

UNIVERSITIES AUSTRALIA

CLEVER COLLABORATIONS: THE STRONG BUSINESS CASE FOR PARTNERING WITH UNIVERSITIES



UNIVERSITIES
AUSTRALIA

“Every day more than a billion people around the world rely on, and take for granted, extraordinary Australian discoveries that improve the quality of their lives and contribute to our economic strength. The jobs and income from such innovations power our economy, helping to lift wages and living standards for all Australians. Spray-on skin, automated agriculture, contamination removal from natural gas streams, the Cochlear hearing device, enhanced ore recovery using flotation technology, and anti-viral and cervical cancer vaccines are some of Australia’s best-known discoveries. Yet remarkable inventions and innovations are being developed all the time: a painless, transportable vaccine delivery device (the Nanopatch); an electronic skin patch for at-home health monitoring; the use of 3D printing to replicate jet engines and lost cultural artefacts; and the building blocks for quantum computing, which has potential to revolutionise research and industry.”

UNIVERSITIES AUSTRALIA,
‘KEEP IT CLEVER’ POLICY STATEMENT, 2016

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FOREWORD

In recent years, right around the world, governments and policy makers have wrestled with how to lift collaboration between businesses and universities.

Why? Because there is a growing body of evidence that shows that when companies tap into the expertise of universities and their researchers, it boosts not only the firm's own bottom line — but also that of national economies.

Now, for the first time, Universities Australia has sought data to confirm the extent to which this is true for Australia.

New modelling by Cadence Economics confirms that **formal collaborations between Australian businesses and universities generate an impressive \$10.6 billion a year in revenue directly for the firms who partner with universities.**

And the benefits to our national economy are even greater.

By the time that flows through the economy, these **clever collaborations are contributing \$19.4 billion a year to Australia's income.**

And this collaborative activity has created an estimated extra 30,000 full-time Australian jobs across the country, in addition to the **120,000 jobs** directly supported by our university sector.

Data from the Australian Bureau of Statistics confirms around **16,000 Australian businesses have formal partnerships with a university.** That would translate to an average of 410 industry partnerships at each of our 39 universities. And that's before you get to the vast number of less formal relationships between universities and industry.

If we could lift that number to 24,000 collaborating businesses — a 50 per cent increase — it would benefit those companies' operations, balance sheets and shareholders.

It would also benefit Australia's economy even more substantially, helping us **lift that \$19.4 billion contribution to closer to \$30 billion a year.**

And it would lift Australia's rate of business-university collaboration to that of innovation powerhouses such as Israel and the United States.

That's why — in this publication — we make a 'business case to business' on the benefits of a clever collaboration with one of Australia's world-class universities. We also showcase a small sample of the many impressive collaborations underway.

So if you have a challenge you haven't yet been able to solve in your company or community organisation, come talk to one of our universities about how we can work together.



Professor Margaret Gardner AO
Chair
Universities Australia



Ms Belinda Robinson
Chief Executive
Universities Australia

THE PITCH

Australia's world-class universities are home to brilliant researchers, cutting-edge specialist expertise and — increasingly — a strong ability to apply and commercialise knowledge with industry and community partners.

They are a vast resource of research and innovation for both business and community groups.

Tapping into this expertise can help businesses to lift their competitiveness and growth, gain a competitive edge, reduce both costs and risks, identify outstanding student and graduate talent, and gain access to new ideas and emerging opportunities.

Australia's universities are at the global forefront of research in a vast number of specialist fields.

That means when you collaborate with an Australian university, you'll potentially have access to some of the world's best minds in their area of research specialisation.

From maths to medicine and agriculture to archaeology — and a host of fields in between — Australia has 43 areas of official national research strength. Almost 90 per cent of our research is rated at or above world standard.

And when you collaborate with a university, there's vast potential to bring together specialist researchers from multiple fields on the one project.

So if you have a complex challenge to solve — one that requires clever thinking from experts in a wide range of fields working together — an Australian university should be your first call.

The returns to business from such clever collaborations can be profound.

Analysis by Cadence Economics for Universities Australia shows **more than \$10.6 billion a year of all business income in Australia flows from collaborations with universities.**

That averages out to **\$662,000 for each of the 16,000 businesses that currently collaborate with a university. And the estimated benefit to our national economy is \$19.4 billion a year.**

This research also found a **strong return on investment to companies of \$4.50 for every \$1 invested in collaborative university research in Australia.**

Most Australian universities now have a clear first point of contact for any external organisation looking to explore a possible collaboration.

A table of these handy contacts — listed by state — is at the end of this publication.

So if you have a complex challenge, or need to stay ahead of your competitors in a rapidly changing world, come and talk to one of Australia's world-class universities about how we can work together.

WHY COLLABORATE WITH A UNIVERSITY?

- Access to cutting-edge specialist expertise without needing to have a full range of specialist skills in-house
- Reduced costs in commercialising new ideas and products by sharing costs with partner organisations (including tax benefits)
- Cutting the time it takes to bring innovations to market
- A stream of new ideas for further development
- Sharing technical and commercial risks
- Access to fresh perspectives on potential viability or commercial potential before incurring development costs
- Access to new graduate talent in your operation's specialisation¹

Drawn from interviews with major firms that have Australian university collaborations, conducted for "Joining Forces: Innovations Success Through Partnerships", Australian Industry Group, September 2016

“With some of the world's best researchers, university-business collaboration should be part of Australia's DNA. The Turnbull Government, through our National Innovation and Science Agenda (NISA), is committed to make this a reality. We've streamlined university block grant funding, introduced an assessment to incentivise industry engagement, and made ARC Linkage Grants continuous to foster more collaboration. Governments cannot enforce collaboration, but we can play wingman — by providing the right policy settings to promote collaboration and make it more habitual.”



Senator the Hon Simon Birmingham
Minister for Education and Training



Senator the Hon Kim Carr
Shadow Minister for Innovation, Industry, Science and Research

“Universities and research agencies are central to meeting the great economic and social challenges of our time. That is why Bill Shorten and Labor have said that by 2030, we should aim to dedicate three per cent of our national GDP to research and development. Building partnerships between industry, communities and universities must be fundamental to all of our social and economic policies. Supporting policies that champion discovery and basic research — while backing applied research and supporting innovation and emerging industries.”

THE CHALLENGE

The latest figures from the Australian Bureau of Statistics show **16,000 companies in Australia are collaborating formally with a university. And countless more have university links that are less formal** — including through student work placements and local community ties.

A lift in that number to 24,000 firms would **boost Australia's business-university formal collaboration rate to that of innovation powerhouses such as Israel and the United States.**

This would also see Australia leap nine places on the World Economic Forum index — moving from the 27th to the 18th most innovative country in the world.

Increasing the number of clever collaborations has the potential to deliver significant benefits to Australian companies' operations, balance sheets and shareholder returns.

It would also **generate an extra \$10 billion a year for Australia's national income** — supporting Australian jobs, growth, revenue and living standards — both now and into the future.

And it can help ensure that great Australian ideas can become great Australian industries.

As the Australian Industry Group (Ai Group) declared in its 2016 report analysing the benefits to businesses of such partnerships: "the reasons for collaborating are compelling".²

There is a growing body of evidence from Australia and around the world confirming that collaborative innovation is linked to higher performance in companies.

This includes the study that looked at the performance of 7,000 small and medium Australian businesses in the five years to 2012.³ It found the benefits of innovation are compounded when collaboration occurs. **Companies that introduced a new innovation reported an annual 2.7 per cent productivity edge over their non-innovating competitors the following year. But the ones that did so as part of a collaboration had a productivity lift of 4.4 per cent a year.**

The Ai Group work also noted it was increasingly difficult for companies to "acquire and retain internally all of the knowledge skills and resources needed to maintain and improve their competitive position".⁴

Over the past decade, a number of government policy and funding initiatives have sought to lift collaboration rates in Australia. Cooperative Research Centres (CRCs), university precincts, industry clusters and growth centres have all played a role. So too, have changes made under the National Innovation and Science Agenda — including moving to a year-round application process for Australian Research Council Linkage grants, and moves to publish information about all Australian university patents in a one-stop-shop at SourceIP.

The Australian Government's R&D Tax Incentive also supports businesses undertaking research and development. Innovation and Science Australia has recommended the R&D Tax Incentive be expanded to include a premium rate for businesses that collaborate with publicly-funded research organisations, including universities.

Business has called for more practical and clear information on how to build, maintain and get the most out of successful innovation partnerships.

We hope this publication is a further contribution towards that goal.

“ It has never been more important to strengthen the relationships between industry and universities. The drivers are clear: exponential changes to industry systems and jobs driven by digital transformation. Industry relies on the university sector for its key role in the development of the analytical mind, and in its resulting research and development capabilities ... Ai Group will continue to facilitate these connections as they take on a new level, by working with employers and by pursuing national strategic initiatives that bring the sectors together for a prosperous Australian future. ”



Mr Innes Willox
Chief Executive, Australian Industry Group



Ms Jennifer Westacott
Chief Executive, Business Council of Australia

“ In this rapidly changing global economy we will need to retrain people very quickly and we will require the capacity to have more and more work integrated learning. Business Council members are happy to build on the valuable partnerships already underway to better prepare graduates for the challenges of work and the future. This includes collaborations between business and world leading research institutions endeavouring to solve some of the world’s most enduring problems. ”

“ The Australian Chamber is focused on the job readiness of graduates including expectations about teaching quality, employability skills and skills utilisation. We can enhance the outcomes for graduates, universities and business through active collaboration between business and universities. Higher education institutions are a base for research, so it is vital for business to continue to work closely with universities to stay at the frontier of innovation and keep pace with changes in the economy. ”



Mr James Pearson
Chief Executive, Australian Chamber of Commerce and Industry



Mr David McDonald
Business Insider Australia Research, The Collaboration Report

“ Collaboration does not always just happen. Sometimes it literally needs a little nudge ... This could also do with a polite call-to-arms to business, as policy and capital availability only go so far: business needs to try things, reach out, engage with researchers and universities. And universities, too, probably need to see business as stronger partners. ”

THE VALUE TO YOU

Many businesses already recognise the value of university partnerships.

A recent study found 99 per cent of Australian businesses that collaborated with a university in 2017 said they planned to maintain or increase their cooperation with universities.⁵

Those surveyed for the research included CEOs and Managing Directors with a keen eye on the direct benefits and returns to the firm.

As is evident from the case studies included in this publication, **many companies forge long-term collaborations with universities that generate multiple benefits to a business over many years.**

Analysis by Cadence Economics for Universities Australia found a **strong direct return on investment to companies of \$4.50 for every \$1 invested in collaborative university research in Australia.**

Beyond such returns on collaborative research, partnerships can be invaluable to a company's **talent identification for future recruitment**, ability to bring in university specialists **to solve problems**, and offers **an insight into early-stage and emerging frontiers in research** to deliver a competitive edge.⁶

Consumers and the public also rate firms more highly when they know they have such partnerships and community engagements.

