

Adelaidean

News from the University of Adelaide

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Curing
chronic
pain

History repeats at
Urrbrae House

Making our
roads safer

**SAVING LIVES
WITH SMART ENGINEERING**



THE UNIVERSITY
of ADELAIDE



INSIDE THIS EDITION OF ADELAIDEAN

Two University researchers are closing in on a cure for chronic pain in a breakthrough that has thrown traditional medical thinking on its head.

In the autumn edition of *Adelaidean* we discover how and introduce our new Dean of Medicine who is planning a stronger focus on medical research for undergraduates.

Among other exclusive stories, profiles and opinion pieces we celebrate a special centenary for the Waite Campus and the huge impact it has on agricultural sciences in Australia.

You can see this and past editions of the magazine at adelaide.edu.au/adelaidean

>ADELAIDEAN



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Established in 1991, *Adelaidean* is the University of Adelaide's free corporate magazine.

Circulation: 12,000 **Cover photo:** Dr Cristian Birzer, lecturer in the School of Mechanical Engineering.

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CRICOS 00123M 1330.4 Autumn 2013

ON A MISSION TO HELP BOTSWANA'S FARMERS



Mitchel Dintwa is a long, long way from home and her husband in Botswana.

But the Agribusiness and Marketing Officer is on a mission.

She is intent on making a difference and helping her people become more effective and commercially astute farmers.

Four out of every five people in the landlocked African nation live off the land. But its subsistence farming only produces enough food for about half the country's population. Most farmers rely on handouts from family members working in the city to make ends meet.

With improved agriculture considered a key to increased economic growth, Mitchel has travelled half way around the world to enrol in a two-year Master in Global Food and Agricultural Business course at the University of Adelaide.

She wants to further extend her specialist skills and do her bit to help Botswana's farmers move towards profit-oriented agriculture.

"The government has reduced its external professional development process following the global recession, so training is limited to local institutions which is also in small numbers," says Mitchel. "Therefore the AusAID Australian Awards Scholarships came at the right time. I competed and was successful.

"The Masters in Global Food and Agricultural Business is just what I was looking for because it's all about global food and international trade and covers most of the areas that I'm interested in."

Mitchel graduated with a Bachelor in Agriculture from the Cape Peninsula University of Technology in South Africa and for the past seven years has been employed by the Ministry of Agriculture, under the Department of Agricultural Business Promotion.

Based in Ramotswa, a village South East of the capital Gaborone, she has been training local farmers in areas of post harvest, such as packaging, compliance to quality standards and promoting their products. Much of her work involves on-farm training and demonstrations.

Her husband, Emmanuel Molemogi, works for the same ministry as an agricultural research assistant.

Mitchel admits she knew little about Australia before arriving in Adelaide but has soon settled into the local way of life.

"I've been very impressed with the University of Adelaide because it has all the services you need on campus, including banking and health facilities, and the transport system is really convenient," she says.

Mitchel is sharing a house in Myrtle Bank with another student from Botswana, Oaitse Ramorula, who is studying international business.

Both have been struck by the friendliness of the people here – and their honesty.

"Twice I've lost my purse – once in a café in Rundle Arcade and another time I dropped it outside my house – and both times I've had it returned," said Mitchel.

Once she has finished her studies in Adelaide Mitchel plans to go back to her previous position but with more knowledge and skills to support local farmers.

"I will retain the same position but I'm hoping this will give me opportunities to move into other ranks," she said. "Agriculture is so important and is needed for our economy to help us for the future, as proven in the developed world." ♥

TOP Mitchel Dintwa,
Agribusiness and
Marketing Officer

"I've been very impressed with the University of Adelaide because it has all the services you need on campus."

FINDING THE NARRATIVE: KEY TO LEADING A UNIVERSITY

VICE-CHANCELLOR AND PRESIDENT PROFESSOR WARREN BEBBINGTON WAS SURPRISED AND INSPIRED WHEN HE LEARNT ABOUT THE PIONEERING ORIGINS OF THE UNIVERSITY OF ADELAIDE. HE EXPLAINS HOW THE NEW STRATEGIC PLAN AIMS TO RECAPTURE THE UNIVERSITY'S POSITION AT THE FOREFRONT OF INTERNATIONAL EDUCATION.

In most organisations, CEOs soon learn there is a common core of rather mundane skills they need – setting objectives, leading staff, engaging stakeholders, managing resources ... But in universities there is a more powerful quality vice-chancellors can develop as a core of their work, one quite different from the skills generic to business leadership. In place of satisfying shareholders with profits they can share, a vice-chancellor can inspire people with something they can believe in – the university's noble history, character and values.

Put simply, the successful university vice-chancellor becomes a teller of tales. By reaching into stories of the lives of the university's founders, its early ambitions, major successes and aspirations, they can construct a heroic narrative, which can then be told again and again in speeches, presentations and publications.

At its most inspirational, this narrative can ennoble the strategic plan, lift staff morale, enliven marketing materials, animate representations to government and stimulate the case for philanthropic support. It can set staff aflame, animate students and reawaken alumni passion in a way the advertising of a commercial product seldom does with a market.

At the University of Adelaide when I arrived in mid 2012, the preoccupation was with modernising the campus, expanding student load and lifting research performance: 'Becoming a Great Research University' had been the title of the previous five-year Strategic Plan. Worthy ambition, but it seemed to me this near-140-year-old institution, the city's original university, had forgotten its history.

Dipping into the University archives, I was therefore stunned to learn that in the 1870s the University of Adelaide had been at the forefront of international higher education. It had been 40 years ahead of other English-speaking universities in admitting women to degrees, years before other British Commonwealth universities it had abandoned the ancient classical curriculum of Oxford for laboratory sciences, and it had produced two Nobel prizewinners in its first four decades. What could possibly have been the cause of such rapid success? Poring over the history, eventually it became clear: the University of Adelaide had benefited from a visionary founder, its first Vice-Chancellor, one of Adelaide's pioneers, Dr Augustus Short.

