

Adelaidean

NEWS FROM THE UNIVERSITY OF ADELAIDE

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High praise for **sister city support**

Story on page 3

Funding challenges in education

I recently had the opportunity to spend some time in Asia and the United States of America, culminating in a meeting of the International Association of University Presidents in New York. It caused me to reflect on the similarities and differences between universities around the world.

American universities include some magnificent institutions with a historical reliance on philanthropy which, although flowing at a reduced level, is still breathtaking compared to what we see in Australia. The institutions range from community colleges to research universities and embrace both public and private institutions (profit and not for profit). What is evident, however, is that they are suffering the pressures of the Global Financial Crisis which has diminished their confidence and weakened their structures.

The story in Europe is not dissimilar, although without the great diversity of institutions. Universities are largely state funded and, as a consequence, in England and Wales we see them struggling with annual student fees now rising to as much as £9,000 (\$14,300 AUD) amidst the prospect of entire universities failing.

In much of Asia, by contrast, we see enormous public funding being pumped into universities while private philanthropy continues to grow and indeed is being aggressively promoted by most governments. They display a genuine belief in the power and value of education as both a private and a public good. As a consequence the growth and development of institutions and the increasing level of participation is truly startling.

So where does Australia sit in all of this?

Participation rates have been comparatively low but the government is currently addressing this issue. Facilities are a bit run down and student services are stretched although there is genuine commitment to a student focussed education. Funding is very marginal and only viable because of large international student intakes. Interestingly, this may in itself be an incentive for governments to keep funding low so as not to risk the lucrative educational services export market.

What of our belief in education? Do we accept it to be a game changer and just how large a sacrifice would we make to see children educated?

From all of this some things are clear. Firstly, Asia is fast developing its university system and is relying on the universities to build their economies and to provide social benefits. Europe and the US are examples of how the relationship between the economy and education is two-way; with weakened economies resulting in weakened universities. Of more concern is the potential medium and long-term damage to those economies and to social well being.

In Australia, you get the impression we are still somewhat undecided, and I don't just mean the Government – I include the wider community. We seem to wonder whether we can get the benefits of higher education without paying the price. Or perhaps if we just wait, an easy solution will appear. Maybe we don't need to educate so many people or maybe education is just not that valuable.

My conclusion is simple. Education is valuable both in itself as a driver of social well being and as the major contributor to economic development. Let's take up the call for education and let's not just demand more but show a willingness to give more.



JAMES A. McWha
Vice-Chancellor and President

Adelaidean

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Australian Prime Minister Julia Gillard and New Zealand Prime Minister John Key pictured with the University of Adelaide Vice-Chancellor and President, Professor James McWha at Federal Parliament. Photo courtesy of AAP

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Thanks Adelaide, you've done us proud

The University of Adelaide has been formally thanked by both the Prime Ministers of Australia and New Zealand for hosting 170 Christchurch university students since the devastating earthquake earlier this year.

At a private meeting in Parliament House, Canberra, on 20 June, the University's Vice-Chancellor and President, Professor James McWha, was congratulated by Prime Minister Julia Gillard and New Zealand Prime Minister John Key for the University's generosity in hosting the students for a semester, free of charge.

Christchurch is a sister city of Adelaide and when the earthquake struck on 22 February, the University of Adelaide extended an offer of help to the University of Canterbury, whose campus was damaged.

A total of 170 first and second-year Arts, Science, Commerce and Marketing students have embraced the opportunity to study for four months at the University of Adelaide, living in subsidised student accommodation and in home-stay arrangements.

Prime Minister Gillard congratulated the University and Adelaide residents for their selfless generosity in Christchurch's hour of need.

"The friendships formed between the students are testament to the strong bond between Australia and New Zealand. This is a great illustration of the genuine and enduring connection between our countries that is fostered by our ANZAC heritage but

is shared across the Tasman in so many ways," Prime Minister Gillard said.

New Zealand Prime Minister John Key made an historic first address to Australia's Federal Parliament on 20 June, saying that Australia had shown his country "a degree of loyalty and support that only family can".

Three New Zealand students studying at Adelaide – Philip Hughes, Nathaniel Weaver and Emma Livingstone – accompanied the Vice-Chancellor to Canberra and met with both Prime Minister Gillard and Prime Minister Key.

Senator Chris Evans (Federal Minister for Tertiary Education, Skills, Jobs and Workplace Relations) and Senator Penny Wong (Federal Finance and Deregulation Minister) visited the University's North Terrace Campus in May for a barbecue with the New Zealand students and University staff.

The students will be formally farewelled at a lunch hosted by the University of Adelaide before returning to Christchurch on Saturday 2 July.

Above: Senator Chris Evans, Professor James McWha, Philip Hughes, New Zealand Prime Minister John Key, Nathaniel Weaver, Emma Livingstone and Australian Prime Minister Julia Gillard.

Photo courtesy of the Prime Minister's Office, Canberra.

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GP Super Clinic opens in Adelaide's north

Residents north of Adelaide will have access to more doctors, nurses and allied health professionals, thanks to a new \$7.5 million Playford North Super Clinic built by Adelaide Unicare.

The University of Adelaide-owned general practice service was officially opened last month by the Federal Minister for Health and Ageing, Nicola Roxon.

Professor Justin Beilby, the Executive Dean of the Faculty of Health Sciences, said the University was pleased to partner with the South Australian Government to deliver the new clinic.

"This is a much-needed facility for the northern suburbs community," Professor Beilby said.

"Bringing GP and allied health services together in this way will greatly improve the level of care and support available to those living in and around Playford, including the new housing development areas.

"Linking the University's broad-ranging health science teaching programs with day-to-day clinical services will ensure that the next generation of health professionals will benefit from valuable, relevant experience.

"It's a great outcome for our students, our doctors and most importantly, the local community," he said.

Minister Roxon and local Federal Member for Wakefield Nick Champion declared last month's opening of the Playford North GP Super Clinic a win for the local community.

"This GP Super Clinic will deliver more doctors, more nurses, more allied health professionals and better access to health services for locals," Minister Roxon said.

"GP Super Clinics are making a difference right around the country and today marks the 11th GP Super Clinic official opening with 31 now either open, providing early services or under construction.