Another recent study found that when the public was aware that a company partnered with a university, it enhanced the firm's public regard. It also **boosted a company's reputation for innovation, attractiveness as an employer, and the level of positive attitude that consumers had about the company.**⁷

And sometimes the strongest benefits that flow from collaborating with a university aren't necessarily those that stem from the pursuit of a technical innovation, or which lead directly to a commercial product.

An MIT-Cambridge study in 2006 found **businesses derived even greater value from their 'informal contacts' with universities than the significant benefits they derived from technology licensing and spinoff companies.**⁸

“ The case for collaboration is increasingly compelling, particularly for companies seeking growth and new competitive advantage. Australian universities are now well-positioned to provide an extraordinary array of technologies and services to support companies. Over the last decade, they have become much more open and easier to navigate, and have put systems in place for working with companies. It is often the unexpected or flow-on benefits – such as access to graduates for employment, or introductions to other partners, suppliers, and customers – that make a collaboration with a university especially valuable for a company. ”



Dr Peter Binks
CEO, Business/Higher Education Round Table

WHERE AND HOW TO BEGIN

Universities are large institutions. Identifying the right person to speak with to explore a potential collaboration is crucial. A list of key contacts is included in the final pages of this publication to help you start your inquiry.

It can also be handy to understand the diversity of collaborative opportunities available as a starting point.

The guide below lists some of the types of opportunities you might wish to explore.

TYPES OF COLLABORATION

CONTRACT RESEARCH

Got a particular problem that you want to solve? Define what you need and contact your local university to conduct research on your behalf. You get access to top-level expertise, often while retaining the intellectual property rights.

COLLABORATIVE RESEARCH

This is where a business or community group undertakes research together with a university. Government funding, such as an Australian Research Council Linkage Grant, may be available for such joint research work. Intellectual property is usually shared between the partner organisation and the university.

STUDENT PLACEMENTS AND SCHOLARSHIPS

Want to find homegrown talent? Reach out to your university to see if you can establish a student placement, project or scholarship program. This kind of collaboration helps you connect with undergraduate and postgraduate students while they're still studying. Students get the experience, and you get to identify the best skilled graduates.

CO-LOCATION

Put yourself right in the middle of things by working alongside researchers on campus — or in an innovation hub or university precinct. Having a presence on the same site can lead to valuable cross-fertilisation of ideas — and means that businesses, researchers and students get the benefit of working together.

INNOVATION NETWORKS

These networks can help businesses and organisations forge connections with local researchers — and help universities find businesses to partner with.

INDUSTRY ADVISORY GROUPS

These groups help universities ensure their courses reflect industry-relevant skills and knowledge — and help inform university curriculum. Advisory group participants are also exposed to the latest research and student trends relevant to their industry.

EXPERT-IN-RESIDENCE

Why not bring a university expert in-house? Researchers can go on secondment to industry and get the benefit of working on real-world problems, while you get your very own experts working on discrete research projects or company goals.



“ Our country’s future relies on companies working with key educational and research institutions to get our workforce ready for the fourth industrial revolution. The world is changing rapidly through technology and Australia needs to equip our future generations and our existing workforce with the necessary capabilities and tools to make things faster, cheaper and better – ultimately this is about jobs and competition. ”



Mr Jeff Connolly
CEO, Siemens



Ms Catherine Livingstone AO
Chairman, Commonwealth Bank

“ None of the new era opportunities can be realised without far more effective collaboration between the university sector and industry. ”

CASE STUDIES

FROM CAR INDUSTRY TO SOLAR IN SA WITH PRECISION COMPONENTS

With the big car manufacturing industries in Australia — a major employer in industrial suburbs — having faced vast challenges over the past decade, the race is on to find new work for the companies who supplied components to those plants.

At the same time, South Australia has been a key state in the public debate about Australia's future energy supply sources amid rising costs for energy consumers.

Governments, industry and researchers are all working towards solutions to deliver more sustainable and more affordable energy.

University of South Australia (UniSA) has joined forces with press metal company **Precision Components** in a project set to revolutionise solar energy in Australia.

The project has led to the design and manufacture of 25 heliostats; highly reflective mirrors that focus sunlight onto collectors and convert the sun's energy to electricity.

The heliostats are coated with a thin film, an application that evolved from the same UniSA research that delivered the world's first fully plastic automotive mirror. The technology means the heliostats are able to withstand all weather conditions.

Apart from providing a potential solution to the state's spiralling energy costs, the technology has allowed Precision Components — an automotive manufacturing company — to diversify into the new and growing renewable energy sector after its major client Holden closed the doors to its Elizabeth plant, in Adelaide's northern suburbs, in late 2017.

The partnership includes a plan to develop a tracking system that will create more than 120 jobs in the state.



Photo: UniSA



Photo: The University of Sydney

APPLYING SMART SCIENCE TO LONG HAUL FLIGHTS WITH QANTAS

In 2017, more than four billion people around the world travelled by plane. Globally, the aviation industry is worth nearly US\$30 billion. In such a huge industry, any competitive edge can help with market share.

Ahead of the first flights on its Boeing 787 Dreamliner, **Qantas** partnered with **The University of Sydney** to improve the health of passengers flying longer distances than ever before.

Dieticians and nutritionists from the university's **Charles Perkins Centre** worked with Qantas' food service team to improve how changes to the timing of meals — and the food that is served — can help with sleep and wakefulness. In collaboration with Qantas, Boeing and industrial designer David Caon, university researchers also advised on cabin temperature and the wavelength and strength of light to help regulate sleep, and begin to adjust passengers' circadian rhythms to a new time zone.

The second stage of the partnership involves long haul Qantas passengers participating in in-flight trials. Customers will be given wearable technology to measure the impact of air travel on mental state and anxiety, immune function, sleep patterns, and jet lag recovery.

"As an airline, Qantas sought to build upon nearly 100 years of aviation and customer service experience using the world's best scientific minds in key fields of research, contributing to the design of new products, services and even facilities such as our new Perth International Transit Lounge armed with factual information around what is going to best benefit our customers," says Qantas' Head of Product Planning and Development, Philip Capps.

SMARTER FARMING WITH JOHN DEERE

Without our farmers, we'd starve. Australian farmers produce over 90 per cent of Australia's domestic food supply. Last year, Australian farm production was worth \$60 billion. Yet productivity growth in agriculture has slowed. Commodity prices are similar to 20 years ago — yet the costs of farming have risen considerably.

In the next 15 years, Australian agriculture has the potential to generate \$1.2 trillion for the Australian economy as world food demand doubles. So how can we help Aussie farmers to make the most of that opportunity?

John Deere and **University of Southern Queensland (USQ)** have forged a partnership to work on lifting farm productivity. They are developing the next generation of technology in farming — including machine automation and control — such as driverless tractors. The smarter farming partnership will help growers manage their costs more precisely and maximise yields and profits.

Driverless tractor technology has the potential to make farm operations more efficient and create a safer and less stressful working environment for farm workers and their families.

John Deere Australian Managing Director Peter Wanckel said the research partnership between USQ and John Deere's Intelligent Solutions Advanced Engineering Group will benefit growers in Australia and around the world.

"We are delighted to work alongside USQ's respected researchers. Together we can provide additional tools for agriculture to feed, fuel and clothe the increasing global population," he said.



Photo: USQ



SAVING LIVES AFTER STROKE WITH CLINICIANS AND RESEARCH PARTNERS

There are more than 420,000 stroke survivors in Australia. Many of them have profound health and mobility challenges. The total cost of stroke in Australia is \$5 billion a year to our health system and the economy.

Patients face the highest risk of death in the days and weeks immediately following a stroke. That's why the **Australian Catholic University** and **St Vincent's Health Australia's Nursing Research Institute (NRI)** established a collaboration to improve how nurses look after patients in those vital first 72 hours.

In partnership with researchers and clinicians, the NRI developed new protocols for nurses and doctors to manage patients' fever, raised blood sugar levels, and swallowing difficulties after a stroke.

The partnership tested the best way to embed these life-saving new protocols in hospitals in a trial with 1,600 patients at 19 NSW acute stroke units. The work involved **The University of Newcastle, Western Sydney University, The University of Sydney, Prince of Wales Hospital - Randwick, Monash University, the University of Ottawa** and the **Florey Neurosciences Institute**.

When hospital staff followed the protocols, 16 per cent more patients were still alive — and independent — three months after a stroke.

The Australian Commission on Safety and Quality in Healthcare says Australia could save at least \$281 million a year in healthcare costs if the protocols were followed for 65 per cent of eligible patients.

These life-saving protocols are now used in all 36 NSW stroke services and are set to be introduced to over 300 hospitals in 12 European countries.

The use of these protocols is now recommended in Australia's stroke national guidelines.



EXPLORING NEW FRONTIERS IN AEROSPACE TECHNOLOGY WITH BOEING

Global aerospace giant **Boeing** is a big name in the Australian economy. In 2016, the company contributed \$1.3 billion to Australia's GDP, invested \$47 million in research and development, and supported more than 9,300 jobs across the country. Boeing's presence in Australia is its largest outside the USA.

Through its ten Australian university partnerships, Boeing collaborates with Australian researchers on autonomous systems, composite fabrication, materials development, and robotics.

In 2017, Boeing moved a team of 30 into a dedicated research and technology facility within **The University of Queensland's (UQ)** St Lucia Campus to explore new frontiers in aerospace alongside the university's researchers and students. They are working on some of the industry's most exciting challenges including unmanned aircraft and autonomous systems, aircraft simulator technologies, manufacturing technologies, and cabin disease transmission.

Boeing Australia, New Zealand and South Pacific President Ms Maureen Dougherty said: "The opening of this centre on campus brings together Boeing and UQ researchers who will collaborate on the next great advances in aerospace."

Boeing and The University of Queensland have been partners since 2003. The partnership has included a range of support from Boeing for students at the university and more than \$10.5 million invested in diverse research projects.

The 15-year collaboration has helped Boeing identify talented engineers and research students to recruit after graduation. It has also enabled the company to work with the university's brilliant research teams in areas like incremental sheet forming, a cheaper and more efficient manufacturing technique that could also be used in biomedical and engineering industries.

Boeing supports a range of initiatives through its Australian university partnerships including scholarships, student science or engineering projects, seminars and workshops for university professors.

IMPROVING NATURAL GAS TECHNOLOGY WITH CHEVRON

By 2021, Australia is set to be the biggest exporter of liquefied natural gas in the world.

In 2015-16 alone, Australia exported 37 million tonnes of liquid natural gas with a value of \$16.5 billion, mostly to growing Asian economies.

For more than 15 years, **The University of Western Australia (UWA)** has enjoyed a close and mutually beneficial collaboration with multinational energy company **Chevron**.

The multimillion dollar partnership includes everything from research collaboration to infrastructure projects, as well as academic appointments, student placements, and scholarships. UWA, and the university's home city of Perth, is one part of three global innovation hubs for Chevron —and the company is also a significant employer of UWA engineering graduates.

The relationship has enabled UWA to play an important role in creating new products and technologies that have been employed across the industry.