The more I read the more excited I became: here was an heroic narrative of the first order. A brilliant Oxford don, Short had taught at Christ Church College in the 1830s, producing from his students a staggering succession of world leaders: Governors-General of India and Canada, British parliamentarians and, most notably, W.E. Gladstone, the longest serving British Prime Minister. Coming to Australia as the first Anglican Bishop of Adelaide in 1847, he campaigned for 20 years to establish a university, finally pouncing on a Scottish donor,

Sir Thomas Elder, who was intent on doing no more than assisting a religious college to secure the founding endowment for an innovative, secular university. Once in place, Short recruited professors internationally, threw open scholarship enrolment to any citizen of the colony, and pursued the latest in curricular innovation. Happily, his enlightened and humane vision for the campus reflected the progressive values of South Australia itself – the first Australian settlement founded as a free community rather than as a penal colony. No wonder the University of Adelaide came so quickly to prominence. "There were giants in the lands in those days," wrote Gladstone of Short on his death. Clearly, I had found the hero for my narrative.

In discussing our new Strategic Plan, therefore, I took the campus' wider community back to the vision of the founder, traced his shadow in the present shape of the University of Adelaide program and character, and challenged staff to recapture the boldness of the University's dazzling first era. The new Plan, called *Beacon of Enlightenment* after the University's motto *Sub Cruce Lumen* (Light under the [Southern] Cross), sets out to capture a sense of the light of learning, shining against the dark southern skies, illuminating new discoveries, and bringing enlightenment to southern Australia. The plan promises an end to continual growth, and pledges a return to the focus on individual discovery and small-group learning which characterised the Humboldtian model Short had espoused: every student, in every year, of every program would experience "small group discovery".

Far from making us the same as other research universities, the narrative made plain we were completely unique. Staff are now abuzz, workshopping how to make the plan operational for students entering in 2014. We have set about animating the alumni with the same sense of their alma mater's heritage and excitement, and we are now confidently plotting ways of recapturing the focused international research distinction we once had in abundance.

And for the wider community, we will soon refresh the look and feel of our published materials in the light of its story, inviting potential students to come and seek the light of discovery and innovative learning Adelaide has always stood for. Short's portrait and his vision will permeate our new web site, our print materials and advertising campaign.

So a vice-chancellor may be many generic things – an organisational leader, a strategic planner and a resource manager. But the vice-chancellor also has an opportunity distinctive to universities: to become a storyteller, a constant advocate of belief in the institution's noble past, its aspirational present and its inspiring future. ♥

“...a vice-chancellor can inspire people with something they can believe in – the university's noble history, character and values.”

LEFT Vice-Chancellor and President Professor Warren Bebbington.

CURING CHRONIC PAIN

UNIVERSITY OF ADELAIDE RESEARCHERS UNRAVEL MYSTERIES OF THE PAIN PUZZLE

A unique partnership between two of the University of Adelaide's senior medical researchers is edging closer to finding new treatments for chronic pain, one of the most common yet little understood conditions.

In a radical departure from accepted medical thinking, Professor Paul Rolan and Dr Mark Hutchinson have combined their different specialist skills to prove a link between pain and the brain's immune system.

"It's a novel approach – and that usually means it's either crackpot or groundbreaking," said Professor Rolan.

"But we're being viewed less and less as renegades because our research is strongly indicating that it's the latter. Over the past four years we've had very few blind alleys."

Their work could eventually result in blood tests for the cause of chronic pain and new treatment regimes for thousands of Australians and millions worldwide who suffer from the debilitating condition.

Chronic pain is the fourth most prevalent health issue in Australia and has the single biggest societal impact.

"It is so common that it's embarrassing how little we do actually know about it," Professor Rolan said.

The path to a new approach began in 2008 after Dr Hutchinson, an award-winning pharmacology scientist, returned from the US where he had been exploring the effect of pain-relieving drugs, such as morphine and codeine, on immune cell function.

He had previously held a "vibrant conversation" with an initially sceptical Professor Rolan on his ideas about the connection between chronic pain and glia – immune cells which support the brain's nervous system.

"All existing drug treatments are neuron-related and target the nerves or wiring of the pain system," said Dr Hutchinson. "But in chronic pain the treatment is hit and miss and there are a high range of side effects.

"Our research demonstrates that the immune system may be the cause and that for patients with the right set of circumstances, pain medication actually makes their condition worse."

Their work provides possible answers to some previously baffling yet common medical conditions – pain in limbs which have been amputated and ongoing pain in injured areas of the body which appear to have fully healed. Conversely, soldiers and some accident victims can suffer horrendous injuries yet feel no pain at all until later.

The partnership between Professor Rolan and Dr Hutchinson has been so effective because of their related but quite different skill sets.