"The Gillard Government wants to make it easier for all Australians to see and contact a doctor and GP Super Clinics around the country are making this happen."

Mr Champion said the new GP Super Clinic would provide better health care for families living in the 'Playford Alive' urban renewal area through early services.

"The Playford North GP Super Clinic will provide a new level of integrated, multidisciplinary, team-based, patient-centred healthcare all under one roof," Mr Champion said.

"Patients will have access to a comprehensive range of health services including mental health, physiotherapy, pharmaceutical medication reviews, diabetic services, exercise therapy, healthcare plans and assessments, wellness clinics, radiology, pathology and Royal District Nursing Services. These will expand to provide podiatry and programs that cater for Aboriginal and Torres Strait Islander Peoples into the future.



"The clinic will have a role in training the future health workforce as it will focus on training and education for undergraduate and postgraduate students from both the University of Adelaide and University of South Australia across a range of health disciplines including medicine, nursing, psychology and allied health," he said.

The clinic is currently bulk billing for a variety of services and is operating from 8.00am-6.00pm Monday to Friday and 9.00am-1.00pm Saturday mornings, with an opportunity to expand.

The Federal Government has also provided Adelaide Unicare with up to \$4.6 million to construct a new two-storey dedicated teaching and training facility next to the Playford North GP Super Clinic.

Adelaide Unicare is a controlled entity of the University of Adelaide. With the new Playford North GP Super Clinic, it now manages seven general practices in urban and rural South Australia.

Above: Dr Lorenzo Ponte outside the new Playford North GP Super Clinic
Photo by Noelle Bobrige, *Messenger News Review*



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Climbing the career ladder with postgraduate study

Gaining a postgraduate qualification can lead to major personal and professional benefits.

This month, the University of Adelaide will hold a Postgraduate Information Night aimed at providing details about postgraduate study opportunities – in both coursework and research programs.

“The difference between choosing a coursework or research program relates to an individual student’s career interests,” said the University’s Dean of Postgraduate Coursework, Professor Iain Reid.

“Postgraduate coursework is generally viewed as more vocationally based and may assist the student to further their career by enhancing their knowledge and skills, or equipping them to pursue a career change. Postgraduate coursework is also often required by those seeking professional accreditation in a particular career.

“Many students choose coursework to extend their marketability to employers, because they know that having more than just a Bachelor’s degree can make them highly attractive to potential employers.

“Short coursework programs are very useful for those who are currently employed or who have family commitments. In many cases, an employer will decide to sponsor a staff member’s further study because they know it will result in additional skills in the workplace,” Professor Reid said.

Nurse Iain Everett is one of the many students to gain a postgraduate qualification at the University of Adelaide to help his career.

This year, he graduated from the Master of Nurse Practitioner program through the School of Nursing. His Masters degree – accredited by the Australian Health Practitioner Regulation Agency – is essential to Mr Everett’s role, enabling him to practise as an Emergency Nurse Practitioner in a hospital emergency department. He is currently a candidate for such a position at the Queen Elizabeth Hospital’s Emergency Department.

“I had previously completed a Master of Public Health at the University of Adelaide and was very pleased with the process and the outcome, so Adelaide was the obvious choice for my next Masters degree,” Mr Everett said.

“The support I received from staff made it very worthwhile – it enhanced my learning and enabled me to better understand the role of the Nurse Practitioner. The courses within the program were appropriate and challenged my thinking and understanding of nursing in this context.”

Mr Everett said obtaining the Masters degree was “a major milestone in my career”.

“In many ways this is the pinnacle of my clinical career. The role provides me with the opportunity to practise in an area that I love, through the expertise I have gained in this area over many years,” he said.

“An Emergency Nurse Practitioner (ENP) has the ability to manage all aspects of their patients’ needs with autonomy in collaboration with other health professionals. We aim to provide a high quality of nursing care, which in turn helps the patient to feel satisfied with the level of care they’re receiving.

“As an ENP, you need to understand your role in relation to the legislative and ethical frameworks of practice, as well as being prepared with the right understanding of pharmacology, assessment, diagnosis and evidence-based management of the conditions that fall within your defined scope of practice in a typical emergency department.

“All of these areas were covered in my Masters program and I’m very grateful to the friendly, approachable staff and the educational expertise they offered,” Mr Everett said.

The University of Adelaide’s Postgraduate Information Night will be held on Thursday 28 July, from 5.00pm-7.30pm. To register, visit: adelaide.edu.au/pgnight

Story by David Ellis

Left: Iain Everett, an Emergency Nursing Practitioner candidate and graduate of the Master of Nurse Practitioner program

Photo by James Knowler



Genuine commitment to sustainability

The University of Adelaide has become the first university in South Australia to be awarded a Sustainability Licence from the Environment Protection Authority (EPA).

The licence recognises the University's genuine commitment to reducing its impact on the environment. It combines the standard EPA licence with a voluntary sustainability agreement outlining the University's public commitment to reducing its environmental impact.

EPA Deputy Presiding Member Stephen Hains said the EPA's Sustainability Licence was only presented to businesses that went above and beyond standard EPA licence conditions and demonstrated a genuine commitment to reducing their environmental footprint. The licence is only the fourth to be granted to an organisation by the South Australian EPA.

"The launch of InnoVa21 – Australia's first 6 Star Green Star Design in the education sector – is a practical demonstration that the University is a truly deserving recipient of the Sustainability Licence," Mr Hains said.

"The University has a proactive culture of complying with environmental protection requirements as well as demonstrated leadership in sustainability. The EPA is pleased to recognise this leadership and the model that it offers to all EPA licensees to take a proactive role in meeting their environmental standards."

The University's Vice-President (Services & Resources), Mr Paul Duldig, said:

"The University of Adelaide is already a widely recognised leader in environmental research and education, and we believe it's important to demonstrate leadership in sustainability issues at an operational level.

"With 25,000 students, more than 3000 staff, four campuses and wide-ranging research and education activities, the University is a major organisation in this State with a significant environmental footprint. Understanding and managing that footprint, and finding more sustainable ways of doing so, are extremely important to us," he said.