The university's SAFEBUCK and STABLEPIPE projects, for example, have delivered solutions to stabilise undersea gas pipelines during cyclones and help them cope with high temperatures. These technologies have been vital to the industry's ability to move into deeper waters and save on costs.

The technologies were developed using the "O-Tube" — infrastructure that is unique to UWA and unlike any other facility in the world.

UWA also has similar long-term relationships across the industry, including with **Rio Tinto**, **BHP**, **Woodside** and **Shell**.



RE-BOOTING MANUFACTURING IN REGIONAL AUSTRALIA WITH LEMOND COMPOSITES AND CARBON REVOLUTION

Geelong, like other regional Australian cities, has been hit hard by the decline in traditional manufacturing. But **Deakin University** is partnering with local and global companies to reboot manufacturing in the region — creating new opportunities as old industries fade.

The **Geelong Future Economy Precinct** brings together experts and researchers to work directly with industry, while also giving students the opportunity to get experience inside cutting-edge companies.

Leveraging Deakin University's carbon fibre technologies — developed in its world-leading \$34 million carbon fibre research facility, Carbon Nexus — the university has partnered with companies like **LeMond Composites** and **Carbon Revolution**.

In one example, LeMond Composites has signed a \$58 million licensing deal for Deakin technology that is expected to reduce energy consumption in carbon fibre production by 75 per cent and to reduce manufacturing costs by about 50 per cent compared to current processes.

This reduced cost should make it possible to use carbon fibre across a range of industries in place of traditional structural materials such as steel and aluminium.

In just five years, it's estimated that the Precinct has created over 1,000 jobs.



Photo: Deakin University



BOOSTING FOOD PRODUCTION USING SMART IRRIGATION WITH RUBICON WATER

Living in a drought-prone country like Australia makes us more water-conscious than most. Particularly when efficient use of water has such a big impact on farm production in Australia which is worth \$60 billion a year to our national income.

Even a 20 per cent improvement in irrigation productivity on the farm can double the amount of food produced.

A ground-breaking 15-year partnership between **The University of Melbourne** and **Rubicon Water** has led to new technologies to help farmers use water more efficiently.

FarmConnect and the Total Channel Control system uses everything from solar power to smart gates and valves to deliver precise amounts of water to crops when they need it.

While the average Australian farm achieves about 50 per cent water efficiency, the innovative technology can lift that to around 90 per cent — saving around 400 gigalitres of water per year.

That's equivalent to the entire city of Melbourne's annual water consumption.

Now the project is going global — reaching the US, Spain, Chile, Mexico, Italy, France, New Zealand, and Canada. Given food production uses 70 per cent of all water globally, this technology has the potential to make a big difference for the economy and the environment, both at home and around the world.



Photo: Sarah Adams/RMIT

DEVELOPING DIGITAL SKILLS FOR THE APP ECONOMY WITH APPLE

The app economy is booming, with estimates that it contributed more than \$11 billion to the Australian economy in 2017.

As workplace demand for digital skills continues to grow, Australia will need an additional 81,000 specialist tech workers by 2022.

Jobs that will involve the intensive use of tech are also anticipated to rapidly increase, with growth estimates over the next five years in excess of 236,000.

With this in mind, in 2017 **RMIT University (RMIT)** announced a brand new collaboration with **Apple Inc.**

In what is an Australian first, RMIT is now delivering an 'Apple app development with Swift' course.

Swift is a programming language created by Apple for building everything from mobile apps and desktop software to services in the Cloud.

The course will provide students with new opportunities to develop the digital skills they will need for the future world of work. The program was co-created and endorsed by major industry partners, including Tigerspike, jtribe and Bilue.

Lisa Jackson, Apple's Vice President of Environment, Policy and Social Initiatives, said: "We are excited to see RMIT University use our Swift curriculum to equip students in Australia with the skills to carry them into the growing app economy."

The collaboration complements RMIT's existing software engineering and computer science degrees and highlights the university's ongoing commitment to fostering digital start-ups.

The online course was so popular it booked out in just six days and more than 150 students have already registered for the on-campus course. RMIT Online program scholarships have also been offered to school teachers, along with a free summer coding school for secondary school students.

HELPING AUSTRALIAN GRAIN GROWERS WITH THE GRAINS RESEARCH DEVELOPMENT CORPORATION

Australian farm production was worth around \$60 billion last year, and agricultural products make up 15 per cent of Australia's total exports, so it's crucial that we get even better at eliminating the pathogens, pests, and weeds that can put our farmers' livelihoods and our food security at risk.

That's why the **Grains Research and Development Corporation** (GRDC) partnered with **Curtin University** to establish the Centre for Crop and Disease Management — a ground-breaking national research centre for improved crop health, productivity, and viability.

Since its launch in 2014, the centre has delivered research breakthroughs in fungicide resistance; molecular genetics to help breed cereal, oilseed and pulse varieties with stronger disease resistance; and more economical farming systems.

The work of the centre, and crop research previously undertaken by Curtin University, is estimated to save growers and industry more than \$200 million per year. The centre has more than 65 staff working across ten research programs.

GRDC Chairman John Woods said the collaboration is delivering cutting-edge research for the benefit of Australian grain growers.

"Through this partnership, we are tackling the \$1.5 billion disease threat faced by Australian grain growers every year, and ensuring growers and advisers have important management information to make better decisions and implement key changes at the paddock level," Mr Woods said.

"As a result of this collaboration, Australian growers are saving millions of dollars, making this value-for-money investment vital to the profitability of the nation's agricultural industry".



Photo: John Noonan, CCDM

A COLLABORATION FORGED IN STEEL WITH BLUESCOPE

The Australian steel manufacturing industry plays a major role in the Australian economy. It includes hundreds of small and medium-sized businesses that supply steel manufacturers and the customers who use Australian steel products. The industry employed around 90,000 people and added more than \$8.7 billion to the economy in 2012.

Yet the industry is facing intense global competitive pressures — as are many Australian manufacturing industries. **BlueScope Steel** is responding to these challenges through innovation and collaboration, including through their partnership with the **University of Wollongong**. The Australian Research Council Research Hub for Australian Steel Manufacturing is a collaboration that draws together brilliant researchers with their industrial counterparts across the entire steel manufacturing chain.

The partnership aims to develop innovative solutions and breakthrough technologies, helping the sector to develop more competitive processing methods and new products. Since 2015, this ground-breaking initiative has attracted funding of almost \$13 million over five years, including significant investments from the Australian Research Council, through the Industrial Transformation Research Program, and BlueScope.

This project highlights the value that both industry and government see in collaborative, cross-disciplinary research and industry-focused research. The Steel Research Hub brings together seven industry partners and seven universities to collaborate on a diverse range of projects. Its work is helping to develop new steel products with improved properties and new functional coating systems, new manufacturing process technologies for greater efficiency, and new supply chain relationships and capabilities to support the competitiveness of Australia's steel manufacturing sector, both economically and environmentally.



Photo: Paul Jones, UOW Photography



A PRACTICAL RESOURCE TO PREVENT ILLNESS WITH GENERAL PRACTITIONERS

Each year, about 86 per cent of Australians visit their GP. We rely on GPs for the answers to just about everything that can go wrong with our health. But how do they keep across the latest and best advice to prevent common health problems? And how do they stay up-to-date with the newest research for each medical condition?

The Australian guidelines for preventive activities in general practice, also known as the 'Red Book', are one of the most-used references for GPs in Australia. Developed by the **Royal Australian College of General Practitioners (RACGP)** — in collaboration with GPs and university experts — the Red Book covers a variety of areas including advice to GPs on how to improve their patients' heart health, as well as advice on immunisation and suicide prevention.

The book receives nearly half a million online views a year. The RACGP has also distributed more than 4,000 hard copies of the book since its latest revision launched in 2016.

Medical experts, including those from **Bond University, UNSW Sydney, The University of Newcastle, The University of Melbourne, Flinders University, Monash University, The University of Adelaide, The University of Tasmania** and **The University of Sydney**, contribute to updates for the Red Book. They review the guidelines every two to three years to ensure they are up-to-date with the latest research.

It's now in its ninth edition and is free to download on the RACGP website.



Photo: Sally Tsoutas, WSU

GREENER GREENHOUSES: ENHANCED CROPS WITH HORT INNOVATION AUSTRALIA AND INDUSTRY PARTNERS

In Australia, greenhouse crop production and hydroponic food have rapidly developed over the past 20 years. The protected cropping industry is currently valued at \$1.3 billion at the farmgate.

This protected form of agricultural production means temperature, humidity, light, fertilisation, and CO₂ levels can all be tightly controlled, allowing producers to get better crops while making energy and water use more efficient.

The Hawkesbury Institute for the Environment at **Western Sydney University** has forged a strong collaboration with **Hort Innovation Australia** and other industry partners including **Syngenta, Bayer** and **Olam** to provide research solutions for future food challenges.

A centrepiece to this collaboration is the National Vegetable Protected Cropping Centre, featuring a sector leading, high-tech greenhouse.

The Centre provides an Australian context for research into all aspects of greenhouse crop production and will help industry meet growing market demand for fresh food.

The Centre also offers opportunities for training and education to students from the university and local TAFEs, along with workers from industry, helping to prepare them for a career in protected crop production.

Hort Innovation Australia Chief Executive John Lloyd said: “The combination of an ageing horticultural industry in Australia with a fast-moving technological landscape and a rising global demand for food means the National Vegetable Protected Cropping Centre has never been more critical.

“The expected findings that will come out of this Centre are exciting. Researchers are working to create the optimum environment to drive maximum harvest windows and overall yield for a variety of vegetables, then share this information with Australia’s growers.”

All vegetables produced in the massive structure are currently donated to Foodbank to help provide food relief for those in need.

Other collaborative projects including examining the health of Australian bee and other pollinator populations and their impact on food production, as well as new tools to develop sustainable, resilient urban green spaces.

LEADING SOLAR ENERGY RESEARCH AND DEVELOPMENT WITH INDUSTRY AND GOVERNMENT PARTNERS

It's a burgeoning industry and an environmental boon. The economic flow-on benefits of solar energy to Australia are estimated at well over \$8 billion as companies and households move to minimise climate change by choosing solar power.

A fruitful university-business-government partnership driven by **UNSW Sydney** aims to keep Australia at the forefront of solar photovoltaic (PV) technology.

Gains in energy efficiency resulting from the research are forecast to save \$750 million in Australia's electricity generation over the next 10 years.

The research includes more efficient solar PV cells, developing cheaper materials to cut manufacturing costs and improvements in the quality and lifespan of the cells.

The project includes contributions from **The Australian National University**, **CSIRO**, industry partners — **Jinko Solar Co**, **SunPower**, **Trina Solar** and **LONGi Solar** — and the **Australian Renewable Energy Agency**.

Another example of UNSW Sydney's innovative collaboration is the 15 year solar supply agreement between UNSW Sydney, **Maoneng Australia** and **Origin Energy** that will drive greater renewable energy procurement and help the university achieve its goal of becoming fully carbon neutral by 2020.