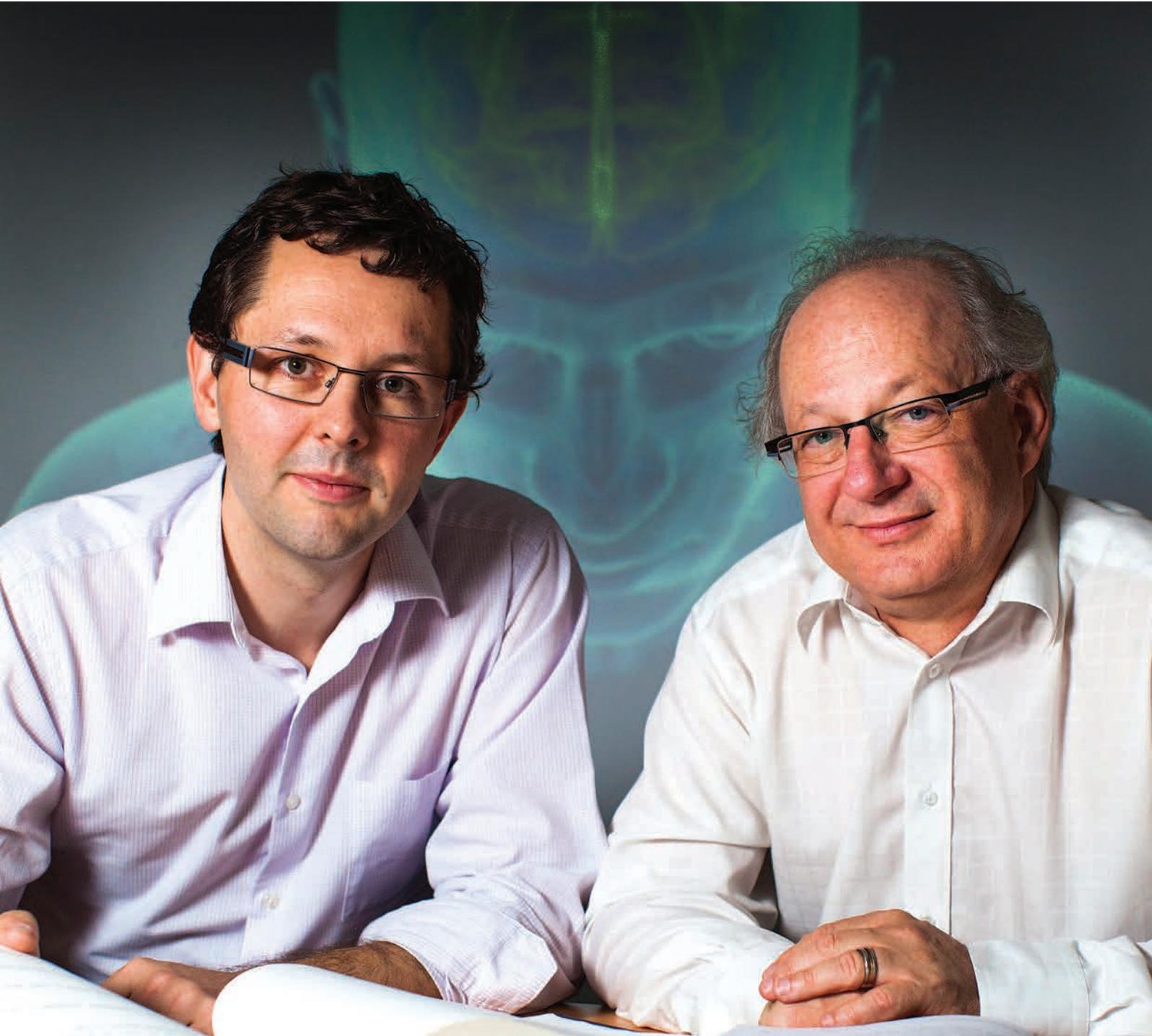
Professor Rolan trained in medicine and then clinical pharmacology at the University of Adelaide before embarking on a career in the pharmaceutical industry in the UK, which included developing a new treatment for headache. Since 2005 he has been Professor of Clinical Pharmacology at the University of Adelaide and a Senior Consultant in the Pain Management Unit at Royal Adelaide Hospital.

After graduating at the University of Adelaide Dr Hutchinson undertook postdoctoral training at the world-renowned Centre for Neuroscience at the University of Colorado. He returned to Adelaide and started his own laboratory – the Neuroimmunopharmacology Lab – in the University of Adelaide's School of Medical Sciences physiology discipline.

"Mark tests our ideas on animals in the laboratory but without there being a clinical way of assessing these findings it's not going to work," said Professor Rolan. "The synergies between the two of us are providing a completely new approach."

With valuable support from their PhD students Professor Rolan and Dr Hutchinson have taken giant strides towards proving their theory that chronic pain is immune-related and the result of a genetic predisposition.

"The synergies between the two of us are providing a completely new approach."



Initial proof was demonstrated in the laboratory by transplanting immune cells between rats. The tests showed that the different pain responses of the rats was also transplanted.

But could this be demonstrated in humans?

The ‘eureka’ moment occurred when capsaicin – the fiery compound in chillies – was placed under the skin of volunteers. A subtle immune stimulant in the form of endotoxin was then given intravenously and it showed that when the immune system was switched it made the volunteers more sensitive to pain.

Several other exciting and related lines of research are now being pursued by the scientists.

They are looking at a diagnostic blood test to identify people with an over-sensitive immune reaction to pain and are assessing existing medications to see if they can be used to calm the system down.

Teams are also testing the exciting possibility of magnetically rewiring the chronic pain-affected brain – safely and drug-free.

Another breakthrough involves the role of codeine and morphine-like medications which, in chronic headache sufferers, have been shown to actually activate the glia immune system to create more pain.

And women who complain of being more sensitive to pain during their monthly cycle might now have an explanation. An increase in the female hormone oestrogen is believed to be turning on the immune pain cells.

The Rolan and Hutchinson team is thinking big.

“Current treatments are not pain modifying – if you stop taking the pills the pain is still there,” said Professor Rolan. “What we want to do is not just treat chronic pain but to prevent and cure it.” ♥

ABOVE Research partners Dr Mark Hutchinson (left) and Professor Paul Rolan.

SAVING LIVES WITH SMART ENGINEERING

ENGINEERING STUDENTS AT THE UNIVERSITY OF ADELAIDE ARE APPLYING THEIR EXPERTISE AND CREATIVITY TO PRODUCE **REAL-LIFE HUMANITARIAN SOLUTIONS** TO HELP COMMUNITIES IN DEVELOPING COUNTRIES.

Millions of people die every year because they lack access to essential services and resources which many Australian communities take for granted.

Schools within the University of Adelaide's Faculty of Engineering, Computer and Mathematical Sciences have linked with not-for-profit humanitarian organisation Engineers Without Borders (EWB) on various projects designed to improve access to basic human needs such as clean water, sanitation and hygiene.

The University is now planning to extend opportunities for students by establishing a humanitarian engineering elective course next year which will be available across disciplines, including architecture and agriculture.

Meanwhile, final-year civil engineering students Robbie Goedecke and Nicholas Grear are also working on increasing humanitarian support by establishing an EWB student chapter at the University.

"Not only is it a great cause and an opportunity to use your skills to do something worthwhile to benefit others, but it can also lead to job opportunities," said Mr Goedecke. "Engineering graduates who become involved in community development projects find they have an improved chance of gaining employment, particularly in similar areas overseas."