As part of its commitment to sustainability, the University has:

- established an 'Ecoversity' initiative to tackle environmental sustainability right across the University
- worked with SA Water to reduce water consumption
- accomplished waste reduction and improved recycling with the assistance of Zero Waste SA
- established an 'Ecoleader' program and student internships programs, addressing water, waste and energy management

- produced comprehensive carbon inventories since 2007
- developed a web-based sustainability management and reporting tool to manage energy, carbon and environmental performance.

Minister for Environment and Conservation the Hon. Paul Caica congratulated the University of Adelaide on its ongoing efforts to improve environmental performance.

"I'm pleased to see the University of Adelaide has become the first educational institution in the State to take this step, leading by example and helping to show what can be achieved towards environmental sustainability," said Mr Caica.

The Sustainability Licence applies to the University's campuses at North Terrace, Waite, Roseworthy and Thebarton.

For more information on the University's sustainability practices, go to www.adelaide.edu.au/ecoversity/

Story by David Ellis

Below (from left): Helen Fulcher, EPA Chief Executive, Paul Duldig, University's Vice-President (Services & Resources), the Hon. Paul Caica, Minister for Environment and Conservation, and Stephen Hains, EPA Deputy Presiding Member, at an event to hand over and sign the new Sustainability Licence
Photo by David Ellis



\$4.3 million boost to industry-linked research

The University of Adelaide will strive to make major advances for industry and the community thanks to new research funding of \$4.3 million.



The funding – awarded by the Australian Research Council (ARC) – will go towards 11 new research projects in the fields of animal and human health and wellbeing, energy production, agriculture, computer science, environment, and laser-based sensing systems.

The University of Adelaide received 69% of the research funds awarded in the State in the latest round of the ARC Linkage Projects funding.

“These new projects enable us to match our world-class research skills with the needs of industry and society, and to work in collaboration to deliver real and meaningful outcomes,” said the Vice-Chancellor and President, Professor James McWha.

“While this research has direct benefits for industry, government and the community, it also greatly benefits our students because the latest innovations in research also inform our teaching,” he said.

The 11 new projects that have received funding are:

\$750,110 awarded to a team led by Dr Brent Kaiser (Waite Research Institute/ School of Agriculture, Food and Wine) in partnership with Dupont Pioneer
Transport systems that underpin nitrogen-efficient maize;

\$750,000 awarded to a team led by Professor Gus Nathan (Environment Institute/Centre for Energy Technology) in partnership with Petratherm
Investigation of the coupled dependence of concentrated solar radiation and combustion in a novel solar hybrid technology;

\$360,000 awarded to a team led by Professor Pavel Bedrikovetski (Australian School of Petroleum) in partnership with Santos

Novel technology for enhanced coal seam gas production utilising mechanisms of stimulated cleat permeability through graded particle injection;

\$348,151 awarded to a team led by Professor Andrew Beer (School of Social Sciences/Centre for Housing, Urban and Regional Planning) in partnership with Anglicare SA, Benetas, Council on the Ageing Queensland, ECH, Illawarra Retirement Trust, and Silver Chain Nursing Association

Emerging from the shadows: the evaluation of intervention strategies to reduce social isolation amongst the aged;

\$139,399 awarded to a team led by Associate Professor Peng Bi (School of Population Health and Clinical Practice/ Public Health) in partnership with the Department of Health (SA)

The unfolding story of the 2009 Adelaide heatwave: risk factors for mortality and morbidity;

\$405,222 awarded to a team led by Professor Andrew Lowe (Environment Institute/Australian Centre for Evolutionary Biology and Biodiversity) in partnership with the Australian Carbon Biosequestration Initiative, Greenfleet, Greening Australia (SA), SA Water, Trees For Life

Developing best practice approaches for restoring forest ecosystems that are resilient to climate change;

\$97,874 awarded to a team led by Dr Megan Warin (School of Social Sciences/Gender, Work and Social Inquiry) in partnership with ACEDA, Flinders Medical Centre, SA Health Mental Health Unit
Why are people with eating disorders reluctant to engage with treatment services?

\$420,000 awarded to a team led by Professor Tanya Monro (Institute for Photonics and Advanced Sensing) in partnership with Cook Medical Australia
Nanosampling sensors for real-time embryo monitoring;

\$154,070 awarded to a team led by Dr David Ottaway (Institute for Photonics and Advanced Sensing/School of Chemistry and Physics) in partnership with BAE Systems Australia
Advanced eyesafe Er:YAG short-pulsed lasers for remote sensing applications;

\$428,000 awarded to a team led by Dr Darren Trott (School of Animal and Veterinary Sciences) in partnership with Neoculi

Characterisation of a new class of antimicrobial agent for multi-drug-resistant infections;

\$475,000 awarded to a team led by Professor Anton van den Hengel (School of Computer Science/Australian Centre for Visual Technologies) in partnership with LemnaTec GmbH
Improving yield through image-based structural analysis of cereals.

Story by David Ellis

Research opportunities for postgraduate students will be highlighted at the Postgraduate Information Night on Thursday 28 July. For details go to: adelaide.edu.au/pgnight

Potential treatment for deadly disease

A potential life-saving treatment for recent severe *E. coli* food poisoning outbreaks – developed more than a decade ago – hasn't gone forward into clinical trials because of lack of commercial interest.

University of Adelaide researchers produced a "designer" probiotic bacterium which binds and neutralises the toxin produced by *E. coli*, which causes life-threatening attack on the kidneys and blood vessels.

The team of scientists – Dr Adrienne Paton, Associate Professor Renato Morona and Professor James Paton – showed that mice infected with a highly virulent strain of *E. coli* were completely protected by the probiotic bacterium.

The research was published in the prestigious journal *Nature Medicine* in 2000 and generated ongoing interest from the scientific and medical communities, but the commercial sector hasn't taken up its development for progress into clinical trials in humans.

"Severe *E. coli* food poisoning outbreaks such as the recent one in Europe are becoming increasingly common," said Professor Paton, Director of the Research Centre for Infectious Diseases in the School of Molecular and Biomedical Science.

"They have the potential to cause widespread disease and many patients develop life-threatening complications including kidney failure.

"The probiotic bacterium could be produced cheaply on a large scale. However, in spite of ongoing attention from the scientific and medical community, there has been a lack of interest from the commercial sector in taking this product forward into clinical trials.

