

# Adelaidean

News from the University of Adelaide

Winter 2015 | FREE publication

## Beating the bad Aussie mozzie

Humble nut a blossoming industry

Reforming laws for the 21st century

It takes a Village ...



THE UNIVERSITY  
of ADELAIDE



# >ADELAIDEAN



## INSIDE THIS EDITION OF ADELAIDEAN

Professor Philip Weinstein is famous for his work showing how degrading ecosystems harms human health, plus he has a cockroach named after him!

Professor Julie Owens has spent much of her life in the lab, now the medical scientist is working to connect researchers right across the University.

Dr Michelle Wirthensohn is nuts about almonds, creating new varieties uniquely suited to South Australia.

Professor Mobo Gao grew up in a poor Chinese village but now the Confucius Institute head is a world-renowned scholar of the country's transformation. He explains to *Adelaidean* how education changed his life.

From IVF to LGBTIQ rights, society changes faster than the law can keep up – a University research institute is fixing that.

Dr Ian Musgrave worries about the side effects of herbal medicine, but that does not stop him searching for a plant to treat Alzheimer's Disease.

And here comes the sun. Meet the team who built our solar racer from concept to car.

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## LEADERSHIP COMES FROM WITHIN

Professor Julie Owens is uniquely suited to drive the University of Adelaide's research strategy, with a brilliant career in medical science, a deep understanding of the campus developed over decades and enormous experience at the interface of inquiry and administration.

And she is very keen to use all of her experience in a research leadership role. "I was looking for this sort of position, luckily it came up right here at Adelaide," she says.

Professor Owens became Pro Vice-Chancellor (Research Strategy) in May. It's an enormous, important job but significant work, and lots of it, is something she is used to. Previous to this appointment she was Head of the University's School of Paediatrics and Reproductive Health, Associate Dean of Research in the Faculty of Health Sciences, as well as co-director and research leader of the Early Origins of Health and Disease Theme and Group in the Robinson Research Institute.

She is also the author of over 170 refereed articles and book chapters and is experienced in assessing research through her membership of the National Health and Medical Research Council (NHMRC) Academy and the Australian Research Council's College of Experts.

However, for all her credentials in health and medical science, Professor Owens is no silo-scholar. "Having been a member of the ARC College of Experts helps you get across other disciplines more easily." And she points to the importance of multi-discipline research, "sociology and anthropology can provide important insights into the origins of the modern obesity epidemic", she says.

"The real challenge now is to make explicit choices on using resources across the University to have both economic and research impact, as increasingly expected by government and the community," she explains.

And you cannot focus on the former without investing in the latter. "Look at the University's core mission – it's about increasing the body of fundamental knowledge and ensuring that translates into benefits for the wider community," she says.

A challenge for sure, but it also remains a great opportunity, especially for young researchers at the University contemplating different career options. "My advice to any aspiring researcher is always to leap in and make the most of your opportunities and talent and see where it leads."

Just as Professor Owens is doing. ♥

"My advice to any aspiring researcher is always to leap in and make the most of your opportunities and talent and see where it leads."

PHOTO  
Professor Julie Owens





A BLOOMING INDUSTRY  
CENTRED ON A HUMBLE  
NUT IS SUPPORTED  
BY CUTTING-EDGE  
RESEARCH AT THE  
UNIVERSITY OF ADELAIDE.

# ALMONDS BLOSSOMING

Virtually no-one outside the almond industry blinked when Australia overtook Spain as the world's number two exporter last year. But South Australians certainly should have taken notice, with the humble nut set to join the olive and the grape as a great new cash crop for the State.

This year's crop is expected to top out at a record 75,000 tonnes, with room for growth as international demand expands. This is due to the ongoing drought reducing California's yield, which normally accounts for 80 per cent of world output.

The \$370 million almond export industry is already a second-generation success in South Australia, with growers expanding from original plantations around Adelaide into the Riverland. And it is likely to grow faster and further, if research led by the University to create an almond that is especially suited to Australia succeeds.

Almonds are a good source of protein, plus Vitamin E, heart disease risk-reducing monounsaturated fat and dietary fibre. Almond meal also meets the increasing market gluten-free foods. Recent US research also points to the almond's potential in preventing the onset of diabetes. "Almonds are the quiet achiever of horticulture," says Dr Michelle Wirthensohn, Horticulture Innovation Australia Research Fellow at the University's Waite Research Institute.

Also in the pipeline is a research project on almond waste, investigating the use the shell in cancer treatment and as an organic feed additive for fish and abalone.

It's why Dr Wirthensohn, by her own admission, "lives and breathes almonds"—she is currently working to discover if new tree breeds can create a super SA nut. "At the moment there are only three cultivars, so we need to develop more for long-term sustainability," she says. Of the five varieties in large-scale trials in the Riverland and Sunraysia regions, three are self-fertile, which could be a very big deal indeed for growers.

Many commercial cultivars, notably Australian favourite Nonpareil, are sterile, so bees and polliniser varieties need to be planted to ensure fruit is set. However, this means orchards are less productive and crops could also reduce if, as feared, bee populations decline.

The potential for self-fertility was identified in the mid-1970s when Italian almond cultivars were found to be self-fertile. It's a long research process with promising signs of success but nothing certain as yet, which does not deter Dr Wirthensohn, who has built a career on understanding and improving horticultural crops.