The number of humanitarian projects at the University is on the increase.



“Not only is it a great cause and an opportunity to use your skills to do something worthwhile to benefit others, but it can also lead to job opportunities.”

Last year five first-year chemical engineering students were selected as the South Australian finalist team in the EWB Challenge, a national competition for sustainable cross-cultural development initiatives.

The challenge was held in partnership with Habitat for Humanity Vietnam with teams working on projects for the Anh Minh district on the Mekong Delta.

The University of Adelaide team designed a cheap but effective biodigester which can be used to turn vegetable matter into biogas for fuel in kitchens. Their design involved using a flexible polyethylene bag which was low cost and low maintenance.

Since 2011, under the supervision of Dr Paul Medwell and Dr Cristian Birzer, mechanical engineering students have been applying their skills to design a safe and efficient dung burning stove suitable for Nepalese conditions and adaptable for other parts of the world.

An estimated three billion people – nearly half the world’s population – use poor performing stoves indoors for cooking and to keep warm. As a result, about 1.6 million die every year because of the noxious fumes they breathe. For children under five it is the biggest cause of death.

Because families in the Nepalese Terai region burn dung, this has been the material of choice for the Adelaide students who have found a plentiful supply at Monarto Zoo.

Dr Birzer, a lecturer in the School of Mechanical Engineering, said the students have worked with all types of dung from giraffes, zebras and many other animals to test for noxious substances and their calorific value for efficient burning.

“It’s a bit revolting because to prepare the dung you have to wash out the nutrients and shape it into little cakes,” said Dr Birzer.

“These are students who have been involved in rocket science and robotics and all those other high tech areas. But they love being involved in this project – I was surprised how excited they actually are. They had a mass production system going.”

The new team for this year is commissioning a furnace to accurately assess combustion for various fuels in order to improve their stove design.

Their idea involves top-lit, up-draft (TLUD) technology which provides more complete combustion with less emissions than conventional bottom-lit stoves.

Importantly, the stoves can be made by householders from cheap, commonly available materials such as used product cans.

“The most difficult thing is punching the holes in the can and that can be done with a hammer and hole punch,” said Dr Birzer.

The design was placed online and has attracted interest from around the world. Links have been established with the IBEKA Foundation in Indonesia, the International Young Professionals Foundation which does community work in Africa and the San Diego Zoo which is interested in work for Vietnam.

While deaths from stove smoke are high, nearly twice as many people die in developing countries from drinking contaminated water – an estimated three million every year.

This is another challenge being tackled by the mechanical engineering students.

In a project just started, they are investigating designs for portable and cheap water treatment systems using either solar thermal power or solar UV power to treat the bacteria.

The preparatory work includes determining which part of the world they want to help, whether it’s river or rain water and the types of hazards. ♣

ABOVE Dr Cristian Birzer and mechanical engineering student Harrison Wallace demonstrate the dung-burning stove.

FACING PAGE Dr Cristian Birzer, lecturer in the School of Mechanical Engineering.

GROWTH IN AGRICULTURAL SCIENCES

GOOD NEWS FOR THE RURAL SECTOR AS STUDENT NUMBERS INCREASE

Rural Australia has played a critical part in the nation's economic success since the early days of European settlement.

But its underpinning role depends on a highly skilled and motivated workforce – and that has been under threat for some years with the exodus of young people from regional centres. Now the University of Adelaide is helping to address the worrying skills shortage through a concerted profile-raising program by the School of Agriculture, Food and Wine.

School leavers are being made aware of the broad range of career options in the rural sciences and an increasing number are jumping at the opportunity.

The initiative is reflected in a 50 per cent increase this year in both first preference applications and offers for the Bachelor of Agricultural Sciences degree. This has translated into a significant rise in enrolments from about 40 over the past three years to 53 in 2013.

"These are very good signs and it's good news for the local agriculture sector, which is crying out for skilled graduates, and great news for our rural communities," said Professor Eileen Scott, Deputy Head of the School of Agriculture, Food and Wine.

Importantly, the course is attracting an equal number of rural and urban students lured by the chance of work in a dynamic and rapidly changing industry.

A survey of the new students revealed that 39 per cent were from a non-farming background, 22 per cent were inspired to study agricultural science by an agriculture teacher at high school, and 61 per cent chose the subject because they are passionate about agriculture and what it can provide to society.

Graduates qualify for roles across the agricultural value chain in areas such as consulting, banks, rural press, seed production, research, chemical manufacturers and re-sellers and in government agencies and local councils.

And they find their skills are in extremely high demand.

"Today agriculture is very different from what it was 10 years ago and it's changing all the time as farms get bigger and production methods improve," said School Head, Professor Mike Wilkinson.

"Keeping a pulse on the latest developments is a key part of the University of Adelaide's approach and it's a two-way thing – we get a needs pull from industry and we feed back to industry. It's not static.

"As part of this process we make sure our graduates are flexible, nimble and open-minded to deal with changes and that they have the ability to adapt for the future."

A number of factors are believed to have assisted the large increase in enrolments which Professor Wilkinson said had been achieved without any lowering of the entry standards.

The School has been very proactive with a strong presence at the Royal Adelaide Show and rural field days, and campus activity has increased with work experience for school students supported by visits to schools.

Industry has also been attempting to address the skills shortage through initiatives such as Australian Year of the Farmer in 2012.

"There is also a heightened awareness among students of the need to look at new ways of feeding the world in coming years," said Professor Scott. "Many young people are interested in being able to make a difference in global issues."

This trend is also reflected in growing interest in the School's Bachelor of Food and Nutrition Science degree which has seen enrolments increase from as low as 17 in 2009 to 38 this year.

The School's other Bachelor course, Viticulture and Oenology, also attracts about 30 students every year and is widely recognised as one of the best wine training degrees in the world.

"The close link between wine and science has been the key to the global success of our industry, that's undisputed, and the international competition looks to our campus here at Waite," said Professor Wilkinson.

"Our graduates are snapped up and can be found anywhere they make wine." ♥

RIGHT Professor Eileen Scott, Deputy Head of the School of Agriculture, Food and Wine, in the Plant Accelerator.