"If this had been done, and the probiotic had been proven to be safe and efficacious in humans, it could have been deployed during the recent European outbreak. This would undoubtedly have saved lives, as well as millions of dollars in current and future health care costs."

The researchers engineered a harmless bacterium to mimic binding receptors for the potentially fatal Shiga toxin on its surface.

Professor Paton said after diagnosis of *E. coli* infection there was a window of opportunity for therapeutic intervention before kidneys started to fail. Antibiotics are not used because they can increase the amount of toxin released in the gut.

The *E. coli* outbreak in Europe has claimed the lives of at least 40 people since early May and has been linked to infected bean sprouts and also hamburger patties.

If you're interested in studying Molecular and Biomedical Science at the University of Adelaide, visit: ua.edu.au/programs/2011



Social isolation a serious health risk

The University of Adelaide is leading an Australian-first study to reduce social isolation among older people, identified as one of the most serious mental and physical health risks facing the nation.

Chief Investigator Professor Andrew Beer and a team of researchers have been awarded \$348,151 by the Australian Research Council to look at the most effective programs to combat social isolation in an ageing society, where divorce, lower marriage rates and reduced fertility are contributing to a critical health issue.

"Social isolation is equivalent to the health effects of smoking 15 cigarettes a day or consuming more than six alcoholic drinks daily," Professor Beer said. "It is more harmful than not exercising and twice as harmful as obesity."

Professor Beer is the Director of the Centre for Housing, Urban and Regional Planning at the University of Adelaide.

He and his colleague Dr Debbie Faulkner are partnering with researchers from Australia and the UK as well as aged care and charitable organisations across five States to pinpoint those programs which are successful in reducing social isolation.

"Numerous studies have documented the health impact of social isolation but there is very limited research on what programs work best, and for whom, to tackle the problem," he said.

"It is estimated that 20% of older Australians are socially isolated, which results in insomnia, depression, a greater likelihood of developing dementia and

elevated blood pressure, among other health problems.

"This has a reverberating effect on society, placing extra strain on carers, additional demands on health services, a reduced sense of community and a greater need for acute interventions by local governments, housing providers and other welfare services."

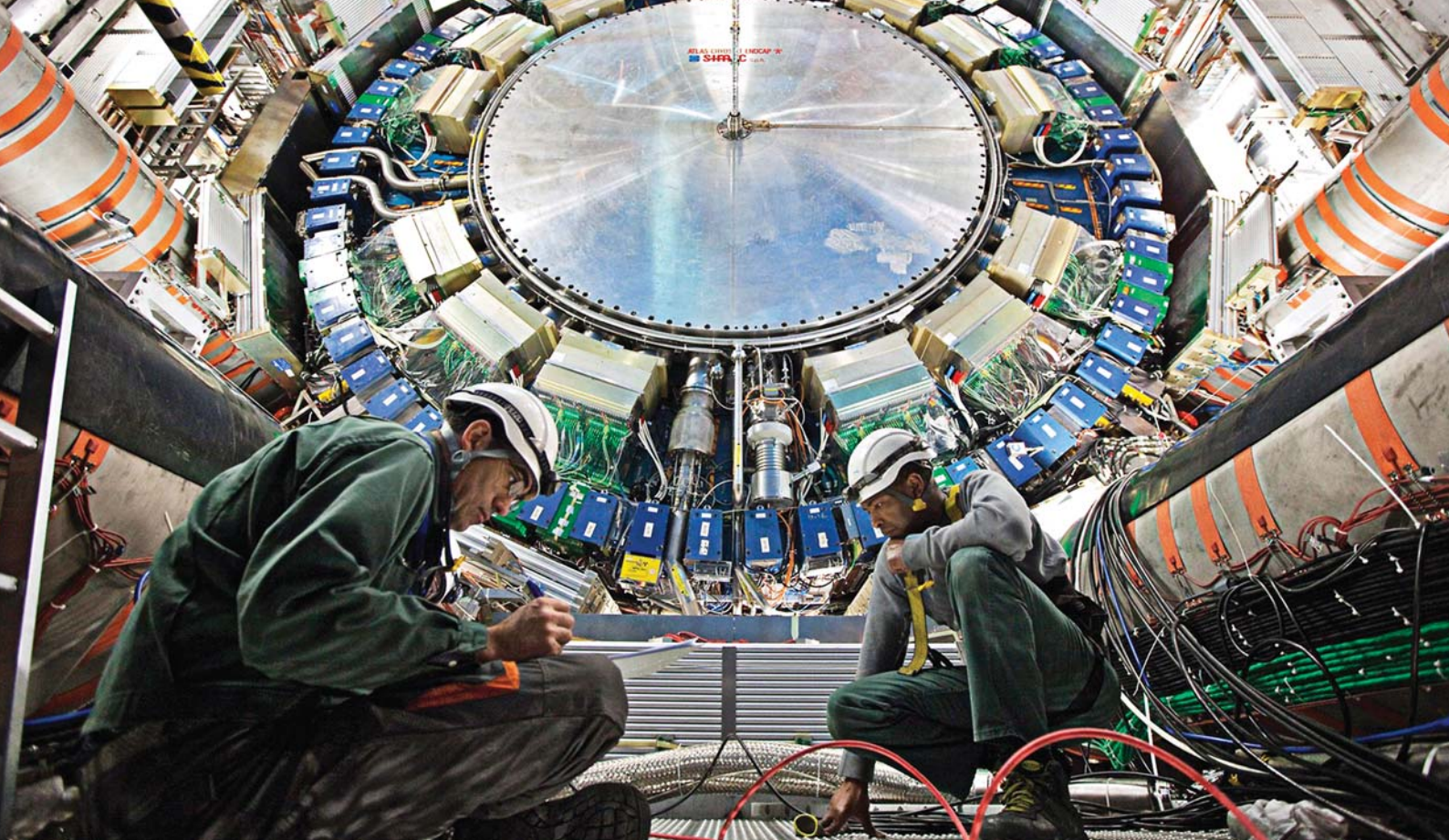
Scientific evidence suggests the most effective programs are those that have an educational component, are targeted at specific groups – for example, women, caregivers and widowers – and involve the recruitment of people from the same neighbourhood.