Announcing the agreement earlier this year, UNSW Sydney President and Vice-Chancellor Ian Jacobs said: "It is highly significant and a testament to the world-class research carried out here at UNSW, that a technology which we played a leading role in developing is now being used to provide the university with a renewable source of emissions-free energy".

Origin's General Manager, Business Energy, Ryan Willemsen-Bell said: "Origin is proud to be a contract partner in this agreement with UNSW and we are committed to creating innovative solutions to help our customers meet their carbon neutrality aspirations".



Photo: UNSW



PRESERVING AUSTRALIA'S BEACHES WITH THE CITY OF GOLD COAST COUNCIL

As one of Australia's fastest growing regions and with a tourism industry worth more than \$5 billion, preserving the quality of the beaches and water at the Gold Coast is crucial.

But beach erosion, climate change, and industrialisation have meant the region's 52 kilometres of pristine beaches are coming under increasing pressure.

As part of an ongoing 20-year partnership, **Griffith University** has worked with the **City of Gold Coast Council** to underpin the city's Gold Coast Shoreline Management plan — a strategy to protect the city's natural shoreline for the next 50 years.

Since the partnership began, Griffith has helped to develop ways to improve the health of the beaches and water quality, to protect them from major erosion and storms, to manage dredging, and advise on sea wall construction.

The partnership has meant the council was able to reduce damage caused by major storms since 2009.

FIGHTING LETHAL BODY INFECTIONS WITH GENENTECH

Sepsis is a severe, whole-body infection that kills an estimated 3,000 people in Australia each year — and the number is growing. If not treated quickly, it can lead to septic shock and multiple organ failure, with only a one in two chance of survival.

Antibiotics and other treatments can boost a patient's chances but only if the disease is caught early.

In collaboration with **Genentech**, a leading US biotechnology company, researchers at **Australian Phenomics Facility** and the **John Curtin School of Medical Research at The Australian National University (ANU)** have identified a gene that triggers the condition that can lead to the full-body infection.

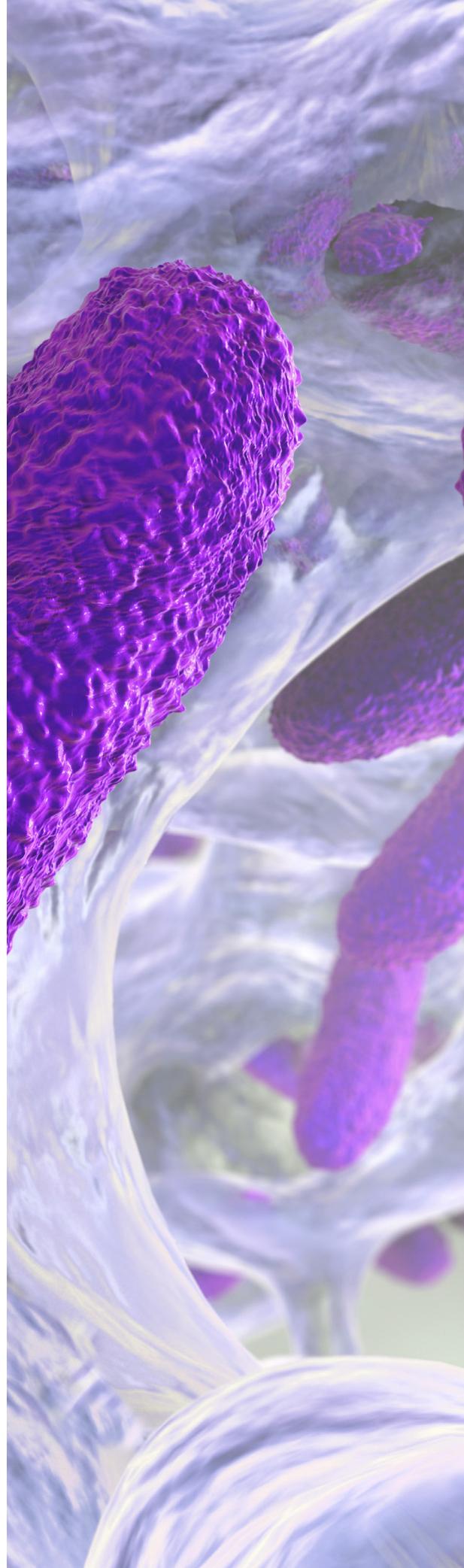
As part of a research collaboration that spans the last four years, researchers screened thousands of genes involved in the self-destructive inflammatory reaction.

The discovery of the gene could lead to new therapies and treatments to prevent immune system self-destruction and boost survival rates.

Genentech used infrastructure, technology and experience developed over 15 years at ANU, including the Australian Government's National Collaborative Research Infrastructure Strategy program and local and international research grants.

Senior scientist from Genentech Dr Nobuhiko Kayagaki said the work will also help researchers understand and treat other diseases.

"The identification of [the gene] can give us a better understanding not only of lethal sepsis, but also of multiple other inflammatory diseases", he said.



USING 'BOOSTED BANANAS' TO FIGHT MALNUTRITION WITH THE BILL AND MELINDA GATES FOUNDATION

Every year in developing countries, more than a million children under the age of five die or become permanently blind as a result of Vitamin A deficiency. One promising solution is to increase the amount of pro-vitamin A in staple food crops that form part of community diets.

In Uganda, the average person eats around 500 grams of cooking bananas, or 'matooke', every day, making it an ideal way to fight Vitamin A and iron deficiency, both of which are common in East Africa.

In partnership with **the Bill and Melinda Gates Foundation** and the **National Agricultural Research Organisation of Uganda, Queensland University of Technology** began to fortify East African Highland bananas with elevated pro-vitamin A and iron levels, as well as improve the crop's disease resistance.

These 'boosted bananas' have 20 times more pro-vitamin A and have already had early positive results in field trials. The bananas have also proven resistant to particular soil-borne fungus common to tropical areas, promising to help farmers boost banana production world-wide.

The long-term goal of the project is to release the fortified banana plants to Ugandan farmers by 2021.



Photo: Patria Jannides, QUT



Photo: The University of Queensland

APPLYING TRADITIONAL KNOWLEDGE TO TRANSFORM AQUACULTURE WITH COMMUNITY AND INDUSTRY PARTNERS

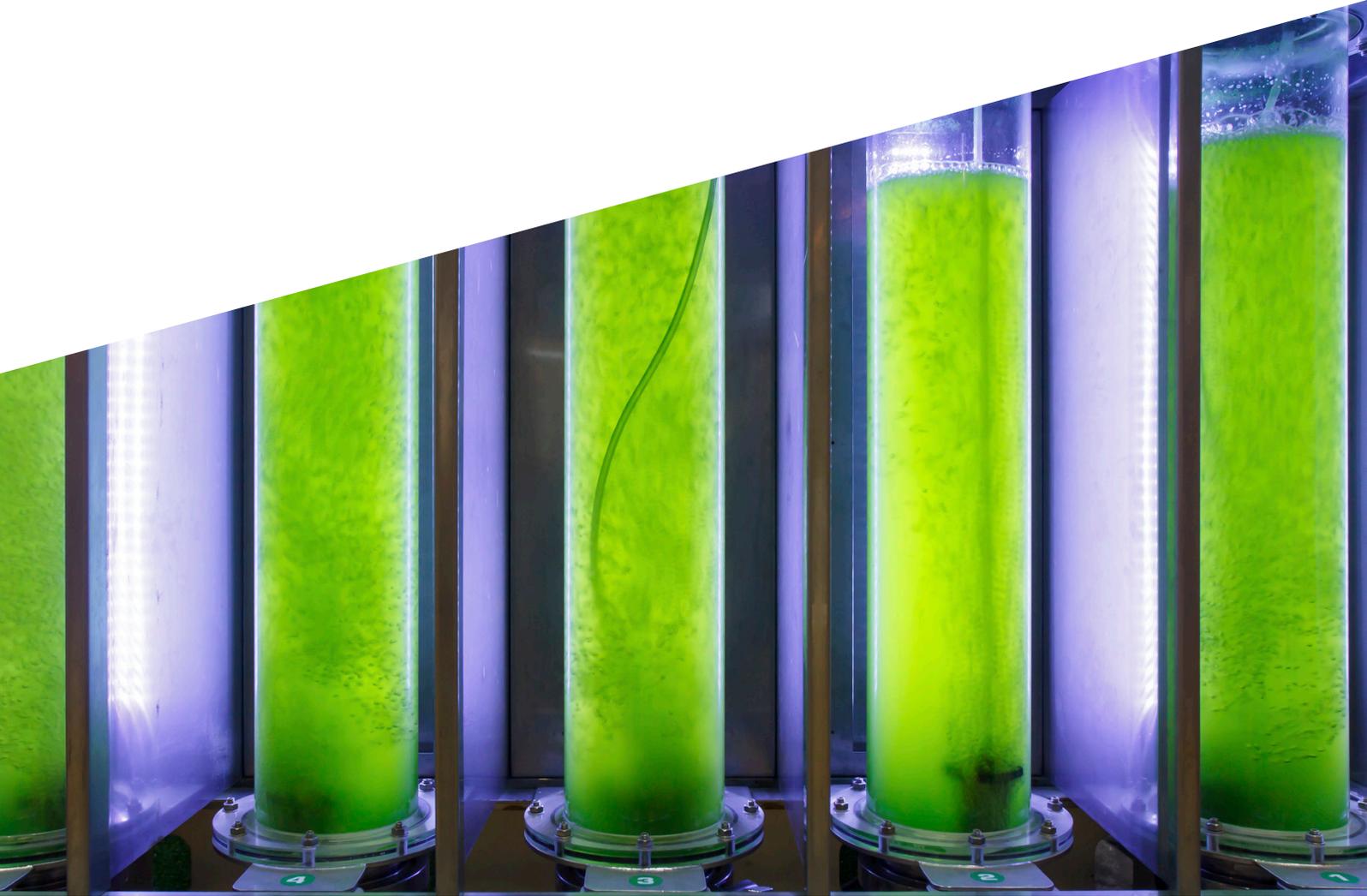
The Kakadu plum has traditionally been used in Indigenous medicine for its healing properties. Through a partnership between universities, traditional owners and businesses, it is now being used as a natural preservative to extend the retail shelf life of prawns.

This work delivers a huge advantage to the \$120 million Queensland aquaculture industry — of which prawns are worth \$80 million a year. It has enormous potential to help both prawn producers and retail sellers avoid waste — and ensure the industry's quality Australian produce stays fresh and saleable for longer.

Twenty tonnes of plums are being harvested annually across a number of Aboriginal communities and are now used as an ingredient by 75 per cent of the Queensland aquaculture industry.

Those involved in this partnership include **The University of Queensland, Gundjeihmi Aboriginal Corporation, Mamabulanjin Aboriginal Corporation, AgriFutures Australia, Australian Native Food and Botanicals, Department of Agriculture and Fisheries, Australian Prawn Farmers Association, Karen Sheldon Catering Pty Ltd, The Australian Industry Group, Kindred Spirits Association, and Charles Darwin University.**

The project won the 2017 Business/Higher Education Round Table (BHERT) award for Outstanding Collaboration in Community Engagement.