An Adelaide girl, she did an agricultural sciences degree at the University, specialising in animal genetics but she later switched to plants, going on to complete a PhD

that identified foliage of 12 eucalypts for floriculture. "It's the skills you learn along the way not what you apply them to," she says. Her advice to students is, "don't make up your mind too early".

From eucalypts, Dr Wirthensohn then began studying olives, examining the commercial potential of types of fruit growing wild and finding eight varieties with prospects. While her main research interest is now almonds, Dr Wirthensohn has held on to a love of olives, judging green and black eating varieties for the Royal Adelaide Show.

She then joined her mentor, Professor Margaret Sedgley, who had worked on almond cultivars since 1997, receiving three Australian Research Council Linkage grants for the project.

After over a decade's work, Dr Wirthensohn says she is patiently waiting on the results from 30,000 seedlings. In the meantime, progress is supported by an international project to sequence the almond genome, funded by the big four of almonds: Spain, France, the US and Australia. "We're collaborative more than competitive," she says.

"Once I have a sequence of genes, I can then search for molecular markers for bitterness and shell hardness in seedlings. This will make the process so much faster as it takes three years for almond trees to produce a crop."

But aren't thirsty almond trees the last thing the Riverland needs in the driest state of the world's driest continent? Dr Wirthensohn says perhaps that would be true if Australian growers used the flooding irrigation methods the Californians do. As it is, the drip-irrigation techniques in the Riverland produce a crop which is much more sustainable than rice or even cotton. "Almonds are a high-nutrition crop which produces much more value per litre of water," she says.

According to the National Water Commission, 90 per cent of the State's almond groves are drip irrigated with most of the balance using sprinklers. The industry is an excellent example of how the water trading market works to ensure industries can be environmentally and economically sustainable.

Industry and government are right behind her work, with funding from Horticulture Innovation Australia using the almond industry levy and funds from the Australian Government.

With a research program to last a working life, in cutting edge science that will improve a nutritious crop with cancer treating potential, what's not to love about almonds? Dr Michelle Wirthensohn is certainly happy to stick with this project. "I'm in the field, and in the lab, it's quite ideal." ♥

"Almonds are a high-nutrition crop which produces much more value per litre of water."

PHOTO

Dr Michelle Wirthensohn



# WHAT THE DOCTOR DIDN'T ORDER

MANY AUSTRALIANS BELIEVE IN HERBAL MEDICINE, WHATEVER THE SCIENCE SAYS. BUT DR IAN MUSGRAVE ALWAYS COUNSELS CAUTION ON WHAT REMEDIES TO RELY ON.



"The simple fact that herbal medicines are drugs is underappreciated, or not understood at all, by most people. They include good drugs, bad drugs and completely useless drugs but they are drugs nonetheless, and therein lies a lot of grief," Dr Ian Musgrave warns.

"As well as being part of traditional remedies, we could very well get new drugs, like antibiotics, from herbs and plants. But we need to be cautious."

And yet the senior lecturer in pharmacology in the University's School of Medicine is very interested in the potential of nature for treating degenerative diseases, including Parkinson's and notably Alzheimer's disease. But there is no contradiction or even ambivalence in Dr Musgrave's position on medicine from nature. Although herbal medicines can be a source of new drugs, "sometimes the medical effect of what we extract has very little connection with what the herbal medicine is traditionally used for. You have to evaluate it carefully," he says.

It is what he is doing with colleagues across the University and in other institutions and disciplines as they research nerve function and what degrades it.

He is a part of a promising new research approach to Alzheimer's. A major cause of brain degeneration is the way proteins fold into the wrong shape and form chains that kill cells. In a process that can start years before the symptomatic impact on a person is obvious, the chains reproduce too fast for the brain to break them down.

Dr Musgrave is focused on ways to stop this "misfolding" from happening, including the use of molecules from plants such as green tea. The same approach also offers opportunities for treating HIV.

But there is a way to go. Dr Musgrave warns that science can't yet explain why the normally innocuous proteins start misfolding in the brain to become toxic. And he is definitely not ready to contemplate a cure yet. "If the chemicals we are looking at work, we might be able to slow the onset of Alzheimer's. While a chemical breakthrough might occur, the clinical impact will be incremental. It's a long road ahead."

If the research direction is right, that is. He frankly mentions this work might not deliver on its present prodigious promise. "We could be barking up the wrong tree on the processes involved in Alzheimer's, the disease is known as a graveyard of therapeutic approaches." But that won't stop him trying.

If there is a breakthrough it may not come from chemistry. For example, recent research in mice showed ultrasound could break up the protein clumps that do the damage, Dr Musgrave explains. It's why he is keen to credit his many collaborators. "Without colleagues in chemical and life sciences, I would not be able to do my work," he says.

His is a clear-eyed assessment of years of hard work but Dr Musgrave is obviously someone who goes only where the evidence takes him. He started his career in science in a laboratory, and after a University of Melbourne PhD in chemistry went onto postdoctoral research in Germany. Since coming home he has focused on Alzheimer's for 14 years.

He is also known as a prolific science commentator speaking on a range of issues that are dominating current public debate.

And he takes a strong evidence-based approach to herbs in medicine—it is up to scientists to discover what works.

"Science can turn up surprising new things. For example, Rosy Periwinkle, which is used as a traditional herb treatment, also is the source of a chemical compound that is effective against some forms of cancer," he says.