"We need to look at this in more depth and also examine the differences between gender, location, housing options, age, the presence of a disability, and socio-economic status," Professor Beer said.

About 900 older Australians will be surveyed as part of the three-year study, along with focus groups, service providers and policy makers in this area.

The University of Adelaide is also partnering with Benetas, Anglicare SA, Council on the Ageing Queensland, ECH, Illawarra Retirement Trust and Silver Chain Nursing Association.

The study will be completed in mid 2014.



Unlocking the mysteries of the universe

Australia's and the University of Adelaide's involvement in one of the world's most exciting scientific endeavours has been officially launched in Melbourne.

The new Australian Research Council (ARC) Centre of Excellence for Particle Physics at the Tera-Scale is a national collaboration involving four Australian universities, including the University of Adelaide, and a number of overseas institutions. It was launched last month at the University of Melbourne by Innovation Minister Senator the Hon. Kim Carr.

The new Centre of Excellence is associated with the Large Hadron Collider (LHC) – the world's largest and highest-energy particle accelerator.

The LHC has been built at CERN, the European centre for Particle Physics near Geneva, Switzerland. Using the LHC, scientists are attempting to reproduce and understand the origins of the Big Bang, which is believed to have resulted in the creation of the universe as we know it. High-energy particle beams – containing subatomic particles called protons – are collided in the detector.

"As scientists, we're hoping these collisions will create new particles that may completely change our understanding of particle physics and the known laws of the universe," said physicist Professor Anthony Thomas.

Professor Thomas is an Australian Laureate Fellow at the University of Adelaide. He is Director of the University's Research Centre for Complex Systems and

the Structure of Matter (CSSM) and is also Associate Director of the new Centre of Excellence for Particle Physics at the Tera-scale (CoEPP).

For the first time in Australian research history, the centre is coordinating tera-scale high-energy physics research right across Australia.

"This joint effort will contribute to and directly benefit from the work being conducted at the LHC," Professor Thomas said.

The ARC has granted more than \$25 million to the new centre, with a further \$8 million in support coming from partner institutions.

As a partner, the University of Adelaide's School of Chemistry & Physics stands to receive up to \$6 million of this funding and will join the international ATLAS collaboration, which built and is operating one of the two major experiments at the LHC.

"The LHC represents such a significant step forward in physics research, it's difficult to overstate its importance," said Professor Thomas.

"If we are able to make particles that haven't existed since the Big Bang, this could radically alter our understanding of how the universe works.

"It's a wonderfully challenging and exciting time, not just for scientists but also

for humankind. As scientists, we know a lot about the universe, but we also know enough to realise just how much we still need to learn; there's so much more that we don't know.

"Though our involvement with the new Centre of Excellence, and our work in the Research Centre for Complex Systems and the Structure of Matter, the University of Adelaide is playing a key role in this big leap forward in science," he said.

Senator Carr said the Federal Government's support for the centre was helping Australian scientists to link with the world's best research equipment.

He said the LHC "has the unprecedented energy needed to probe big questions like the origins of mass, the secrets of the big bang and dark matter and the search for new dimensions in space".

"Having access to this equipment is vital for the centre's researchers," Senator Carr said.

For more information on studying Physics at the University of Adelaide go to: ua.edu.au/programs/2011

Story by David Ellis

Above: Working in the cavern of the ATLAS detector, part of the Large Hadron Collider at CERN (the European Organization for Nuclear Research)

Photo by ATLAS Experiment © 2011 CERN



Mt Gambier music school makes history

The Elder Conservatorium of Music has signed an historic agreement with a Mt Gambier school to help fast track its jazz students into a music degree.

Tenison Woods College has become the first school in Australia to achieve university accreditation for its music students who are keen to proceed to tertiary study.

The University of Adelaide will give Tenison Woods' Year 13 Generations in Jazz Academy students automatic entry and credit towards the Elder Conservatorium's Diploma of Music (Jazz).

It will also provide students with the opportunity to be auditioned in Mt Gambier by university staff for the Bachelor of Music (Jazz Performance) degree.

In signing the pathway agreement, Elder Conservatorium Director Carl Crossin said the diploma could also be a stepping stone for some students to enter the degree course in their second year subject to a high level of achievement in the Diploma.

Mr Crossin said the Conservatorium's Jazz staff would work closely with the Mt Gambier students to help them gain the Diploma of Music by the end of the year.

This work will include participation in specialist ensembles and various aspects of jazz theory and performances.

The Generations in Jazz Academy program was formed at Tenison Woods College in 2010.

Above: Generations in Jazz Academy students with musical director Graeme Lyall

Photos by Nethanel Sutton



Major boost for crop yields

University of Adelaide computer scientists are developing image-based technology which promises a major boost to the breeding of improved cereal varieties for the harsher environmental conditions expected under climate change.

Led by Professor Anton van den Hengel, Director of the Australian Centre for Visual Technologies (ACVT), the computer scientists are joining with plant physiologists and an industry partner to develop technology that will be able to accurately estimate plant yield of potential new cereal varieties well before grain production.

They will use multiple images of plants as they grow to construct computerised 3-D models that will match the plants' changing "shape" with its biological properties and, ultimately, predict yield.

"We are using image analysis to understand the shape of plants so that we can automatically and rapidly measure plant structural properties and how they change over time," said Professor van den Hengel.

"We want to be able to predict yield based on a collection of measurable plant attributes early in the plant's lifespan, rather than having to wait for the plant to mature and then measuring the yield."

Professor van den Hengel said this image-based approach would enable detailed, accurate and rapid estimation of large numbers of plants' potential yields under various growing conditions, for example high salinity or drought.

"This novel image analysis technology promises to transform crop breeding and, as a result, the agricultural industry," he said.

"By expediting the development of plant varieties capable of delivering increased yield under harsh environmental conditions

this project will help improve Australia's agricultural efficiency and competitiveness. It will help Australian agriculture prepare for the impact of climate change and the need to produce more food for a growing population."

The image-based analysis will be incorporated into the Plant Accelerator at the University's Waite Campus. Opened last year, the Plant Accelerator houses more than 1km of conveyor systems that deliver plants automatically to the imaging and other stations.