"We make sure our graduates are flexible, nimble and open-minded to deal with changes and that they have the ability to adapt for the future."



HISTORY REPEATS AT URRBRAE HOUSE

PETER WAITE DECIDED TO BEQUEATH THE HISTORIC URRBRAE HOUSE AND ESTATE TO THE UNIVERSITY OF ADELAIDE 100 YEARS AGO IN AN EXTRAORDINARY ACT OF GENEROSITY. HIS LEGACY CREATED ONE OF AUSTRALIA'S MOST CELEBRATED AGRICULTURAL SCIENCE RESEARCH AND TEACHING CENTRES WHICH IS NOW UNDERGOING A \$50 MILLION EXPANSION THANKS TO SUPPORT FROM OTHER BENEFACTORS.

Urrbrae House library:

(l-r) Manager Lynette Zeitz in period costume with Co-ordinator Amanda Jackson and volunteers Lyn Mackay and Vicki Cheshire.

In 1913 Peter Waite had a vision of creating a research and education centre in agricultural sciences for the long-term benefit of Australian farmers.

The Scottish migrant had carved a fortune out of the land as a pastoralist after arriving in South Australia in 1859 when he was 25. But by 1913 he felt Australian agriculture was stagnating and would struggle to remain internationally competitive without scientific input.

With the support of his wife Matilda and children, he decided to leave his impressive mansion Urrbrae House and farming estate to the University of Adelaide for the creation of an agricultural sciences campus.

Fearing that the 53 hectare estate might not be large enough, he more than doubled the size of his bequest by purchasing an additional 66 hectares of land from the adjoining Claremont and Netherby estates.

For someone who had never attended university, it was an inspiring move.

But Peter was a keen innovator and he loved science. A trained ironmonger, he succeeded as a farmer by leading in areas such as land rotation, fencing, building dams and vermin eradication.

He personally indulged his love of new technology by having the second registered automobile in South Australia and equipping Urrbrae House with Australia's first domestic refrigeration plant.

The two-storey bluestone mansion was completed by the Waites in 1891 on the site of a single-storey house built by another Scotsman, Robert Macgeorge, who named the estate after his former parish 'Urr' and 'brae', which denotes a hillside near a creek.

The estate was handed over to the University in 1923, the year after Peter and Matilda Waite died.

Turning what was essentially sheep paddocks into a centre of agricultural science then fell to inaugural Director Professor Arnold Richardson, a charismatic local cereal breeder, who worked in close partnership with accomplished English soil scientist Professor James Prescott.

The new campus was named the Waite Agricultural Research Institute (WARI) and modelled on the successful Rothamsted Experimental Station in England.



KEY DATES

- 1834 – Peter Waite born in Kirkcaldy, Scotland
- 1859 – Joins his brother James in South Australia
- 1877 – Peter and his family move into the old Urrbrae House
- 1891 – The new Urrbrae House is completed
- 1913 – Peter indicates his intention to leave his estate to the University of Adelaide and land to the State Government for the creation of an agricultural high school
- 1915 – Purchases land in adjoining Claremont and Netherby estates for the University
- 1922 – Peter and Matilda Waite die aged 88 and 86 respectively
- 1923 – Daughters Lily and Eva Waite hand over the estate to the University of Adelaide
- 1924 – Waite Agricultural Research Institute created
- 1932 – Urrbrae Agricultural High School created
- 1955 – Australian Wine Research Institute established at the Waite
- 1991 – The University of Adelaide, including the Waite Agricultural Research Institute, and Roseworthy Agricultural College merge
- 1991 – Urrbrae House opened to the public
- 1992 – Co-location agreement between the University, State Government and CSIRO
- 2013 – \$50 million investment in Waite and Roseworthy campuses

“Peter demonstrated incredible foresight in so many ways, including his stipulation that part of the estate be protected for public recreation which today is the Waite Arboretum,” said Urrbrae House Manager and historian Lynette Zeitz.

“He was also spot on with the amount of land the University would need for the campus with new buildings still being added.”

Ms Zeitz has written a new history of the Waite Campus since 1975 following on from VA Edgeloe’s book, *The Waite Agricultural Research Institute: The First Fifty Years 1924-1974*. The new book will be published at the end of the year.

Today the Waite Campus is a thriving centre of agricultural research and education excellence and Urrbrae House stands on the edge of the campus as a lasting symbol of Peter Waite’s vision.

For the first 50 years as part of the University the house was home to the Waite Institute directors. In the 1960s the ballroom became a student refectory and the dining room was used by staff.



ABOVE Peter Waite (left) in front of Urrbrae House stables with son David, granddaughter Dorothy and daughter Lily.



Today Urrbrae House is an accredited museum open to the public three days a week. Ms Zeitz runs the building as an education, cultural and conference centre for the benefit of the campus, community and schools.

Each year up to 800 primary school children take part in a free interactive history program at the house which allows them to experience life in the 1890s. The program operates with the help of volunteers who recreate characters such as Peter and Matilda Waite, and their household staff.

In a separate 'Plants as Food' program run with the Office for Future Students, children learn about being plant scientists in the past and see the amazing new technologies being used on the campus today.

The campus itself has also evolved and grown significantly. In 1991 the University of Adelaide, including the Waite Campus, merged with Roseworthy Agricultural College and the following year a co-location agreement between the University, State Government and CSIRO revitalised the campus and resulted in agricultural scientists from different institutions working side by side.

What hasn't changed over the years is the influence and key role played by benefactors.

Peter Waite proved an inspiration for generations of others, including his daughters, Lily and Eva, who funded the University of Adelaide footbridge over the River Torrens.

In the 1920s John Melrose and the family of John Darling made substantial donations to create new laboratory buildings at Waite Campus, and in March this year the University announced its biggest ever investment at the Waite and Roseworthy Campuses using \$50 million in funds from gifts by JAT Mortlock and JS Davies.

"Not since Peter Waite a century ago have we seen an investment even close to this magnitude for agricultural science research in this country," said Vice-Chancellor and President Professor Warren Bebbington.