Certainly he understands why so many Australians have faith in herbal cures, (over 50 per cent, he says). "Taking medicine is a very personal thing. People are attracted by the sense of personal autonomy provided by taking control of their medication." But, and it is a very big but, people should not take them without telling their GP and should never think that if a herb is good for you, the more you take, the better you will be.

"The old saying is true, 'it's the dose that makes the poison,'" Dr Musgrave says.

It's a problem that alarms the peak government agency, the National Health and Medical Research Council, which last year awarded close to half a million dollars to a cross-university team, including Dr Musgrave, to look at the adulteration and contamination of herbal medicines.

So if natural remedies are a source, not a solution, for research into some of medicine's biggest challenges, what is he taking for the terrible head cold he has on the day he talks to *Adelaidean*?

"Tea, just conventional tea—no herbs." ♥

"Sometimes the medical effect of what we extract has very little connection with what the herbal medicine is traditionally used for."



Professor Paul Kerin is in economics to shape debates that improve productivity, to serve the public interest and to educate the next generation of economists as change agents.

"If students want to equip themselves to have an impact, an economics degree is a great way to go," he says.

"What is the point of studying if you don't improve your life and progress society? Economics can help you make decisions that really influence society in a positive way, whether it be in business, the public sector or academia."

The new Head of the University's School of Economics has spent a lifetime practising what he preaches, with a distinguished career as an economist in academia, business, government and education.

# MAKING A DIFFERENCE

HOW ECONOMICS FUELS  
PAUL KERIN'S PASSION  
FOR POLICY

It all started with his undergraduate (1982) and Masters degrees (1985) at the University, and now Professor Kerin is back to ensure the economists of the future have the great opportunities he had.

"The University of Adelaide has a proud tradition in economics," he says, pointing to the way Adelaide economists have long influenced government and industry. "When I was an undergraduate, there was a strong public policy emphasis." He nominates Geoff Harcourt as especially influential. Professor Harcourt, who taught at the University for close to 25 years, focused on post-Keynesian economics and public policy – the University created a visiting professorship in his honour.

Other notable Adelaide economics achievers include Professor Bruce Chapman AO and Professor Jonathan Pincus, both honoured in July with Distinguished Fellow Awards from the Economics Society of Australia. Professor Chapman, known as the "father of HECS", came back from Yale in the early 1980s to lecture at the University. Coincidentally, Paul Kerin was Professor Chapman's research assistant in 1980/81. Professor Pincus, a former Head of the School of Economics and now a visiting professor, was a research leader at the Australian Productivity Commission, with a teaching reputation for "actively challenging his students to think beyond the square", as the Economics Society put it.

It's a tradition of engaged research that Professor Kerin has embraced in his own career. His Honours thesis, on the regulation of financial reporting, is even more relevant to today's world of self-managed superannuation than it was in the early 1980s; and his Masters, which focused on moving wheat off the Eyre Peninsula, influenced his Harvard doctoral dissertation, on transport economics.

He went on to a long industry career, which saw his economic training improve productivity in settings ranging from giant retail chains to international management advisers. After his stint as Managing Director of A.T. Kearney in Australia and New Zealand, he spent a decade teaching at the Melbourne Business School, focusing on economics and corporate strategy.

His appointment prior to joining the University of Adelaide was Chief Executive Officer of the Executive Services Commission of South Australia, from which

he resigned due to his concerns that government policy kept consumer costs unnecessarily high.

It's not the only time Professor Kerin has applied an economist's insight in a regulatory environment that needed change. After publicly arguing for many years that the single desk marketing monopoly that had been run by grain company AWB Ltd should be abolished, he was appointed to the board of Wheat Exports Australia (WEA), which was charged with overseeing the deregulation of the industry. It worked so well that board members recommended that WEA be abolished. "Few government bodies ever do that," he says with a wry smile.

And for more than 30 years he has made the case for economic principles in the media, appearing on the ABC and writing for the policy press on everything from the cost of public transport to the National Broadband Network.

Since returning to the University he has engaged in the vital arena of ideas where economics intersects with policy. In an opinion piece written with colleague and Executive Dean of the Faculty of the Professions, Professor Christopher Findlay AM, he proposed replacing economically inefficient stamp duties and company tax with a levy on land which would free up resources, "every extra dollar of tax raised costs Australian citizens at least \$1.29".

Tax reform is an issue Professor Kerin says is particularly important for South Australia. "Growth in our economy depends on the government getting the pre-conditions right," he says.

Which puts economics centre of the policy stage: "Productive reform deepens the economy but sometimes economic ideas take time to take hold," he says. And Professor Kerin sees a big role for the School of Economics. "We have fantastic people."

In particular he points to the potential of the Master of Applied Economics degree to meet the needs of both business and government. It is well regarded in Indonesia and Professor Kerin plans to expand demand in China and India.

So what does he say to anybody at school interested in improving life for their fellow South Australians and wondering if economics is for them? "You don't do economics for economics' sake. You do it to have impact, whether it be in business, public policy or elsewhere." ♥

"What is the point of studying if you don't improve your life and progress society? Economics can help you make decisions that really influence society in a positive way."





# IT TAKES A VILLAGE ...

A STRONG SENSE OF COMMUNITY MAKES ALL THE DIFFERENCE FOR INTERNATIONAL STUDENTS STUDYING AND LIVING IN ADELAIDE.