‘LITTLE BIOFACTORIES’: DEVELOPING ALGAE PRODUCTS WITH GOVERNMENT AND INDUSTRY PARTNERS

It’s estimated that by 2050 the world will have 10 billion mouths to feed, requiring a 70 per cent increase in food production and a 50 per cent increase of our energy supply, all while decreasing our carbon footprint.

Algae could hold the key to a cost-effective, low-carbon future.

The **Deep Green Biotech Hub** is an innovative bio-manufacturing facility at the **University of Technology Sydney (UTS)** that’s connecting industry, entrepreneurs and students to boost the state’s bio-economy, from agriculture and energy production to the manufacture of complex chemicals and pharmaceuticals.

The idea is to investigate and develop a range of exciting products derived from algae that act as ‘little biofactories’ reliant only on sunlight, simple nutrients and carbon dioxide.

They can produce sugar to make ethanol and oils for plastics; they can be altered to make pharmaceuticals; and used for the production of cosmetics, animal feed and nutraceuticals, such as algae-based omega-3 oil.

One estimate suggests the algae products market could be worth \$US44 billion globally by 2023.

The challenge lies in achieving the scale and efficiencies to make the industry and its products viable.

To this end, researchers at UTS are introducing foreign DNA to algae cells to produce greater quantities of high-value algae biomass and learn how to tweak the algae’s genetic make-up to be more useful.

UTS is one of only a few sites in the world supporting this budding industry, and partnerships are critical to the successful operation of the hub. Key partners include **NSW Department of Industry, Biofoundry** and **GE Healthcare Lifesciences**.

NEW RHEUMATOID ARTHRITIS DETECTION AND TREATMENT WITH JOHNSON & JOHNSON

Rheumatoid arthritis is an autoimmune disease that affects more than 400,000 Australians and more than 24.5 million people worldwide. The disease can be debilitating and painful — and can severely compromise people’s quality of life.

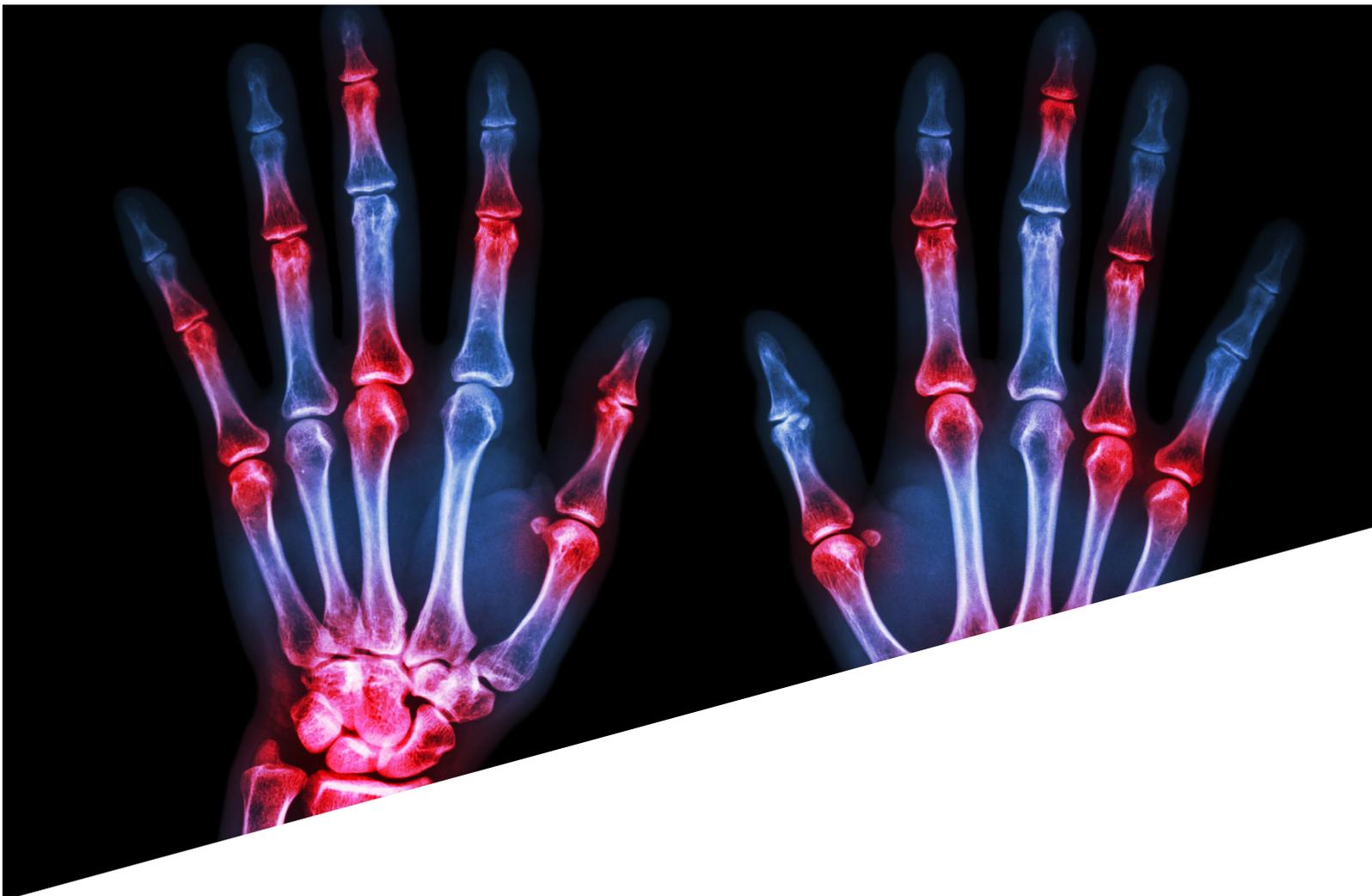
Monash University has formed a multi-year research partnership with **Janssen Biotech, Inc.**, part of multinational company **Johnson & Johnson**, to understand how to detect the disease early and develop new ways to prevent it.

The research is being led by Professor Jamie Rossjohn from Monash’s Biomedicine Discovery Institute — which brings together more than 120 internationally-renowned research teams committed to discovering new treatments and eradicating disease.

The agreement was facilitated by Monash Innovation, part of the recently established Enterprise portfolio at Monash University, and Johnson & Johnson Innovation.

The Victorian Minister for Small Business, Innovation and Trade, Philip Dalidakis MP said it was “great to have our world-leading universities partnering with global companies to drive innovation that will create jobs in Victoria’s medical technologies and pharmaceuticals sector”.

Monash University is close to major biomedical research infrastructure such as the Australian Synchrotron, Monash Biomedical Imaging and other research facilities such as CSIRO, helping to make Monash a strong industry partner.



REINVENTING MANUFACTURING IN THE DIGITAL AGE WITH SIEMENS

As traditional manufacturing comes under threat, advanced manufacturing techniques are going to be critical to revitalise and re-invent industry in Australia.

But advanced manufacturing requires different skillsets and different technologies to get the next generation of products out into the market.

Swinburne University of Technology has further cemented its reputation as a leader in advanced manufacturing by partnering with engineering giant **Siemens** with a \$135 million software deal.

The funds will be used to digitalise Swinburne's Factory of the Future, a facility with highly specialised studios that enables students, researchers and industry to develop prototypes rapidly, create innovative products, and research potential manufacturing methods.

The grant will enable students and researchers to have access to the same software being used by leading companies around the world working on advanced manufacturing projects.

Chairman and CEO of Siemens Australia, Jeff Connolly, says the grant will support Victoria and Australia by preparing students to participate fully in the emerging global innovation economy.

"The world is changing rapidly through technology and Australia needs to equip our future generations and our existing workforce with the necessary capabilities and tools to make things faster, cheaper and better – ultimately this is about jobs and competition", Mr Connolly said.

Swinburne University of Technology has also partnered with Siemens, the Government and Ai Group to create a revolutionary new apprenticeship model, now in its second year, designed to meet industry needs and focus on the high-level technological skills required for the future workforce.



Photo: Swinburne University of Technology



Photo: The University of Adelaide

TACKLING DENTAL CARE SHORTAGES IN REGIONAL AUSTRALIA WITH GOVERNMENT AND HEALTH NETWORKS

Many common preventable dental problems can escalate into life-threatening illnesses. That’s why having access to dental care is so important — particularly for low-income, pensioner, and regional communities.

Yet less than half of all Australian adults have regular dental check-ups. If you live in a regional or remote area, you’re even less likely to visit your dentist regularly.

The **Central Adelaide Local Health Network** has partnered with **The University of Adelaide** to help tackle this problem. Under their agreement, dental and oral health therapy students provide dental care to eligible patients at the South Australian Dental Service clinics.

The students work at various locations across South Australia, including the new Adelaide Dental Hospital, and in various community clinics across Adelaide, Berri, Mount Gambier, Whyalla, and Port Lincoln.

Through their work in the clinics, the students make a significant contribution to the dental and oral care of public dental patients across South Australia. Each year they provide care in over 36,000 sessions with patients.

South Australia isn’t the only place where dental students are making a difference. In far north Queensland, **James Cook University** students provide supervised care at JCU Dental clinics in Cairns and Townsville. In regional New South Wales, **Charles Sturt University** dental students and oral health therapy students provide care in Wagga Wagga, Orange, Bathurst, Dubbo, and Albury.



Photo: The University of Newcastle

TINY PERSONAL TRAINERS: HEALTHY DADS, HEALTHY KIDS WITH COMMUNITY PARTNERS

In Australia, more than two thirds of men are overweight. That's not only a problem for their own health but also for the public purse — obesity costs the Australian economy more than \$60 billion every year. It's also a problem when they pass along bad health habits to the next generation.

Despite dads being very influential on children's physical activity and eating behaviour, family-based programs to tackle obesity have so far only engaged mothers.

In response, **The University of Newcastle** developed and rolled-out 'Healthy Dads, Healthy Kids' in partnership with **local schools and communities, the Hunter Medical Research Institute** and community sponsor **Coal and Allied**.

The program helps children become 'little personal trainers' and motivates kids and dads to work together to change behaviour and become more active.

Since starting in 2009, the program has worked with over 500 families and 1000 children — and has influenced public health agendas in Australia, the UK, and USA.

An evaluation of the program when it was rolled out in the NSW Hunter region found that participating fathers lost weight, reduced waist circumference, and improved their diets and activity levels. Children also saw improvements in physical activity, dietary behaviours, and weight.

One father who participated in the program said: "I cannot recommend this program enough. It has probably added years to my life expectancy — but probably more importantly it has added immeasurably to my quality of life and my family's right now.

"I have more energy, I want to be more involved with my kids and I have a sense of control of my body."

BREAKING THE LINK BETWEEN POVERTY AND ILLNESS WITH THE CITY OF BRIMBANK

Chronic diseases such as cancer, cardiovascular disease and diabetes are the leading cause of illness, disability, and death in Australia. They are a huge health challenge — particularly in economically and socially disadvantaged communities.

Almost a third of chronic disease could be prevented by lower rates of smoking, obesity, alcohol use, physical inactivity, and high blood pressure.