The project, 'Improving yield through image-based structural analysis of cereals', has been funded under the latest round of Australian Research Council Linkage Projects.

Other chief investigators for the project are Professor Mark Tester, Professor of Plant Physiology in the School of Agriculture, Food and Wine and Director of the Plant Accelerator, and Dr Anthony Dick, Deputy Director of the ACVT. The ACVT is a University of Adelaide research centre housed within the School of Computer Science.

The project involves industry partner LemnaTec, which provided some of the equipment used in the Plant Accelerator. They will help commercialise the technology.

Story by Robyn Mills

Above: State-of-the-art imaging facilities at the Plant Accelerator

Photo by LemnaTec GmbH



Turning points in South Australia's history

Some of the country's most high-profile historians will feature in a public lecture series starting at the University of Adelaide later this month to mark the 175th anniversary of European settlement in South Australia.

Run by the School of History and Politics, the public lecture series begins on 27 July and will be held on consecutive Wednesdays at 6.00pm in the Napier Lecture Theatre G04.

The guest speakers, their topics, and lecture dates are:

- **Bill Gammage AM:** *The Adelaide district in 1836*, Wednesday 27 July.

(Adjunct Professor at the Humanities Research Centre, Australian National University)

The talk argues that Aborigines purposefully distributed the Adelaide district's dominant plants into patterns, to make plants and animals abundant, convenient and predictable. The talk then sketches how the arrival of Europeans impacted on this way of life.

- **Professor Henry Reynolds** – *Between Van Diemen's Land and New Zealand*, Wednesday 3 August.

(Senior Research Fellow at the University of Tasmania)

This talk will examine early British policy towards the Aborigines in South Australia and the impact of two quite different developments: the experience of European settlement in Tasmania and also New Zealand.

- **Emeritus Professor Jill Roe AO** – *Making the most of it: Life on the rural frontier in 20th century South Australia*, Wednesday 10 August

(Emeritus Professor of History, Macquarie University)

This lecture will chart the main shifts in rural settlement across the State during the 20th century, addressing the decline of small country towns and the new coastal dynamics such as fishing and tourism.

- **Professor Mark Peel** – *A place to grow: Making a future in post war South Australia*, Wednesday 17 August

(Professor of History, University of Liverpool)

This lecture examines South Australia through migrants' eyes, using family stories to show how the State's post war development relied heavily on British and European migrants.

- **Professor Susan Magarey AM** – *Sex and citizenship: From ballot boxes to bedrooms*, Wednesday 24 August

(Adjunct Professor of History, University of Adelaide)

This lecture will examine two major events in South Australia: granting women the right to vote in the late 19th and early 20th centuries; and prohibiting discrimination

on the grounds of sex in the second half of the 20th century.

- **Neal Blewett AC** – *The impact of the "Dunstan Decade"*, Wednesday 31 August

(former Federal Labor politician, academic and diplomat)

This lecture will examine Don Dunstan's role in the transformation of the ALP during his era, epitomised by the advancement of minorities, egalitarian welfare policies, and cultural and social awareness.

The series is being co-ordinated by Associate Professor Paul Sendziuk and Associate Professor Robert Foster in the School of History and Politics. The latter will also deliver a paper with colleague Amanda Nettelbeck at the State History Conference on 5 August.

Admission to the lecture series is free but bookings are essential and can be made by emailing history@adelaide.edu.au or phoning 08 8313 1441.

Story by Candy Gibson

Image courtesy of: Art Gallery of South Australia, Adelaide Morgan Thomas Bequest Fund 1936 *The Proclamation of South Australia 1836* by Charles Hill

Finding a solution for noisy wind turbines

University of Adelaide acoustics researchers are investigating the causes of wind turbine noise with the aim of making them quieter and solving 'wind turbine syndrome'.

They are also developing a computer model to predict the noise output from wind farms so they can accurately and quickly assess the effectiveness of potential noise-reducing designs and control methods.

Research leader Dr Con Doolan, of the University's School of Mechanical Engineering, said the noise generated from wind turbines was 'trailing edge or airfoil noise', the same sort of noise generated at the edge of aircraft wings.

"We know generally what causes that noise – as the turbulent air flows over the sharp edge of the blade it radiates sound much more efficiently, so the noise can be heard at some distance," said Dr Doolan.

"What we don't yet understand, however, is exactly how that turbulence and blade edge, or boundary layer, interact and how that makes the noise louder.

"If we can understand this fundamental science, we can then look at ways of controlling the noise, through changing the shape of the rotor blades or using active control devices at the blade edges to disrupt the pattern of turbulence and so reduce the noise."

Dr Doolan said further complicating factors came from the effects of multiple wind turbines together and the way the noise increased and decreased as the blades rotated – the blade 'swish'. The model they are developing will look at the noise from the whole wind turbine and how multiple numbers of wind turbines together, as in a wind farm, generate noise.

"Wind turbine noise is very directional. Someone living at the base might not have a problem, but two kilometres away it might be keeping them awake at night," he said.

"Likewise this broadband 'hissing' noise modulates up and down as the blades rotate and we think that's what makes it so annoying," he said.

"Wind turbine noise is controversial but there's no doubt that there is noise and that it seems to be more annoying than other types of noise at the same level. Finding ways of controlling and reducing this noise will help us make the most of this very effective means of generating large amounts of electricity with next to zero carbon emissions."

For information about studying Mechanical Engineering at the University of Adelaide go to: au.edu.au/programs/2011



Virtual community for wine lovers

Lovers of Adelaide Hills wine have a new, online community of their own, thanks to a research project at the University of Adelaide looking at the use of social media by the wine industry.

As part of the project, the Adelaide Hills Wine Region has launched its new virtual 'Wine Room' – an online, interactive community forum complete with a program of events that showcase the best the region has to offer.

The Wine Room is connected to the website of the Adelaide Hills Wine Region. Funded by the Grape and Wine Research and Development Corporation (GWRDC), the Wine Room is supported by the University of Adelaide's Wine2030 Research Network and the Business School.

Dr Roberta Veale, marketing lecturer with the University's Business School, has spearheaded the initiative as part of her GWRDC-funded research project 'Wine As A Social Bond', which is the first study of its kind looking at the use of social media by the wine industry.