The University is a cosmopolitan community, with 7000 international students choosing to invest in an Adelaide education.

The number has grown steadily for years and Professor Pascale Quester is not at all surprised. “We offer a high-quality, globally competitive education in a great, safe city,” the Deputy Vice-Chancellor and Vice-President (Academic) says.

The University’s experience is part of an extraordinary Australian success. Last year there were 250,000 international students studying at Australian universities (plus another 340,000 going to school, learning English or in vocational education). All up, the Federal Government estimates education earned a staggering \$17.6 billion last year, making it the most successful set of services Australia sells to the world.

But international competition in education is increasing. And so Australia needs a competitive edge, which includes appropriate student housing options.

“It’s great to have small classes and high-quality academics but if students can’t find affordable, comfortable accommodation, they simply will not come,” Professor Quester warns.

And because international students come from such diverse backgrounds with quite different needs, there must be a range of accommodation available.

It’s a message the University understood 10 years ago when it decided it needed a “village”—just not in the countryside. In fact, The Village is about as urban as Adelaide gets, on Grote Street in the West End, just blocks from the Central Market and the Gouger Street restaurant scene. But while the ambience is city chic there’s a close connection to the North Terrace campus, a 25-minute walk away or a short ride on the city shuttle bus.

The location certainly makes The Village popular, with a 60 per cent resident retention rate, close to twice the rate in the general student accommodation market, says Geoff Denison, Associate Director Student Accommodation Services. Some students never want to leave, he adds—there are medical students who have spent their entire six-year study period living happily in The Village.

But there’s much more to loving Village life than location. For a start, it’s a great way for young students who have moved out of home (and their own country) for the first time to adjust to the change and learn about independent living. “It makes the transition easier, especially for the first-year students,” Mr Denison says. “It’s a nice stepping stone.”

It’s also a great way for parents to feel comfortable about their children being a long way from home. The Village is staffed 24/7 with entry to accommodation through a hotel-style lobby with key card security. The complex includes a range of five-bedroom townhouses and four-bedroom apartments with private and share bathroom options. And yes, it provides that most coveted of utilities: endless free WiFi.



And it is a real community—a house of many nations. The biggest cohorts hail from Malaysia, Singapore, China and Australia, joining students from another 35 countries. A strong local presence is important, Mr Denison says, helping newcomers engage with the University community and life in South Australia. The University’s accommodation services also foster friendships in The Village with a packed program of events and excursions. “Residents consistently report very positive experiences from living in The Village,” Professor Quester adds.

The Village sends a powerful message to prospective students that the University is deeply committed to a holistic student experience, and not only academic achievements.

It is an essential signal in the competitive international education market. “There is fierce global competition for international students in Australia,” Professor Quester says. And accommodation, both in terms of comfort and community contact, is a big part of an appealing offer. Quality accommodation choice is certainly very important to young people, and their families, when considering studying out of country. According to a recent federal government report, students like “purpose built” accommodation, on or near campuses, because it “provides a well-rounded experience for both domestic and international students”.

When The Village opened in July 2005, Geoff Dennison knew exactly what he hoped it would deliver: “A unique student accommodation option for Adelaide that combines independent living with significant support for residents.”

And he believed it would make an important difference for the University’s student culture. “There are many accommodation options available in the private market, but The Village will always provide a unique, student-centric environment that assists students to successfully adapt to life away from home,” Mr Denison says.

A decade on he is proved right—to compete in the global education market, it really does take a village... ▀

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“The Village provides a unique environment that assists students to successfully adapt to life away from home.”

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# A TRADITION OF REFORM

THE BIGGEST PROBLEM FOR THE LAW IS THAT THE WORLD KEEPS CHANGING. "WE HAVE TO APPLY CONSTANTLY OLD PRINCIPLES TO NEW CIRCUMSTANCES," SAYS THE UNIVERSITY'S DEAN OF LAW, PROFESSOR JOHN WILLIAMS.

In 1973 a report on privacy law in South Australia warned of the risk of "wire tapping" and "electronic eavesdropping" but obviously made no mention of stickybeaks with drones or spurned lovers posting very private images across social media.

"Privacy law used to worry about the government. Now it's people on Facebook and Twitter," Professor Williams says.

It's one of many examples that led the State Government and Law Society of South Australia in 2010 to unite with the University of Adelaide to create the Law Reform Institute. With Professor Williams as Director, the Institute's brief is to "help modernise, simplify and consolidate laws and the administration of the justice system and, in doing so, improve access to justice for the community".

The Institute is tackling its task with a small team and the advice of what Professor Williams calls "a spectacularly good" advisory committee, including judges, and his colleague, labour lawyer and former Dean of the University's Law School, Professor Rosemary Owens AO.

And an enormous, important, endless task it is. As Professor Williams says, "There are lots of areas where the law simply runs out." Like succession law, which dates from an age before complex blended families. "IVF did not exist when many basic principles were developed," he says. "As for social media, until recently the State Evidence Act did not refer to modern online communications but it had telegrams covered."