Victoria University's Australian Health Policy Collaboration is researching the most effective programs to reduce these risk factors — and keep those rates down. This collaboration with some of its local communities in Melbourne's west is confirming what works in practice. As part of the 'Growing Brimbank' program, Victoria University researchers and policy experts collaborate with **City of Brimbank** managers and community organisations to target common risk factors for preventable chronic diseases.

These efforts are building the evidence base on approaches that work — and those that don't. Early work has focused on how to encourage physical activity and health knowledge in some of the most disadvantaged sections of the local community. As part of this work, the City of Brimbank has made a commitment to greatly expand St Albans Leisure Centre with a new leisure and aquatic facility, a new community centre, and a range of related health and social services all under the one roof.

The collaboration aims to confirm which policies and interventions are most effective at improving people's health, families, and communities. In the long term, these could then be replicated in other disadvantaged communities across Australia to greatly improve their health and wellbeing.



Photo: Victoria University

REDUCING THE COST OF CYCLONE DAMAGE WITH THE INSURANCE INDUSTRY

Every year, tropical cyclones pose a serious threat to Australian communities and industries. From 1970 to 2013, insurance losses from cyclones in Australia cost the nation over \$5.3 billion.

As well as the economic cost through physical damage to buildings and infrastructure, cyclones can up-end people's lives and community wellbeing.

To reduce the costs of cyclones, **James Cook University's** Cyclone Testing Station (CTS) has worked on building standards, codes and practices for over 40 years to increase the safety and resilience of buildings and infrastructure.

The CTS has partnered with the **Queensland Government** and **leading Australian insurers** to better understand the damage and associated costs — and how to reduce these costs through increasing building reliability.

With project partner **Suncorp**, the goal is to reduce insurance premiums paid by Australian homeowners by better understanding the drivers of claims and what can be done to address these.

Data from Cyclone Yasi found that 86 per cent of insurance claims were minor. Many of these claims could have been prevented by more effective building upgrades, maintenance, and preparedness. By investigating the common weaknesses in buildings, along with external elements which cause building damage, this collaboration investigated options to help reduce insurance premiums through lowering household risk.

Undertaking the retrofitting and mitigation of risks to buildings has a broader public good function — it helps build community resilience through preparedness. Suncorp has noted “a resilient community is one that enjoys physical safety, mental wellbeing, the freedom to start a business and the confidence to buy a home.”





KEEPING THE GLOBAL ECONOMY CHUGGING ALONG WITH THE RAIL INDUSTRY

The vast majority of the world's key commodities are carried by heavy haul railway. Improving the size and lifespan of these trains can make a huge difference to both the cost and energy efficiency of rail freight.

CQUniversity's Centre for Railway Engineering has worked with **rail industry organisations** and university rail research groups on ways to make trains more efficient and safer. They identified wagon connection damping systems — known as rail draft gears — as a key area that could be improved.

The centre investigated how using the CQUniversity's supercomputers could optimise rail draft gears to improve their design and increase their service life and capability. They also wanted to reduce the structural weight of the train and decrease the amount of energy required to move empty trains.

Using these supercomputers, the team can run simulations in just a few weeks that would once have taken decades. It also developed its own software for the rail simulations. As a result, the centre has calculated better draft gear designs with significantly decreased coupler forces and fatigue damage.



PROTECTING AUSTRALIA FROM CYBER CRIME WITH OPTUS

Cyber crime remains an ongoing and pervasive threat to Australia's national and economic security and prosperity. Cyber crime will continue to be an attractive option for criminals due to its ability to generate large profits with a low risk of identification and interdiction. Each successful compromise encourages further cyber crime activities.

An \$8 million strategic alliance between **La Trobe University** and **Optus** is working to bolster Australia's cyber security capabilities and deliver the next generation of cyber protection experts.

La Trobe University's engineering and science experts work across areas such as smart grid cyber security, data mining, predictive analytics, machine learning, and big data science — including how to combat money laundering. The university also has law experts who identify policy and legal frameworks to ensure cyber risk management.

As John Paitaridis, Optus Business Managing Director noted, the Optus-La Trobe University partnership "responds to two critical challenges facing organisations. One is the importance of data analytics and cyber security in Australia's future in the digital world. The other is the need for industry, government and academia to collaborate in order to ideate, co-create and innovate."

The alliance has included the appointment of internationally recognised cyber security expert Professor Jill Slay as Optus Chair of Cybersecurity at La Trobe University. Professor Slay will lead the cyber domain at the university and establish a multi-disciplinary and industry-engaged approach to cyber security teaching, research, and policy development.

Other key alliance activities include working with other industry partners to develop unique multidisciplinary courses and provide scholarships, work-integrated learning and employment pathways to address Australia's critical cyber skills shortage. This has included the establishment of the Optus Cyber Security Experience, Australia's first free online national cyber security education course where students experience a day in the life of Optus's cyber experts to understand the skills and activities involved in a cyber-attack.

Optus Business also announced a security partnership with **Macquarie University** in 2016, which included a \$10 million Optus Macquarie University Cyber Security Hub to conduct research, offer training courses, foster thought leadership, and drive recruitment.

TURNING OLD MINES INTO FARMLAND WITH MINTOPE

When a mining site reaches the end of its lifespan, transition plans are crucial to avoid leaving a legacy of environmental degradation.

Yet communities eager to give a new lease of life to these sites may not always have ready expertise on how to make the transition.

On Christmas Island, **Murdoch University** researchers and local community leaders are turning old mine sites into productive farm land.

The research project involves a community organisation called **MINTOPE** (Mining to Plant Enterprises) working with Murdoch University researchers to turn former phosphate mining sites into fertile land capable of growing a variety of high value export crops on the island.

The soil at the old mine sites was analysed and then boosted with nutrients before it was planted with specially selected food crops suited to the conditions.

MINTOPE is owned and run by community leaders on Christmas Island.

The experiences on Christmas Island with rehabilitation of old mine sites and at other sites has inspired the development of a short course on best practice in mine closures.

The course has particular application for African nations seeking to rehabilitate land after mine closures.

The seven week course was designed for and attended by African officials responsible for developing legislation around mine closures. It was attended by officials from 13 African countries.



DEVELOPING THE NORTHERN PERTH INNOVATION ECOSYSTEM WITH INDUSTRY

In a bid to lift industry-university engagement, **Edith Cowan University** partnered with the **City of Joondalup** to launch THE LINK (thelink.space) in mid-2016. This new facility gives businesses access to Edith Cowan University research expertise and infrastructure, facilities, business events and news – along with economic development assistance from the City of Joondalup.

Since it began, more than 79 companies have tapped into THE LINK and it has an overall network of almost 700 subscribers.

One collaboration enabled by THE LINK helped start-up company M3B Labs Pty Ltd to launch a new product. The company worked with experts from ECU's School of Business and Law to help underemployed female professionals transform themselves into mumpreneurs. This work resulted in the launch of 'Jugglr', an app that helps connect mothers with other mothers in their area who are seeking or willing to help each other.

City of Joondalup Economic Development Adviser Steve Marmion said the connections made through THE LINK's network are vital to the success of local businesses.

"THE LINK is an important partnership between the City of Joondalup and Edith Cowan University, and through its engagement with the business community, it has played a significant role in developing an innovative ecosystem in the northern corridor region," said Mr Marmion.

In late-2017, THE LINK was recognised by the Western Australian State Government as a unique opportunity to designate Joondalup as an 'Innovation Hub'. Funding of \$800,000 was provided by the Government for this initiative, marking an important achievement for the partnership.

As THE LINK's network continues to grow, the next stage for the collaboration is to advance the "Innovation Hub" and to grow its industry partnerships, with a focus on small and medium-sized businesses.





BRINGING NEW HOPE TO FAMILIES WITH EMBRYOGEN®

For many people, making a baby is a straightforward process. But for some, it can be much less straightforward — and a lot more scientific.

At least one in six Australian couples experience infertility. Only a generation ago the options available for those unable to conceive in the conventional way were limited.

Thankfully, researchers at **The University of Adelaide** have learned a great deal about reproductive health over the past decades.

Today, IVF is a common procedure in Australia — with approximately one in 25 babies now born from IVF.

Research conducted at the university's **Robinson Research Institute** covers the entire spectrum of reproductive health. This knowledge has been translated into improved IVF to assist thousands of couples to have healthy babies. It has led to a number of discoveries such as **EmbryoGen®**, a breakthrough treatment for women undergoing IVF after one or more previous miscarriages.

EmbryoGen®, developed by the university and Danish company **Origio**, is an innovative fertility culture medium for growing embryos, which can improve implantation rates by up to 40 per cent and live birth rates by 20 per cent.

The product is the culmination of more than two decades of work by the institute under its Director, Professor Sarah Robertson.

Today, EmbryoGen® is used in more than 50 countries worldwide. Patients have a higher chance of achieving successful pregnancy, and undergo fewer IVF cycles to have a child. The savings to patients and to the health care system are estimated at over \$40 million to date. And of course it brings benefits that are hard to quantify — making the dreams of starting a family come true.



SAVING AUSTRALIA'S UNIQUE WILDLIFE FROM CLIMATE CHANGE WITH NSW GOVERNMENT AND PARTNERS

As the planet heats up, Australia faces a race against the clock to help our unique flora and fauna adapt and survive. The risk of not doing so is losing precious species. It is in our national interest to understand precisely how our animals and plants will be affected — and how damage and threats can be mitigated.

Macquarie University, in partnership with the **NSW Government**, wants to maximise the chances of survival for animals and ecosystems under threat from more volatile and extreme weather conditions.

Macquarie University hosts the Biodiversity Node of the NSW Adaptation Research Hub which informs recommendations to Government on the most effective conservation practices to support species adaptation to global warming.

It undertakes research to understand the vulnerability of particular species to climate change, to monitor climate-linked wildlife disease, and investigate the use of aerial imagery to survey weed growth in sensitive environments. It has produced practical tools to aid conservation such as maps predicting the vulnerability of threatened species to climate change in NSW.

The node supports 18 research projects with 64 researchers from 16 institutions and agencies across Australia.

These include the **NSW Office of Environment and Heritage**, **Taronga Conservation Society Australia**, **Western Sydney University**, **Royal Botanical Gardens and Domain Trust**, and several other institutions.

SUPPORTING VICTIMS OF IDENTITY THEFT AND CYBER CRIME WITH IDCARE

Nearly 1.7 million Australians fall victim every year to online identity theft. Having your identity stolen can not only have a financial cost, but a psychological cost, too. Victims often feel powerless and don't know where to turn for help.

To tackle this growing challenge, the **University of the Sunshine Coast (USC)** partnered with other groups to create **IDCARE** — a not-for-profit service that supports people in Australia and New Zealand who have their identity details stolen online or have been affected by cyber crime.

Housed on the USC campus, IDCARE began in 2014 and is the only service of its kind to combine both specialist identity and cybersecurity counselors with a research and data collection team.

The data collected and research undertaken by IDCARE helps keep law enforcement ahead of identity and cyber crime trends, informs policy makers and enables researchers and PhD students to work on real world problems in this area.

