2009

19 Nov 2009, Sydney, NSW

Biosecurity in the new Bioeconomy: threats and opportunities

19 - 21 Nov 2009, The Shine Dome, Canberra, ACT

Public talk: Evidence for Murder - How physics convicted a killer

19 Nov 2009, Sydney, NSW

13th International Conference of the Pacific Basin Consortium

20 - 22 Nov 2009, Perth, WA

Decentralised Energy Technology, Policy and Opportunities for Australia and the Asia-Pacific Region

20 - 21 Nov 2009, Sydney, NSW

Asia Pacific Conference on Metabolic Syndrome

20 - 21 Nov 2009, Melbourne, VIC

JOBS

	INSTITUTION	CLOSING DATE
Snr Lecturer in Equine Surgery	Charles Sturt University NSW	01 Nov
Research Chair of Cancer Medicine	University of Queensland QLD	-
Assoc Prof / Prof in Small Animal Medicine	Charles Sturt University NSW	01 Nov
Assistant Professor in Comparative Physiology	University of Canberra ACT	30 Oct
Head, Department of Food & Allied Sciences	University of Ballarat VIC	25 Oct
Chair of Biochemistry and Molecular Biology	University of Melbourne VIC	21 Mar
Associate Professor / Professor in Dentistry Specialist Disciplines	University of Queensland QLD	30 Nov
Director of the Australian Health Workforce Institute	University of Melbourne VIC	01 Nov
Manager CRC's and Research Infrastructure Projects	Queensland University of Technology QLD	16 Nov
Chief Operating Officer - Brain & Mind Research Institute	University of Sydney NSW	18 Oct
Associate Professor in Clinical Psychology, Faculty of Health	University of Canberra ACT	30 Oct
Professor in Nursing and Midwifery, Faculty of Health	University of Canberra ACT	30 Oct
Associate Professor in Clinical Psychology / Clinic Director, Faculty of Health	University of Canberra ACT	30 Oct
Head - Sciences - Museum Victoria	Victorian Government VIC	30 Oct

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