The State's statutes are equally blind to gender diversity and the existence, let alone rights and needs, of all the South Australians collectively covered by LGBTIQ (lesbian, gay, bisexual, transsexual, intersex, queer). As the Law Reform Institute outlines, "many South Australian laws still include references to 'spouse', 'husband', 'wife' and 'marriage-like relationship', and generally exclude same-sex couples, or couples involving gender-diverse people". The wording of such laws can damage people's lives in all sorts of ways, from starting a family, to insurance, to aged care.

It is also why South Australian Governor, His Excellency the Honourable Hieu Van Le AO, announced in his address to open State Parliament in February this year that the Law Reform Institute would review all relevant legislation.

Even the way South Australians swear oaths and make affirmations in court dates from the days before the cultures and values of Indigenous Australians and people of non-Christian faiths were considered. Looking at how to update them has taken more than a year, according to Professor Williams.

It's an issue South Australians have tackled for a century, with at least three attempts to adapt the law. Back in the 1970s, proposals for change generated a dispute between reformers and the Attorney-General of the day, with the wording of oaths and affirmations becoming an issue considered by the Court of Criminal Appeal.

"As to what the Institute will ultimately recommend... it may come down to just asking witnesses if they will tell the truth, and making the courts truly secular," Professor Williams muses.

The case for creating simplicity in place of centuries of complexity is certainly an option for the Institute to consider. "Abolishing the oath would altogether remove considerations of a witness's religion (irrelevant to one's capacity to tell the truth) from our secular court processes. This might minimise the potential for prejudice, perceptions of discrimination or for the giving of unintended offence," it suggests in a discussion paper.

But it is updating succession law that most consumes the Institute. Perhaps it is because wills, and who gets what in them, is the one area of the law that touches most people, or maybe it is the sheer complexity of the law. Whatever the reason, the Institute has already worked on reform on this legislation for two years, publishing half a dozen papers.

The Institute attracts submissions from the people who will have to work with those of its proposals that State Parliament eventually adopts. The review of technology's impact on legal administration attracted submissions from the chief justice, chief magistrate, director of public prosecutions and the South Australian law and bar associations.

It is all based, Professor Williams says, on a great South Australian tradition of reform. "The Institute stands on the shoulders of giants," he says nodding to Justice Howard Zelling, CBE QC.

Justice Zelling was a brilliant man, of innate ability and erudition. A 1925 report in *The Mail* newspaper reported the then seven-year-old from Goodwood astounded professors with his "marvellous memory, unusual reasoning powers and card-index brain". And, as a law reformer, he set a high standard for Professor Williams and his colleagues to follow.

Between 1968 and 1987, the Law Reform Committee of South Australia (a precursor to the Institute) produced 106 reports, ranging from the arcane, "Problems of proof of survivorship as between two or more persons dying at about the same time in one accident," (1985) through the more obscure (amending the law of fences was a big deal in 1972) and on to many that make Professor Williams point out that the law can lag seriously.

Like the 1987 report on "inherited imperial Sunday observance", which argued: "The time may come when the majority of factories, shops and offices are open seven days a week, with the two (or more) day breaks of workers not necessarily falling on Saturday and Sunday. However, it seems to us desirable to retain at least one regular day a week when it is possible for family and friends to be together."

Certainly it's a struggle to keep the law updated, as Professor Williams says. Fortunately there is an enduring commitment to genuine law reform at the University, and in South Australia. ♥



"There are lots of areas where the law simply runs out. Privacy law used to worry about the government. Now it's people on Facebook and Twitter."

PHOTO

Professor John Williams



# CREATING NEW KNOWLEDGE

PHILIPPA LEVY IS NOT ONLY NEW TO THE UNIVERSITY, SHE IS IN A NEWLY CREATED JOB WORKING ON NOVEL CHALLENGES AS THE UNIVERSITY ADAPTS ITS TEACHING AND LEARNING EXPERIENCE FOR STUDENTS IN THE 21ST CENTURY.

PHOTO  
Professor Philippa Levy

“The skills involved in academic research, such as critical thinking, gathering and analysing evidence, all translate to the world of work.”

Professor Levy has joined the University as the inaugural Pro Vice-Chancellor for Student Learning, a role central to implementing the *Beacon of Enlightenment* strategic plan to transform teaching by making small-group discovery central to the undergraduate experience. This involves academics working with students to actually research and create new knowledge, rather than just taking lecture notes.

“The *Beacon’s* vision is one of the main things that attracted me to the University,” she says. “I find it very compelling.”

Understandably so, as Professor Levy has spent much of her life working on ways to adapt teaching to student learning needs, in a range of roles at the University of Sheffield, where she first studied and then rose to a Chair and as Deputy Chief Executive at the UK Higher Education Academy.

“Professor Levy’s work in the UK has captured the essence of a new paradigm in teaching based squarely on student inquiry and research,” Professor Pascale Quester, Deputy Vice-Chancellor and Vice-President (Academic) says.

And so Professor Levy is putting a life of learning and teaching to good work, leading a transformation of not just how the University teaches but also the way student learning extends beyond knowledge to the skills they need for a digital age.

This means big changes for everybody involved. For academics, it includes adapting their content to blended learning, using small-group teaching plus digital delivery of content. Academics will work more closely with librarians and learning designers, for example.

The University’s very successful massive open online courses (MOOCs) demonstrate the resources a blended classroom of digital and in-person teaching can involve, Professor Levy says.

There is much more to it than simply making a digital edition of the same old lectures. For students, it means learning how to make the most of the technology that has always surrounded them.