In 2017 alone, IDCARE provided 46,000 hours of counselling support and around 35,000 victims used the service for the first time. The service provides victims with total response plan to help deal with identity theft, as well as psychological support.

Founder of IDCARE and the USC Professor of Cybersecurity, David Lacey, said the demand for the service is nearly doubling every year.

In just one example of research projects undertaken by IDCARE, USC worked with researchers at **The Australian National University** to learn more about the impact on those who had had their mobile phone numbers stolen.

After establishing a working group with government and the major telecommunication companies, the research results led to improvements in policies dealing with mobile number theft.



BREEDING BETTER SHEEP AND CATTLE WITH FARMERS AND GOVERNMENT

The Australian cattle and sheep industry contributes more than \$16.9 billion to the nation's economy each year and employs more than 200,000 people.

For more than 40 years, the Animal Genetics and Breeding Unit (AGBU) has been shaping Australia's domestic livestock industry.

The joint venture between **University of New England** and **NSW Department of Primary Industries** researches how genetics can be used to breed better animals and plants.

Using massive datasets and complicated algorithms, AGBU delivers knowledge and tools that help breeders identify the most useful genetic traits. A network of partners distributes the results of the research, including software to the relevant livestock and plant industries.

The unit has made an especially strong contribution to Australia's red meat industries (primarily cattle and sheep), and has made an important contribution to the world-class status of these sectors.

The unit's genetic evaluation systems have also been widely adopted by the beef, pig, sheep, and plant industries.

In 2016, the red meat sector acknowledged the value of AGBU when Meat and Livestock Australia contributed another \$8.4 million over five years to support the unit's ongoing work.





FINDING MORE EFFECTIVE WAYS TO TEACH MATHS SKILLS WITH SAMSUNG

As our economy changes and technology evolves, we know a bigger share of our population will need strong skills in STEM – Science, Technology, Engineering and Maths – to do the jobs of tomorrow. The demand from employers and business for workers with STEM proficiency is only expected to grow in coming decades. So it's vital that we find the best ways to equip our next generations with those crucial skills and the confidence in how to apply them.

That's why **Samsung** and the STEM Education Research Centre (SERC) at the **University of Canberra** have partnered to hone the effectiveness of how maths is taught to our children.

As part of this collaboration, the university ran a program involving a diverse cohort of primary school students from low-SES backgrounds, rural and remote areas, and Aboriginal communities. This ground-breaking work delivered powerful new insights into how spatial awareness improves mathematics and science learning. The tools developed as part of this work delivered a significant improvement in students' maths skills – helping students to acquire the equivalent of a year's worth of maths knowledge in just a few weeks.

The approaches used as part of the Samsung-SERC collaboration are now being embedded in a variety of other collaborations and partnerships. These include work with the **Department of Education** in the Early Learning STEM Australia program.



DEVELOPING GAME-CHANGING SUPPORT FOR AUSSIE FARMERS WITH THE AUSTRALIAN GOVERNMENT

Consumers here and around the world are spoilt for choice with Australia's diverse and high quality farm produce.

But just as important as the extensive array of produce is getting it to market in the most efficient and cost-effective way – and having access to specialist advice on how to keep improving that supply chain. With over 20,000 producers involved, the Farming Together Farm Co-operatives and Collaboration pilot program is managed by **Southern Cross University** and funded by the **Australian Government**.

The game-changing program provides farmers, fishers and foresters with access to more than 200 specialist advisers to enhance their knowledge and skills, and practical materials to strengthen their farm businesses.

The program is lifting awareness of how cooperatives, collective strategies and supply chain negotiations can improve farmers' returns. It offers advice on suitable business models and collaboration options for marketing, and specialist business legal and financial advice.

Covering produce as diverse as truffles, hemp, garlic, olives, tea, oysters, and many others, it has delivered impressive results. Since it began, it has created a pool of over 200 specialist advisers, supported 530 producer groups, delivered 770 expert support services, enrolled 90 producers in cooperatives governance training, and helped 117 new cooperatives to register.

Its biggest achievements include supporting a 100 per cent farmer owned mutual for multi-peril crop insurance for risk mitigation, establishing a national online auction system for fishing cooperatives and instigating block chain technology into the beef supply chain for instant contract payments, traceability and authenticity for export markets. The collaboration has directly created 63 full time jobs, and a further 68 jobs from its flow-on effects.

HELPING CONSUMERS MAKE ECO-SMART CHOICES WITH THE EAST GIPPSLAND SHIRE COUNCIL

When we reduce our household waste and recycle more, it doesn't just help the environment. It can also help local councils cut the cost of collecting and disposing of our rubbish. And that can lower their costs, to help keep council rates down.

So it's a win-win-win when councils can communicate effectively to help residents and ratepayers make eco-smart choices.

To help tackle this challenge, **Federation University Australia** and its Business School MBA Marketing Management course — delivered by its Bairnsdale campus — teamed up with the **East Gippsland Shire Council**.

Students doing the course are not only lending their expertise to their local community — they're also enhancing their own education and skills by applying their knowledge to a practical challenge.

As part of this relationship, students collaborated with the council to help review the effectiveness of its sustainable consumerism campaigns. By understanding more about what works and what doesn't in communicating with residents, the council was able to refine its communication strategy.

And that can also help to preserve the unspoilt natural environment of one of Australia's great regional tourism destinations.



PROGRAMS AND FUNDING

There are a number of government programs that exist to support clever collaborations between industry and universities. Knowing about these can also be useful when you are talking to a university about possible sources of funding that could be accessed as part of your collaboration with the university.

Here is a selection and relevant contact information:

The **Cooperative Research Centres (CRC)** program supports collaborations between industry, researchers and the community with short and long-term research grants.

Find out more at: www.business.gov.au

The **Innovation Connections program** helps small and medium sized businesses gain access to expert advice and collaborate with the research sector in developing new ideas with commercial potential.

Find out more at: www.business.gov.au

The **Rural Research and Development Corporations (RDCs)** work across agriculture, fisheries and forestry industries in Australia. Each one of the 15 RDCs is tasked with helping each industry be more productive, profitable, and sustainable.

Find out more at: www.ruralrdc.com.au

The **Australian Research Council Linkage Projects** scheme promotes and funds partnerships between key stakeholders in research and innovation, including universities, government, business, and industry.

Find out more at: www.arc.gov.au

Industry Growth Centres are new and developing networks designed to foster collaboration and innovation with industry. Growth centres have been established in Advanced Manufacturing; Cyber Security; Food and Agribusiness; Medical Technology and Pharmaceuticals; Mining Equipment, Technology and Services; and Oil, Gas and Energy Resources.

Find out more at: www.industry.gov.au

The **Australian Research Council's Industrial Transformation Research Program** funds research hubs and training centres that help universities and businesses collaborate on research, and train researchers of the future in industry-relevant settings.

Find out more at: www.arc.gov.au

NSW Knowledge Hubs are industry-led collaborative partnerships centred around key NSW industry sectors. These partnerships bring together businesses, research organisations and industry associations, to share information and direct research through collaborative projects.

Find out more at: www.industry.nsw.gov.au

Advance Queensland is a program that provides a range of funding and services for business innovation, including programs that assist with business collaboration with universities, and programs to help small businesses employ skilled graduates to solve business challenges.

Find out more at: advance.qld.gov.au

iPrep WA is a unique collaboration between the five Western Australian universities that places teams of PhD students with an industry partner to work on a six-week project.

Find out more at: www.iprep.edu.au

The **CBR Innovation Network (CBRIN)** runs a range of networking programs that brings entrepreneurs, business, students, and experts together. These include speed-dating sessions to find a university student to suit your business, and Collaborative Innovation Labs that bring business, academia and government and social enterprises together.

Find out more at: cbrin.com.au

Many State Governments also run voucher schemes and competitive grants to help businesses commercialise their innovations:

New South Wales: **Techvouchers**

Find out more at: www.industry.nsw.gov.au

Western Australia: **Innovation Vouchers Program**

Find out more at: www.jtsi.wa.gov.au

South Australia: **Innovation Vouchers Program**

Find out more at: www.statedevelopment.sa.gov.au

Tasmania: **Advanced Manufacturing Innovation and Growth Voucher System**

Find out more at: www.stategrowth.tas.gov.au

Northern Territory: **Innovation Vouchers and Innovation Grants**

Find out more at: www.nt.gov.au/industry

Victoria: **Boost Your Business**

Find out more at: www.business.vic.gov.au





UNIVERSITY CONTACTS

Universities are large institutions. Identifying the right person to speak with to explore a potential collaboration is crucial. We have compiled the following list to help you begin your clever collaboration.

SOUTH AUSTRALIA

THE UNIVERSITY OF ADELAIDE

Campuses in North Terrace, Roseworthy and Waite

- For general information about partnering with the university, visit www.adelaide.edu.au/about/partnerships
- **ThincLab** is the university's Innovation Hub and, with its business incubator and distributed network model, promotes entrepreneurship opportunities for the university and the external community. Find out more: www.adelaide.edu.au/thinclab
- **Adelaide Enterprise** delivers university technologies to the market. Find out more: www.adelaide.edu.au/enterprise or enterprise@adelaide.edu.au
- **Research Services** can provide advice on industry-related competitive research grants. Find out more: www.adelaide.edu.au/research-services

FLINDERS UNIVERSITY

Campuses in Adelaide city, Alice Springs, Bedford Park, Darwin, Greater Green Triangle Lincoln, Katherine, Nhulunbuy, Riverland and Tonsley

- For general information about partnering with the university, visit www.flinders.edu.au/engage
- To begin a conversation about a collaboration, visit www.flinders.edu.au/engage/connect-with-us
- **Flinders Partners** is the sole commercialisation agent for Flinders University's academic research and intellectual property. Find out more: flinderspartners.com
- **New Venture Institute** is the home of innovation and entrepreneurship at Flinders University. Find out more: www.nviflinders.com.au
- To begin a conversation about engaging with Flinders University, contact **Callista Thillou**, Executive Director, Communication, Marketing and Engagement, on **+61 8 8201 5262** or callista.thillou@flinders.edu.au or visit www.flinders.edu.au/engage/connect-with-us

UNIVERSITY OF SOUTH AUSTRALIA

Campuses in Adelaide city, Magill, Mawson Lakes, Mount Gambier and Whyalla

- For general information about partnering with the university, visit www.unisa.edu.au/Research/Industry-partners
- To begin a conversation about a collaboration, contact **Ms Natalie Forde**, Head of Partner Engagement, on **+61 8 8302 5854** or natalie.forde@unisa.edu.au
- **The Future Industries Accelerator** provides an innovative model for effective and sustainable collaboration between universities and industry. Find out more: fii.unisa.edu.au
- **UniSA Ventures** is the technology commercialisation arm of the University of South Australia. Find out more: www.unisa.edu.au/ventures
- **The Innovation & Collaboration Centre** is a strategic partnership between the University of South Australia, the South Australian Government and DXC Technology, supporting technology-based incubation and business growth. Find out more: icc.unisa.edu.au