"These initiatives will make a major contribution to international research in agriculture and animal production, and confirm Adelaide as the leading centre for animal and agricultural research in Australia.

"I'm certain Peter Waite would approve." ♥

ABOVE & RIGHT Volunteers help maintain the beautiful gardens of Urrbrae House.





MAKING THE MOST OF INSPIRATIONAL LEADERS

A career-defining experience occurred for a young Alastair Burt during his undergraduate medical training at the University of Glasgow. He fell under the guidance of the inspirational British medical researcher and leader Professor Sir Roddy MacSween.

Not only did the relationship nudge the University of Adelaide's new Dean of Medicine into a more research-focused clinical path, but it triggered a life-long belief in the importance of mentors.

"It struck me that role models and mentors can have a remarkable influence on some undergraduates and can shape their careers," Professor Burt said.

But in subsequent positions he discovered that some institutions have a tendency to keep their best research staff away from students.

"It's been one of my passions over the past few years to reverse that trend and ensure that undergraduates have exposure to excellence in research and are motivated by those figures."

Professor Burt was leaning towards a career in surgery before encountering Sir Roddy and the discovery that, for him, medical science had the potential to be more intellectually stimulating.

He undertook a two-year science degree in addition to medicine and pursued an interest in liver disease with a post-graduate qualification in histopathology, the microscopic examination of disease in tissue.

After graduating and an initial career in Glasgow, Professor Burt moved to the University of Newcastle in 1989 where he progressed through various senior positions to become Professor of Pathology and Dean of Clinical Medicine.

Throughout his professional life he has devoted time to growing the next generation of clinical academics by encouraging involvement in research, teaching and clinical practice. It is a direction he intends to strongly advocate among medical students in his capacity as Head of the School of Medicine at Adelaide.

"I've been very impressed with the undergraduate medical program but I do want to see a greater research ethos and a strong focus on how we shape our courses to make them fit-for-purpose in 10 to 15 years down the line," he said.

"A considerable amount can be done without a major overhaul by drip feeding research into the teaching program. Undergraduates should be gradually exposed to our research leaders who may not otherwise have the opportunity of explaining the importance, relevance and excitement of what they are doing.

"This is very much in alignment with the University of Adelaide's *Beacon of Enlightenment* agenda which is about recognising and promoting excellence in different pathways, not just research."

To support his efforts Professor Burt will also be encouraging the development of a specific research-focused academic medical society for undergraduates.

"Our undergraduates have a very effective body with the Adelaide Medical Students' Society – which includes elements of academic interest and direction – but I think I can help them develop this further," he said.

During his time in the UK he acted as an advisor to other universities on clinical academic training and contributed to the National Institute for Health Research.

Professor Burt said he had no intention of easing up on his own personal research in his new role.

He is an international expert on liver scarring and how cirrhosis develops from alcohol abuse and viruses.

His most recent work in the laboratory has involved looking for new treatments for liver fibrosis and ways to interfere with mechanisms that trigger cirrhosis.

A particular interest is the hot topic of so-called fatty liver disease related to obesity and diabetes which is very much on the increase in many countries, including Australia.

Professor Burt continues to head a European consortium which is going back to the basics and redefining what is meant by the different stages of fatty liver disease.

"The benefit of the internet means I can do that work remotely and access material on liver biopsies which are being generated from a large cohort of patients from all around Europe," he said.

Professor Burt has already held fruitful discussions with hepatologists and gastroenterologists at the University of Adelaide to seek their involvement in the research.

His extensive experience of liver disease has seen him edit the last two editions of the *Pathology of the Liver* – the international 'bible' on how to interpret liver biopsies – originally authored by former mentor and long-time friend, Sir Roddy. It's a role which has brought him into close contact with other leaders in the field around the world.

Remaining clinically active is a priority and he intends on using his range of skills working with clinicians in the wards in helping to diagnose liver disease.

"I believe very strongly that it is important for a Dean of a medical school to continue to develop themselves in their own clinical academic field," he said.

Another important area for Professor Burt is nurturing the relationship between the University of Adelaide and the healthcare sector.

"I'm really excited to have come at a time when there are lots of changes in terms of capital projects but also changes in the structure of the health services in South Australia.

"I hope to play a key role in capitalising on the opportunities these changes bring and will work very hard on ensuring that the relationship between the University of Adelaide and healthcare partners is as strong as possible." ♥

"I believe very strongly that it is important for a Dean of a medical school to continue to develop themselves in their own clinical academic field."

LEFT Professor Alastair Burt, Dean of Medicine.

IMPROVING END-OF-LIFE CARE

A GROWING NUMBER OF AUSTRALIANS, PARTICULARLY OLDER PEOPLE, ARE BEING DIAGNOSED WITH **CHRONIC DISEASES** SUCH AS DIABETES, RENAL FAILURE, ARTHRITIS, PARKINSON'S AND MULTIPLE SCLEROSIS. MANY OF THESE PEOPLE SUFFER FROM MORE THAN ONE SUCH DISEASE. TERESA BURGESS ARGUES THAT **NOT ENOUGH IS BEING DONE TO PROVIDE END-OF-LIFE CARE** FOR THESE PATIENTS.

Teresa Burgess, a Senior Lecturer and PhD student in the Discipline of Public Health, acknowledges the input of Professor Annette Braunack-Mayer, Associate Professor Gregory Crawford and Professor Justin Beilby in the preparation of this article.

In Australia and overseas considerable effort is being made to implement systematic processes to prevent and manage chronic disease. The major focus is on care planning, health education, chronic disease self-management and regular review.

While treatment for these diseases has improved significantly over the past decade, the fact remains that there is still no cure. We can help these people live longer and have a better quality of life but at some point the disease will progress and care needs will change as they approach the end of their life.

There is no clear transition to end-of-life, but rather a slow period of decline. Most people experience periods where their disease is quite stable, interspersed with serious exacerbations which often require hospitalisation and may lead to death.