“There is a debate whether ‘digital native’ is a useful concept,” says Professor Levy. “The net generation may be fluent in various digital resources but they don’t necessarily know how to use them to study more effectively. And a lot of students actually lack confidence using digital resources for study, or just don’t know how to get the most out of them.”

The new teaching and learning culture uses the intensive experience of small-group inquiry for students to learn about individual subjects and also to develop the skills they will need for work and life.

“Students come to university for the love of a subject but they also have expectations of being equipped for employment. The skills involved in academic research, such as critical thinking, gathering and analysing evidence, all translate to the world of work,” Professor Levy says.

Small-group discovery can also help students develop the personal attributes they will need to succeed in working life—an ability to collaborate, and to lead. “And yes, we support students along the way as they develop emotional intelligence,” she adds.

This is truly learning for the love of knowledge but also for life. “We will equip our students with a portfolio of skills.

“There is a direct connection between the small-group discovery experience and the employability our students,” Professor Levy says. ♥





“China is the University’s leading partner in science and technology research collaborations.”

## TO UNDERSTAND THE POWER OF EDUCATION TO CHANGE LIVES YOU NEED TO TALK TO MOBO GAO, PROFESSOR OF CHINESE AND DIRECTOR OF THE CONFUCIUS INSTITUTE AT THE UNIVERSITY.

Professor Mobo Chang Fan Gao was born in the farming village of Gao in China’s Jiangxi Province, where he lived a peasant’s life until selected for university at the age of 21. After a degree in English teaching, in 1977 the Chinese government sponsored him to do a Masters degree in the United Kingdom. Gao then did a PhD at the University of Essex on Noam Chomsky’s linguistics, as a self-sponsored student.

He returned to China to teach English for five years but, disillusioned with linguistics and anxious to understand what had happened to his homeland since the Communist Revolution, he jumped at the offer of a teaching job at Griffith University in Australia. From there he moved to the University of Tasmania before arriving at Adelaide in 2008.

From farm labourer to internationally regarded scholar – with four books and dozens of papers and articles to his name – is impressive in any circumstances. But starting in China as it began to engage with the West surely makes Professor Gao’s achievements especially so.

His background also gives him a firsthand experience of the subtleties of Chinese politics and society, which make him uniquely suited to leading the University of Adelaide’s Confucius Institute. Yes, he says, Adelaide’s institute, like all the others around the world, receive funding from the Chinese Government and he does not doubt Beijing sees them as a way of projecting “soft power”—of presenting a positive image of China to the world. But unlike European equivalents, staffed by government officials, he works directly for the University.

In any case it would be a committed cadre who tried to give instructions to Professor Gao: “I don’t care what the Chinese authorities want, I do what is right for the University. But while it would be up to me to resist any interference, none has ever occurred.”

Confucius Institutes have different focuses, as suits institutions: RMIT in Melbourne is interested in Chinese medicine, Griffith University’s looks at tourism and Adelaide’s is shaped by Professor Gao’s ambition to make it a forum for exchanging ideas on core issues of concern between Australia and China. “The first major lecture we held was on human rights in China,” he says. “And we have also held talks on Tibet and democracy.”

The Institute has a strong cultural program that has included exhibiting traditional works of calligraphy at the Art Gallery of SA to inviting a Chinese electro-pop band for some concerts in Adelaide. There is also a concerted effort to increase awareness of China among business and community leaders.

“South Australia seemed more hesitant than other states to see the potential for business opportunities and exchanges of experts and ideas but the pace has picked up now with a major State Government trade delegation,” Professor Gao says. “China is also the University’s leading partner in science and technology research collaborations.”

The Confucius Institute offers a range of services for industry looking to do business in China, including tailored language tuition, classes on protocol and customs expected in China and briefings on ever changing economic conditions.

“It also is a resource for schools teaching Chinese across the state,” he says. This is a role set to expand due to the State Government picking up Professor Gao’s idea for a dual-language Chinese-English school. This initiative could have enormous potential in increasing the number of students who do not have a Chinese background studying the language at the University.

In addition to his commitment to making the Institute a real resource for South Australia, and a conduit of ideas with China, Professor Gao also brings to it is his insight into a country transformed across his lifetime.

He explains through a history of his village, entitled *Gao Village: A Portrait of Rural Life in Modern China*, that the Cultural Revolution was “a golden age” for ordinary people in terms of education and health care. “It was still a Spartan life but vastly better,” he says. Professor Gao expanded further on this theme in his 2008 work, *The Battle for China’s Past: Mao and the Cultural Revolution*.

However, he also acknowledges the extraordinary impact of the changes adopted by Mao’s successors. “China industrialised because of a planned economy but when you get to a certain stage you need personal initiative.”

The transformation of his village tells the tale: “When I left the village, it had no electricity and people could not even afford bicycles.” Now he says, thanks to migrant workers sending money home, he has been picked up at the airport by a five-car convoy when he returns to visit. “Houses there are better than mine in Adelaide, the material transformation is unprecedented,” he says.

Nor is oppression the price of prosperity. Professor Gao dismisses generalisations that dissent is suppressed by the Chinese government.

“It’s too rich and diverse for the Communist Party to control. In China, people can say anything they want as long as they don’t organise to threaten the state.”