"The Wine Room is a place where fans of the region's wine can go online and chat to their favourite winemakers, enjoy live streamed wine and food matching events, watch interviews with key wine personalities, and discuss their favourite wine experiences," Dr Veale said.

"Already there is a whole calendar of online events, with members able to log in at the scheduled time to view and participate in each event."

Dr Veale said the Wine Room represented a groundbreaking strategy for the Adelaide Hills wine industry.

"To our knowledge, no other wine region has employed this technology and these types of consumer engagement strategies – combining community building and social media tools – as a marketing device for the region as a whole," she said.

For last month's launch of the Wine Room, an 'online tasting' was conducted by Hahndorf Hill Winery. Registered members of the Wine Room were able to log in and participate in a live, streamed tasting of wine matched to gourmet chocolate, during which they could comment on the experience, pose questions to the Hahndorf Hill vignerons, and engage in wine tasting from the comfort of their own homes.

"In time, we expect to see members of the Wine Room hosting their own events and showing their fellow community members what the region and its products mean to them," Dr Veale said.

Dr Veale and colleagues are also working on a brand community with Mt Surman Wines of the Clare Valley and a collaborative project with the Barossa Grape & Wine Association.

Membership of the Wine Room is free. To become a member, simply register at: adelaidehillswine.com.au/wineroom/register

Marketing is taught at the University's Business School. For more information about the School, go to: business.adelaide.edu.au

Air bubble helps spiders survive under water

Researchers have discovered how a species of air-breathing spider can spend its whole life under water, only venturing to the surface occasionally to replenish its air supply.

The 'diving bell spider' or 'water spider' (*Argyroneta aquatica*) is the only spider that lives entirely under water. It breathes air, which it traps in a dome-shaped web suspended between aquatic plants. It's this bubble that gives the diving bell spider its name.

Until now, scientists have not known how long the spiders could remain under water and how they use their air bubbles to breathe.

Professor Roger Seymour (School of Earth & Environmental Sciences, University of Adelaide) and Dr Stefan Hetz (Institute for Biology, Humboldt University) have now been able to measure the oxygen levels in the spider's air bubble and observe its behaviour.

They found that the 'diving bell' behaves like a gill, extracting oxygen from the water. The spiders only need to dash to the surface once a day to supplement their air supply, and can stay under water for more than 24 hours.

"Previous research had suggested the spiders had to come to the surface as often as every 20-40 minutes throughout the day. Instead, we found that the spiders could sit



still for long periods of time, continuing to use their diving bells to extract oxygen even from the most stagnant water on a hot day," Professor Seymour said.

"Being able to stay still for so long – without having to go to the surface to renew the air bubble – protects the spiders from predators and also keeps them hidden from potential prey that come near."

Found in northern and central Europe and northern Asia, the diving bell spider is an "iconic animal", Professor Seymour said.

"Each spider constructs a net of silk in vegetation beneath the surface and fills it

with air carried down on its abdomen and rear legs. The spiders spend their entire lives submerged and even lay their eggs in their diving bells. They are fascinating creatures but unfortunately they are becoming increasingly rare in Europe."

Professor Seymour and Dr Hetz have published their findings in *The Journal of Experimental Biology*.

Story by David Ellis

Above: A diving bell spider. Researchers have found that the air bubble behaves like a gill, extracting oxygen from the water.

Photo by Dr Stefan Hetz

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Timber DNA used to track illegal loggers

Advances in DNA ‘fingerprinting’ and other genetic techniques led by Adelaide researchers are making it harder for illegal loggers to get away with destroying protected rainforests.

DNA fingerprinting for timber products has grown in international recognition due to research led by the University of Adelaide that traces individual logs or wood products back to the forests where they came from.

Professor Andrew Lowe, Director of the University’s Australian Centre for Evolutionary Biology and Biodiversity, and Dr Hugh Cross, Molecular Biologist at the State Herbarium of South Australia, have been working with Singapore company Double Helix Tracking Technologies (DoubleHelix), a leader in applied genetics for forest trade and conservation.

In a new paper published in the journal of the International Association of Wood Anatomists, Professor Lowe and Dr Cross said DNA science had made a number of key advances in the fight against illegal loggers.

“Molecular marker methods have been applied to freshly cut wood for a number of years, and it’s now also possible to extract and use genetic material from wood products and old samples of wood,” Professor Lowe said.

“We can use ‘DNA barcoding’ to identify species, ‘DNA fingerprinting’ to identify and track individual logs or wood products, and we can also verify the region the wood was sourced from.

“The advancement of genetics technologies means that large-scale screening of wood DNA can be done cheaply, routinely, quickly and with a statistical certainty that can be used in a court of law. Importantly, these methods can be applied at a customs entry point to the country – certification documents can be falsified, but DNA cannot.”

An estimated 10% of wood imported into Australia consists of illegally traded timber, which has been cut down outside designated logging areas or outside agreed environmental controls. Australian companies have been the first in the world to purchase timber products that use DNA fingerprinting, as part of proof of legal origin starting back in 2007 – European and American importers are now following suit.

Jonathan Geach, a Director of DoubleHelix, said: “As the technology is now proven scientifically and commercially, we’re looking at a large-scale application in the Congo Basin, as well as working with governments in Europe and America to tighten the grip on illegal timber trade.

“Having Professor Lowe as a leading researcher from the University of Adelaide and as an active member of our team has been tremendously important in driving the role of DNA tracing in timber internationally.”

Professor Lowe said a number of improvements in genetic marker methods still needed to be made, such as for old or degraded wood samples. “Nevertheless, the advances in the use of DNA to identify wood are exciting,” he said.

This research is closely aligned with another major project, to develop a ‘DNA barcode’ for every tree and grass species on earth. “The Barcode of Life projects will take five years to complete, but the information will lead to a step change in the way we can manage our species and ecosystems right across the globe,” Professor Lowe said.

The University of Adelaide will host the 4th International Barcode of Life Conference later this year, from 28 November to 3 December, in partnership with the Consortium of the Barcode of Life. It’s the first time this conference will be held in the Southern Hemisphere.