Those with advanced chronic disease will experience progressive functional decline, poor quality of life and increasing dependency on both formal and informal caregivers, as well as the health system. At this time, the disease must be managed and supportive care given to effectively control distressing symptoms and emotional, spiritual and psychological support provided for both the patient and their family.

If appropriate end-of-life care is not provided, there are significant and costly implications. These can include:

- › unnecessary hospitalisations;
- › prolonged intensive interventions in acute care settings;
- › people dying in intensive care rather than their preferred place of death;
- › poor symptom management;
- › little opportunity for patients and their families to discuss issues around death and dying; and
- › increased stress on staff not trained in the provision of palliative care.

“All the service people talk about how they want to leave patients at home as long as they can. I reckon it’s lip service because if they were really serious about that, they’d do something to help you.”

64-year-old woman with a chronic neurological disease

In Australia, the need for end-of-life care for people with advanced chronic disease has been addressed by recommending referral to a palliative care service or closer links between specialist palliative care services and other services and general practice. This approach assumes that palliative care can provide the most appropriate care for people with a chronic disease.

However, palliative care was originally developed to provide support for people dying with cancer – people who have a relatively predictable deterioration that requires intensive support over a fairly short period of time. A referral to specialist palliative care can mean that patients are not able to continue access to active disease management, as health funding mechanisms may differ.

There are currently few models of care which combine active management of chronic disease and a palliative approach. Because there is no clear transition from living with a chronic disease to entering an end-of-life period, clinicians can be unsure of when to introduce palliative strategies. Indeed there is no agreement on what end of life means – in the UK it is the last 12 months of life while in Australia it is understood to be the last weeks.

There is also little understanding of what a palliative approach means outside specialist palliative care services, with many people believing it is only for the terminal phase of a disease. Another reason that end-of-life care for people with chronic disease has not been a priority is that many health professionals still view death as a ‘defeat’.

The focus is more on medical interventions throughout the disease rather than recognising the importance of discussions about treatment options, prognosis and patient preference as the disease progresses. These attitudes may reflect the attitudes of the community more generally where there is a societal taboo about discussing death, dying and bereavement.

General practice has been suggested in Australia as the most appropriate place for the co-ordination of end-of-life care. In the UK, systems such as the Gold Standards Framework allow health professionals to support patients as they approach the end of life. This framework is co-ordinated through primary care, but no infrastructure currently exists in Australia to support such a process.

General practice is funded at a national level, while hospitals and community health services are state funded – and joint funding arrangements can be problematic. While a number of GPs do successfully provide palliative care, they do not receive the appropriate remuneration to meet the key needs of such patients. These include lengthy conversations required for advance care planning, organising and co-ordinating care, organising or providing ongoing psycho-social care and home visiting.

To date, there has been little consideration of how the current health care system can accommodate, integrate and implement the strategies required for quality end-of-life care for people with chronic disease. Palliative care services, in the absence of a clear policy framework and appropriate funding, have been attempting to support people with chronic disease, but they will be unable to continue to do so due to the growing numbers of people requiring care and the differing needs of people with advanced chronic disease.

Care must be patient-centred based on patient needs and symptoms rather than prognosis or age, allowing for a symptom and needs-based approach to be introduced much earlier in these chronic conditions. A priority of government should be to promote discussions on death, dying and bereavement similar to international programs such as Dying Matters in the UK and The Conversation Project in the US.

End-of-life care must become part of routine care in both chronic disease management and end-of-life care services. Specialist palliative care services can play a vital role in ensuring access to best practice end-of-life care for people with advanced chronic disease through ongoing roles in education and consultation, as well as provision of expert care for people with particularly complex conditions. The term end-of-life care rather than palliative care could help change people’s attitudes to the skills and training required to meet the needs of people with chronic disease as they approach the end of their life. ♥

MAKING OUR ROADS SAFER

Everyone knows that high speeds kill people on our roads. But no-one realised the extreme danger posed by even small increases in travel speed until the Centre for Automotive Safety Research (CASR) came up with the proof.

It's just one area of world-class research conducted over the past 40 years by the University of Adelaide centre which has helped prevent numerous injuries and saved countless lives.

Findings by the multidisciplinary centre have had a strong influence on road safety policy, car designs and road layouts since it began work as the Road Accident Research Unit in 1973.

The Centre's initial focus was on understanding more about the specific mechanisms of injury in road traffic crashes. Researchers conducted one of the world's first in-depth accident studies, attending the scenes of many hundreds of crashes.

The work revealed for the first time that adult pedestrians are run under not run over.

"It showed that the shape and impact properties of the car strongly influence the resulting injuries," said CASR Director Professor Mary Lydon.

"This ultimately led to the realisation that there were ways of improving design to protect vulnerable road users. CASR's ongoing research program in this area is unique worldwide in its scope and attention to detail."

Today the research is supported by a new purpose-built Vehicle Safety Laboratory in Kent Town – the only facility of its kind in Australia.

The laboratory focuses on pedestrian crash impacts and is the official testing facility for the pedestrian component of the Australasian New Car Assessment Program (ANCAP).

Research on pedestrian protection involves computer modelling of the motion of the pedestrian on impact, through to reconstructing head and leg impacts with the vehicle in the laboratory.

These insights are supported by in-depth crash analysis at the scene of accidents. CASR is the only centre in Australia and one of only a handful in the world to conduct such investigations.

Results from the research are crucial in helping manufacturers produce more pedestrian-friendly vehicles and improved road design and speed control.

The centre's main customers are road authorities and compulsory third-party insurers and it receives ongoing support from South Australia's Motor Accident Commission and Department of Planning, Transport and Infrastructure.

"Providing policy support for transport regulators is a key area because changing legislation is difficult and costly, so policymakers need to know they will get some return for their investment," said Professor Lydon.

Improving levels of vehicle safety is not only about design and technology, but also ensuring that as many vehicles on the road as possible are equipped with such technology.

Consumer programs like ANCAP are very important, but so are influential buyers of large fleets. Their strong purchasing power ensures that if they want a particular safety feature, vehicle manufacturers listen.

"New safety technologies invariably start in the top models of expensive luxury cars and it can take many years before they start appearing in standard vehicles," said Professor Lydon.