# FROM PEASANT TO PROFESSOR



# HERE COMES THE SUN

HARNESSING THE POWER OF THE SUN AND BUILDING A VEHICLE WORTHY OF THE WORLD SOLAR CHALLENGE IS ALL PART OF A DAY'S WORK FOR OUR ENGINEERING STUDENTS.

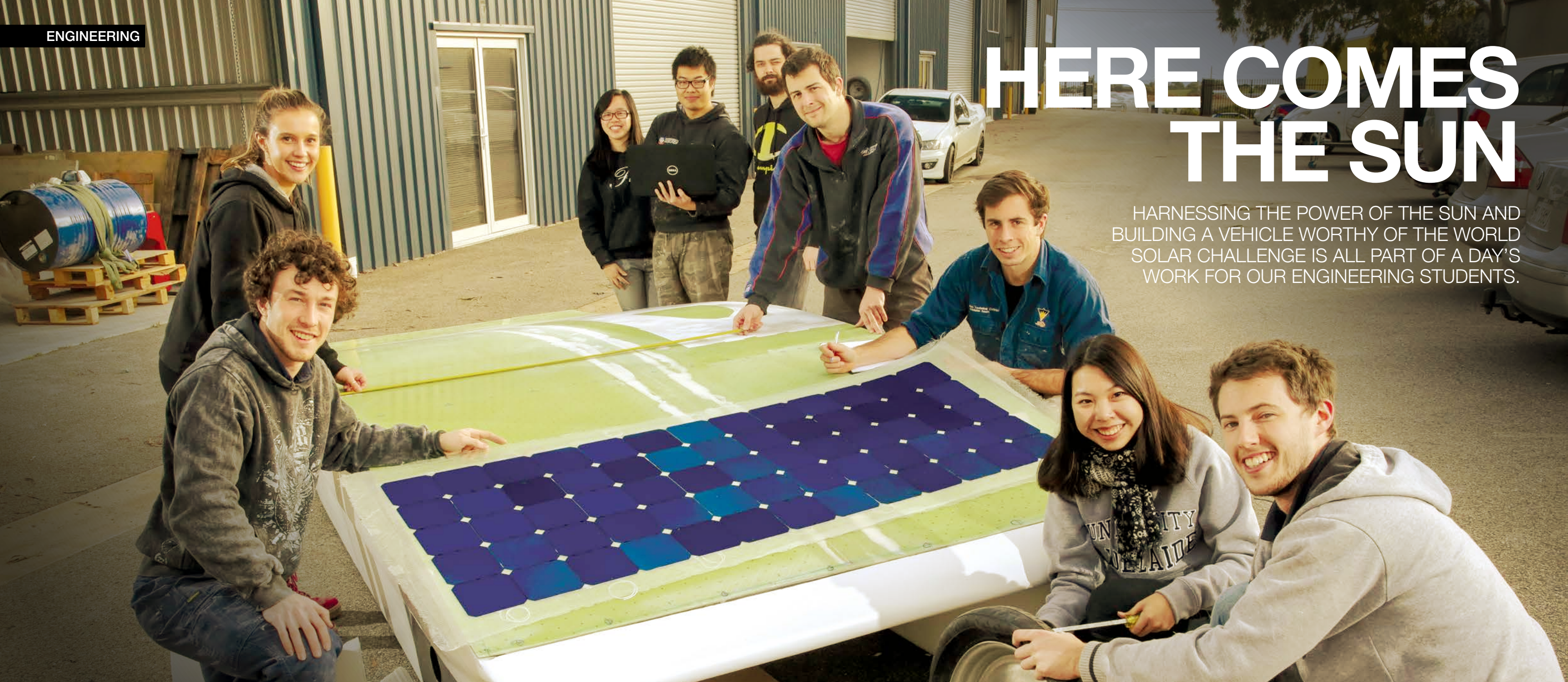


PHOTO  
Some of the University's  
World Solar Challenge team

The first Adelaide to Darwin Solar Challenge was run in 1987, long before engineering student Daniel Haynes and his mates were even born.

But it's a monumental challenge for the University of Adelaide team he leads, which is building a car to race in this year's event.

For a start, as the University's first ever entry, it's all new for everybody involved. But that is what makes it so engrossing for team leader Haynes and the 11 men and two women who are working on the project as part of their engineering studies. "It is sometimes difficult to focus on other subjects when the car is so interesting and full-on," Mr Haynes says.

Work started last year, with a group of senior students beginning with concepts for the car. While the 2014 team members have all graduated they are still on the grid, advising their successors who will see the project out of the workshop and onto the road.

"It's a great application of the skills they are all learning in their various undergraduate programs," says Associate

Professor Anthony Zander, Head of the School of Mechanical Engineering.

Now in its 28th year, the World Solar Challenge will run over a week from 18 October, from Darwin to Adelaide. It's for customised cars, running on sunlight captured by a maximum six square metres of solar panels and transformed into electricity.

This is research where the rubber really hits the road, generating far more than innovations in energy efficiency. The race is about transforming the technology that drives all electric vehicles, be they hydrogen cell-powered, hybrids driven by fossil fuel and renewable energy, or cars that run on power from solar cells.

The Adelaide team is competing against researchers and racers from all over the world, with 41 competitors from Europe and Asia, the Americas and Africa, the Middle East and Australia. Well over half are from education institutions, including other prestige marques like Stanford, Cambridge and the Massachusetts Institute of Technology.