To find out more about biodiversity research and education at the University of Adelaide, go to: ua.edu.au/environment

Story by David Ellis

Above: Professor Andy Lowe
Photo by Chris Tonkin



Honours for alumni

Former senator Natasha Stott Despoja is one of 14 outstanding University of Adelaide alumni recognised in the 2011 Queen's Birthday Honours list.

Announced last month, the list contains a diverse group of notable alumni including 1991 Bachelor of Arts graduate Ms Stott Despoja, who was made a Member in the Order of Australia (AM) for service to the Parliament of Australia, particularly as a Senator for South Australia, through leadership roles with the Australian Democrats, to education, and as a role model for women.

"It's a great honour to be among such a wonderful group of Australians. I am very proud to have my policy and legislative work – especially in the area of education – acknowledged in this way," Ms Stott Despoja said.

While studying at the University of Adelaide, Ms Stott Despoja was President of the Students' Association. In 1995, at the age of 26, she became the youngest woman to enter Federal Parliament, as a Senator for South Australia. From 2001-2002 she was Leader of the Australian Democrats. She announced in October 2006 that she would not recontest the 2007 Federal election.

Ms Stott Despoja sits on the Alumni Advisory Committee, providing strategic advice to the University Council. She is a current PhD student in the School of History and Politics and co-teaches a course on the practice of Australian politics.

She also funds an annual scholarship to support a financially disadvantaged, full-time, female Bachelor of Arts student of academic merit who would not otherwise be able to attend university.

According to Ms Stott Despoja, strong female leaders and role models in society are "imperative".

"Symbolism is important – women and girls need to be able to see the possibilities available to them, especially in areas and occupations where numbers are still lacking, including in leadership positions," she said.

"To be described as a role model for women is a great compliment and has been an important part of my work.

"I hope that, in some small way, I have encouraged women (and young people) to get more involved in the political process, including running for parliament."

For a full list of University of Adelaide alumni to receive Queen's Birthday Honours, please visit: alumni.adelaide.edu.au/queensbday_honours

Story by Connie Dutton

Above: Former Senator Natasha Stott Despoja
Photo by Brett Hartwig, courtesy of *The Australian*

Alumni

PRIVILEGES

Adelaide alumni have access to a range of exclusive benefits, services and discounts – and each month we bring you the pick of the bunch for a featured special.



Special Offer of the Month: Willis – Travel Insurance

Planning to escape the daily grind and head for an interstate holiday or overseas?

Need affordable travel insurance?

The University of Adelaide has generously extended its corporate travel policy with Willis to also cover graduates and current students and staff and their families for their private travel.

Take the hassle out of travel insurance!

For more information about the offers and the full alumni privileges, please log on to: alumni.adelaide.edu.au/privileges





Research Tuesdays

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WHEN:
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Register online:
adelaide.edu.au/researchtuesdays
or call: 08 8303 3692

Underground Knowledge: How cutting-edge research is revealing new ore deposits and the forces that create them

Mineral resources are absolutely pivotal to human society. Our ability to continue extracting them drives industrial development, and expanding our understanding of their formation reveals the geological history of our planet.

The University of Adelaide's Centre for Tectonics, Resources and Exploration (TRaX) was established to conduct research in both these directions. And progress is being made.

TRaX is contributing to the development of advanced new

deposit locating techniques unaffected by dense covering rock.

It's also at the cutting-edge of Focused Ion Beam Scanning Electron Microscopy, bridging existing atomic-scale observations of ore formation with new ones at the nanoscale, where the processes actually take place.

Associate Professor Nigel Cook will discuss TRaX's fascinating work and their most exciting findings.



Healthy Development Adelaide – thematic evening

Micronutrients in Pregnancy: It's the little things that count, featuring the following speakers:

Dr Denise Furness – *Folate in pregnancy: friend or foe?*

Dr Jo Zhou – *Iron in pregnancy: more is not necessarily better!*

Professor Tony Perkins – *Selenium in pregnancy: does it matter?*

Professor Claire Roberts – *Vitamin D in pregnancy: too much and too little.*

ua.edu.au/hda/events

When: 5.00pm to 7.30pm Thursday 14 July

Where: Eclipse Room, Level 4, Union House, North Terrace Campus

Cost: Free – all welcome

RSVP: anne.jurisevic@adelaide.edu.au
or call 08 8303 8222

Evenings at Elder Hall

Concert 4: *Schubertiade*

Featuring Rosaline Martin (soprano), Guila Tiver (mezzo-soprano), Patrick Power (tenor) and guest artist Timothy Young (piano).

Mid-winter is here, with an opportunity to warm your soul to the sounds of Schubert's unsurpassed *Lieder* and selected piano *Impromptus*. Enjoy a treat of warming mulled wine on arrival, and a coffee with a slice of Viennese Sachertorte at interval.

For details of all Elder Hall concerts, go to: elderhall.adelaide.edu.au

When: 6.30pm Saturday 30 July

Where: Elder Hall, North Terrace Campus

Cost: Tickets \$25 adult, \$20 concession, \$15 student

To book: claire.oremland@adelaide.edu.au
or call 08 8303 5925

University of Adelaide Theatre Guild presents William Shakespeare's *Macbeth*

A 'bloody' great night out! The Macbeths, tempted by the prophecies of three mysterious witches, are plunged into a nightmarish world of evil, deceit, madness and murder. More than 400 years after it was written, *Macbeth* continues to shock, fascinate and thrill. ua.edu.au/theatreguild

When: 7.30pm starting Saturday 6 August, and from 9-13 and 16-20 August

Where: Little Theatre, near Cloisters, North Terrace Campus

Cost: Tickets \$25 adult; \$20 concession; on Tuesdays: current University of Adelaide staff/ students \$15/\$10

To book: Phone 08 8303 5999 or go online. Tickets also through BASS on 131 246. Booking fees apply.

"Completing a PhD at Adelaide led to my Research Scientist role. I now develop viticulture management strategies to better prepare the Australian wine industry for potential outbreaks of exotic disease."

Mark Sosnowski
PhD in Plant Pathology



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Postgraduate Information Night

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Exhibition with specific talks on postgraduate study and research opportunities.

To register visit:

adelaide.edu.au/pgnight



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