"But as soon as buyers for the big fleets demand a particular feature it doesn't take long to appear. Together with the ANCAP program, it's an effective way of making sure outcomes from our research into new vehicle safety technologies are picked up by manufacturers."

An area where CASR has had significant influence over the past 10 years is the relationship between travel speed and crash risk. The work has prompted changes in speed limits and resulted in media campaigns such as Creepers produced by the South Australian Government.



The CASR research showed that, in urban areas, the risk of an injury crash doubles with each 5 km increase above the 60 km per hour speed limit.

The accuracy of CASR's predictions were soon proven. After the state lowered the default urban speed limit from 60 km to 50 km the number of injury crashes dropped by more than 200 a year and pedestrian accidents fell by over 30 per cent.

Limits have also been lowered from 110 km per hour to 100 km in rural areas after CASR showed a 30 per cent fall in accidents with just a 5 km per hour reduction in speed.

"There's a lot of resistance to reducing speed limits, particularly in rural areas, but support increases when you can prove to the community that lives will definitely be saved," Professor Lydon said.

The work of CASR is also helping road engineers to rethink the way that our roadsides are designed, with ramifications for the roadside environment.

Over many years there has been a push to clear trees and other objects from the sides of roads to limit impacts when vehicles run off the road.

But extensive simulation by the centre is demonstrating that safety outcomes are just as good if not better with new barrier technology.

"This is still a work in progress but it has enormous implications for road authorities and communities because people don't like to see trees removed."

Professor Lydon joined CASR five years ago after taking over from Professor Jack McLean who had built the centre's international reputation. Her background in accident research with road authorities and the Australian Road Research Board left her highly qualified to take over leadership of the research centre.

Most recently this includes providing key analytical support for the "next big thing" in road safety – vehicle crash prevention technologies.

"Up until now, vehicle safety technology has been focused largely on injury prevention – vehicle crush, seat belts, interior design, airbags and so on," Professor Lydon said.

"Now the focus is moving more to avoiding the crash in the first place and there's a whole raft of technologies coming to market."

Technologies of the future include everything from active cruise control that keep cars at a safe distance from each other, systems that warn of pending danger and systems that can autonomously brake and steer the vehicle to avoid danger. ♥

ABOVE CASR Director Professor Mary Lydon at the new Vehicle Safety Laboratory.

"There's a lot of resistance to reducing speed limits, particularly in rural areas, but support increases when you can prove to the community that lives will definitely be saved."

A CHAMPION OF THE LAND

THE UNIVERSITY OF ADELAIDE'S NEW DEPUTY CHANCELLOR DI DAVIDSON HAS MOULDED A PROFESSIONAL LIFE OUT OF HER ENDURING PASSIONS – THE LAND, PEOPLE AND EDUCATION. ALL THREE CONTINUE TO BENEFIT AS A RESULT.

Di Davidson has the land in her blood. She was born in the tiny district of Angas Plains near Langhorne Creek, close to the Lower Lakes and Coorong, where the Davidson family settled back in 1850.

For the past 40 years she has been championing the cause of rural communities and using her skills as an agricultural scientist and communicator to help them capitalise on the good times and survive the bad.

“Having grown up in a rural community and lived and worked with the people, I’ve not only learnt to understand their values but to appreciate the real fabric of the Australian landscape,” Ms Davidson said.

A graduate of the University’s Waite Agricultural Research Institute, Ms Davidson is one of Australia’s leading agriculture, horticulture and viticulture consultants, specialising in water and soil management.

She oversees her own properties at Langhorne Creek and in the Adelaide Hills and provides advice and support for countless others through her consulting company Davidson Viticulture.

Her expertise was in huge demand during the drought when grapegrowers in badly hit regions were struggling to save not only their vines but their livelihoods.

For the past four years Ms Davidson has been at the centre of the volatile national water management debate in her role as a member of the Murray-Darling Basin Authority.

Having worked from St George in central Queensland to the Lower Lakes in South Australia – and just about everywhere in between – she has an in-depth knowledge of the communities and their issues. This has been invaluable in helping to finalise the basin plan.

“It’s been a very, very challenging role to say the least, frustratingly difficult at times and quite upsetting in the way people felt they had been targeted,” she said. “But it’s also been a privilege to work it through because this is a precious, precious resource and we now have seven years to get the environmental flows working.”



Throughout a busy career, Ms Davidson has maintained an intensive interest in learning and has used her wealth of experience to give back to the education system.

After graduating from the University of Adelaide she gained a Master of Science from James Cook University where she took her first job in the botany department. She also has a Graduate Diploma in Business Administration from the old SA Institute of Technology.

For 30 years she has been a guest lecturer at Waite Campus and was chair of the Seymour College Board for six years where she boarded as a young girl. She is also a director of Horticulture Australia Limited which manages R&D funding for the nation's horticultural sector.

Ms Davidson has contributed to hundreds of articles and presentations to industry journals, workshops and seminars and is also the author of two books – *A Guide to Growing Winegrapes in Australia* and *The Business of Vineyards*. She is a Fellow of the Australian Academy of Technological Sciences and a Fellow of the Australian Institute of Agriculture, Science and Technology.

Her role on the University of Adelaide Council began five years ago and her appointment as Deputy Chancellor coincides with the \$50 million expansion of the University's agricultural science research and teaching centres at the Roseworthy and Waite campuses.

"The University of Adelaide not only has an outstanding past but the future is very bright indeed," she said. "There are enormous strengths to build on in all of our disciplines but for me the most exciting new opportunities come with the Mortlock and Davies bequests, putting really significant funds into agricultural research.

"Waite Campus has been a shining star in the Australian agricultural research sphere for its entire existence and these bequests give us the opportunity to further raise our profile on the global stage." ♥

**University of Adelaide's
new Deputy Chancellor:**
Di Davidson.

"Having grown up in a rural community and lived and worked with the people, I've not only learnt to understand their values but to appreciate the real fabric of the Australian landscape."

MILLIONS SAVED AND STILL COUNTING.

Lord Howard Florey, Graduate 1921.



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of ADELAIDE