But the race itself is not the only reason to participate; big challenges are also about learning. Building the car involves serious science to engineer impressive outcomes. "There are lots of changes in the cars, with progress in the solar panels and the composites used in the structure, the batteries are better and the electronics improve," Associate Professor Zander says. Mr Haynes points to carbon fibre construction and the extra-lightweight solar panels as especially interesting to work with.

The solar car challenge is also preparing the team for the business end of engineering, both in project management and budgeting. They have raised \$5000 through a Kickstarter campaign and secured components, notably solar panels and carbon fibre materials, from various suppliers.

But they are investments in education, not donations. "It is all excellent value in student learning experiences," Associate Professor Zander says. And the team knows it, with members acquiring the sort of practical experience that impresses future employers.

The team come from across a wide spectrum of engineering—mechanical to mechatronics, petroleum to aerospace. Some are combining their engineering expertise with other business skills, like workshop manager Lawrence Taylor-Bonham, who is doing double degrees in Mechanical Engineering and Arts (majoring in Spanish and German) and Jordan Miller-Owen who is in his final year of mechanical engineering and finance.

But for all their energy and expertise, can they win? While the University of Adelaide team's budget is considerably less than some teams, making it a true engineering challenge, the team believes they certainly have a shot.

Whatever happens, the real achievement for everybody involved will be watching the car cross the finish line. It's not winning in solar car competition; it's how you power the game. ♥

The University of Adelaide's solar car will be on display at *Ingenuity* on Tuesday 27 October at the Adelaide Convention Centre.





Professor Philip Weinstein is an understated scientist; it was well into the interview before he mentioned in passing that there is a cockroach named after him—a blind, hairless, cave-dwelling cockroach at that! And he doesn't mention his string of strongly cited research papers or his work on six prestigious projects for the Australian Research Council. Or his major study on air quality and respiratory health, for the Cooperative Research Centre for Asthma and Airways.

But he talks with passion about leading the University's School of Biological Sciences. "The School's objective is to support excellent researchers and it is a privilege to help the next generation," he says.

And he enthusiastically explains his research focus, improving human health by protecting the environment. It's a neat combination of his two scholarly specialities, medicine and biology, reflected in his 100-plus papers on water-borne and mosquito-transmitted disease.

However, there is more to the model than Aussie mozzies. It applies to all sorts of environmental impacts. "My research involves building a methodology that translates to other diseases in other environments," he says, pointing to his work on rat-borne Leptospirosis in Samoa. The model can also apply to other infectious diseases of the developing world including Ebola, HIV and Bird Flu, for alarming example.

He warns that human demands for natural resources come at a cost and that well-intentioned but ill-applied health measures can do great harm. Thus Professor Weinstein has long warned that draining a swamp to eradicate malarial mosquitos also removes a source of biodiversity for future generations. "Ecosystem dynamics are rarely linear and changes to address one problem can often create another. One reason Ross River virus is becoming more common in Australia is that irrigation and the impact of dryland salinity means there is year-round water for the mosquitos that carry the disease," he says.

The challenge is to get policy makers to see the connections across portfolios. "While keeping more trees may mean less land for farming or housing, it also means cleaner water and thus less diarrhoea down the track," he says.

It's a challenge for Australia, as much as the developing world. "The key thing is how far out of town you have to go to get a truly bio-diverse environment.

"Adelaide needs more awareness of the importance of trees. The Parklands are a nice greenbelt but beyond that there is not a lot of green until outside the city. Our 'green lung' is too small, there are too few green patches," he says.

"The worst part is that new homes being built now have no room for gardens and this also involves a psychological risk. People are healthier when there is greenery," he says.

# BEATING THE BAD AUSSIE MOZZIE

PHOTO  
Professor Philip Weinstein

"Irrigation and the impact of dryland salinity means there is year-round water for mosquitos that carry disease."

A research focus on diseases of hot and wet climates is a long way from Professor Weinstein's early life in Sweden, which ended when the family moved to South Australia for his father's work; young Philip's first exclusively English language experience was doing Year 12. But he quickly adapted to life in Adelaide, first studying medicine at the University and then moving on to a PhD.

His developing academic career took him to all points of the Australasian compass, with appointments at Otago University in New Zealand and James Cook as well as the universities of Western Australia and Queensland. But he was very happy to come home to run Adelaide's School of Biological Sciences in January.

"Being head of a large school is a big challenge. I thrive on challenges and this is much more fun than writing policy," he says.

There are, he admits, big issues to address. Like inadequate funding for all the research that needs to be done. This is why, he argues, it is essential to support research strengths and invest in early career fellowships. "We have to support young people coming through the ranks or there will be a brain drain.


"If you look at any successful business, it invests in research and development. But Australia is falling behind in research and development, right across the economy," says Professor Weinstein.

Which, he says, we cannot afford, not least in the biological sciences. There is certainly a great deal of work for the School's 150 postgraduates to do. South Australia has hundreds of plant and insect species that are not understood and which could hold the answers to new drugs and therapies.

"The school is doing very impressive work on cancer treatment and antibiotics," he says, adding that there are currently team members modelling the impact of human intervention on different environments and the impact of variables on health outcomes.

"I found the joy of discovery in research," he says. And it's clearly a sense of delight he wants to pass on. ♥





# WE WROTE THE BOOK ON WRITING BOOKS.

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