NEW SOUTH WALES

AUSTRALIAN CATHOLIC UNIVERSITY

Campuses in Adelaide, Ballarat, Brisbane, Canberra, Melbourne, North Sydney, Strathfield and Rome

- For general information about a university partnership, visit www.acu.edu.au/about_acu/our_university/strategic_partnerships
- For information about work placements and internships, visit www.acu.edu.au/about_acu/our_university/for_employers

CHARLES STURT UNIVERSITY

Campuses in Albury-Wodonga, Bathurst, Canberra, Dubbo, Goulburn, Manly, Orange, Parramatta, Port Macquarie, Wagga Wagga and Wangaratta

- For general information about industry partnerships, visit innovate.csu.edu.au
- To begin a conversation about a collaboration, email innovate@csu.edu.au

MACQUARIE UNIVERSITY

Campus in North Ryde

- For general information about industry partnerships, visit www.mq.edu.au/research/commercialisation-and-innovation
- For information about available technologies, visit www.mq.edu.au/research/commercialisation-and-innovation/industry

UNIVERSITY OF NEW ENGLAND

Campuses in Armidale and Parramatta

- For information about research centres, visit www.une.edu.au/research/research-centres-institutes
- For more information about research impact and engagement, visit www.une.edu.au/research/research-excellence-impact-and-engagement
- To begin a conversation about research services, call **+61 2 6773 3715**

UNSW SYDNEY

Campuses in Kensington, Paddington and Canberra at ADFA

- For general information about a university partnership, visit research.unsw.edu.au/research-strategy-office
- To begin a conversation about a collaboration, visit research.unsw.edu.au/research-strategy-office-staff-contacts

THE UNIVERSITY OF NEWCASTLE

Campuses in Newcastle, Central Coast, Port Macquarie, Sydney and Singapore

- For general information about a university partnership, visit www.newcastle.edu.au/research-and-innovation/innovation/benefits-partnerships
- To begin a conversation about a collaboration, email innovation@newcastle.edu.au or call **+61 2 4921 8777**. Or contact **Professor Kevin Hall**, Deputy Vice-Chancellor (Research and Innovation), on DVCRIO@newcastle.edu.au

SOUTHERN CROSS UNIVERSITY

Campuses in Lismore, Coffs Harbour and Gold Coast

- To begin a conversation about a university partnership, visit www.scu.edu.au/engage/engagement/connect-with-us
- **Live Ideas** provides opportunities for students and staff to work with community partners. For more information, visit www.scu.edu.au/engage/live-ideas

NEW SOUTH WALES

THE UNIVERSITY OF SYDNEY

Campuses in Camden, Camperdown/Darlington, Cumberland, Erskineville, Rozelle, Surry Hills and Sydney city

- For general information about industry partnerships, visit sydney.edu.au/about-us/partnerships.html
- For more information on how to become a partner, visit sydney.edu.au/about-us/partnerships/how-to-become-a-partner.html

UNIVERSITY OF TECHNOLOGY SYDNEY

Campus in Sydney city

- For general information about a university partnership, visit www.uts.edu.au/research-and-teaching/industry-partnerships
- To begin a conversation about a collaboration, contact the **Research and Innovation Office** on **+61 2 9514 9681** or rio@uts.edu.au

WESTERN SYDNEY UNIVERSITY

Campuses in Bankstown, Campbelltown, Hawkesbury, Lithgow, Liverpool, Nirimba (Blacktown), Parramatta, Penrith, Sydney city and Sydney Olympic Park

- To begin a conversation about a collaboration, contact gateway@westernsydney.edu.au
- **Launch Pad** is a one-stop-shop for business and innovation support. For more information, visit www.westernsydney.edu.au/launch-pad/launch_pad

UNIVERSITY OF WOLLONGONG

Campuses in Batemans Bay, Bega, Dubai, Liverpool, Moss Vale, Nowra, Sydney city and Wollongong

- The **Innovation and Commercial Research Unit** streamlines the industry-research collaboration process at the University of Wollongong. For more information, visit www.uow.edu.au/research/icr
- For information about research priorities and strengths, visit www.uow.edu.au/research/priorities
- To begin a conversation about a collaboration contact **Professor Judy Raper**, Deputy Vice-Chancellor (Research & Innovation), on **+61 2 4221 3915** or via her Executive Assistant tracy_panton@uow.edu.au

AUSTRALIAN CAPITAL TERRITORY

THE AUSTRALIAN NATIONAL UNIVERSITY

Campuses in Acton, Brinkin (NT), Kioloa, Mt Stromlo, Siding Spring

- **Innovation ANU** provides strategic and commercial support for the development of high value and high potential programs, projects and partnerships. Find out more: services.anu.edu.au/business-units/innovation-anu or contact **+61 2 6125 3260** or innovation@anu.edu.au
- **ANU Enterprise** supports ANU experts to generate and deliver impact-focused projects with industry and government. Find out more: www.anuenterprise.com.au

UNIVERSITY OF CANBERRA

Campus in Canberra

- For general information about current university partnerships, visit www.canberra.edu.au/about-uc/for-business
- To begin a conversation about a collaboration contact **+61 2 6206 8326** or engagement@canberra.edu.au
- **Entry29 @ UC**, located at the heart of the university, connects students with a flourishing start up community. Find out more: Entry29.org.au/uc/
- **Millhouse** is a social enterprise incubator and accelerator. Find out more: millhouseaccelerator.com.au

DEAKIN UNIVERSITY

Campuses in Burwood, Geelong and Warrnambool

- For general information about collaboration, visit www.deakin.edu.au/collaboration
- For more information about R&D capabilities and industry partnerships, visit www.deakin.edu.au/collaboration/industry-and-business
- To begin a conversation about an industry collaboration contact the **Industry Engagement Office** on **+61 3 5227 1102**

FEDERATION UNIVERSITY AUSTRALIA

Campuses in Ballarat, Berwick, Brisbane, Gippsland and Wimmera

- For general information about community and industry partnerships, visit federation.edu.au/industry-and-community/partnerships
- **The Ballarat Technology Park** enables tech-driven businesses to prosper in a dynamic and supportive environment. Find out more: btp.federation.edu.au
- The **Industry Placement Program (IPP)** provides an opportunity for organisations across multiple fields to tap into the next generation of graduates. Find out more: federation.edu.au/industry-and-community/partnerships/industry-placement-program
- For information about industry research partnerships, visit federation.edu.au/research

LA TROBE UNIVERSITY

Campuses in Albury-Wodonga, Bendigo, Melbourne, Mildura, Shepparton and Sydney

- For general information about industry research partnerships, visit www.latrobe.edu.au/industry-and-community/research-partnerships-with-industry
- The **Industry Engagement team** is responsible for facilitating strategic research partnerships and industry sponsored research. For more information, contact **Ms Alison Angleton**, Deputy Director Industry Engagement, on a.angleton@latrobe.edu.au

THE UNIVERSITY OF MELBOURNE

Campuses in Burnley, Creswick, Dookie, Parkville, Shepparton, Southbank and Werribee

- For general information about industry research partnerships, visit research.unimelb.edu.au/partner
- To begin a conversation about a collaboration, contact **Mr Kevin Orrman-Rossiter**, Manager, External RIC Enquiries, on **+61 3 8344 1539** or kevin.orrman@unimelb.edu.au

MONASH UNIVERSITY

Campuses in Caulfield, Clayton, Parkville, Peninsula, China, India, Italy, Malaysia and United Kingdom

- For general information about industry partnerships, visit www.monash.edu/industry
- To begin a conversation about a collaboration, contact **+61 3 9905 9910** or innovation@monash.edu
- For information about research capabilities and facilities, visit www.monash.edu/industry/capabilities-and-facilities

RMIT UNIVERSITY

Campuses in Bundoora, Brunswick, Melbourne city, Ho Chi Minh City and Hanoi

- For general information about industry research partnerships, visit www.rmit.edu.au/industry
- To begin a conversation about a collaboration, contact industryconnect@rmit.edu.au

SWINBURNE UNIVERSITY OF TECHNOLOGY

Campuses in Croydon, Hawthorn, Wantirna and Sarawak in Malaysia

- For general information about industry partnerships, visit www.swinburne.edu.au/business-partnerships
- To begin a conversation about a collaboration, contact **Ms Janine Shearer**, Director, Collaborations and Partnerships, on **+61 3 9214 5912** or jshearer@swin.edu.au or **Ms Jane Ward**, Vice-President, Engagement, on **+61 3 9214 8626** or janeward@swin.edu.au

VICTORIA UNIVERSITY

Campuses in Footscray, Melbourne city, St Albans, Sunshine, Sydney and Werribee

- For general information about industry partnerships, visit www.vu.edu.au/industry/partner-with-us
- To begin a conversation about a collaboration, contact **Ms Shannon Ryan**, Project Coordinator Industry, Community & Sport Engagement, on **+61 3 9919 5511** or shannon.ryan@vu.edu.au
- For information about research capabilities and partnership opportunities with industry, community and government, visit www.vu.edu.au/research/collaborative-commercial-research or contact **+61 3 9919 5405** or research@vu.edu.au

BOND UNIVERSITY

Campus in Gold Coast

- For general information about research partnerships, visit bond.edu.au/researchers/research-strengths
- To begin a conversation about a collaboration contact **Research Services +61 7 5595 5039** or email research@bond.edu.au

CQUNIVERSITY

Campuses in Adelaide, Brisbane, Bundaberg, Cairns, Gladstone, Emerald, Mackay, Melbourne, Noosa, Perth, Rockhampton, Sydney and Townsville

- For general information about partnering with the university, visit cqu.edu.au/industry-and-partnerships/engagement
- To contact someone in the research division, visit cqu.edu.au/research/contact-us

GRIFFITH UNIVERSITY

Campuses in Gold Coast, Logan, Nathan, Mt Gravatt and South Bank

- For general information about partnering with the university, visit www.griffith.edu.au/industry
- **Griffith Enterprise** the university's dedicated office for business and government engagements, innovations and new ventures. Contact Griffith Enterprise on **+61 7 3735 5489** or visit griffith.edu.au/griffith-enterprise
- **The Griffith Industry Mentoring Program** links undergraduate, postgraduate and higher degree students with experienced professionals. Find out more: griffithmentoring.xinspire.com/programs/imp

JAMES COOK UNIVERSITY

Campuses in Cairns, Singapore and Townsville

- For general information about partnering with the university, visit www.jcu.edu.au/engage/business-and-industry
- To begin a conversation about a collaboration contact **Ms Rochelle Finlay**, Director Research Services, on **+61 7 4781 6538** or industry@jcu.edu.au

THE UNIVERSITY OF QUEENSLAND

Campuses in Gatton, Herston and St Lucia

- For general information about partnering with the university, visit research.uq.edu.au/partner-with-us
- To begin a conversation about a collaboration, contact **+61 7 3365 3559** or researchpartnerships@research.uq.edu.au or visit research.uq.edu.au/partner-us/how-partner
- For industry, find more ways to connect with the university, visit www.uq.edu.au/industry

QUEENSLAND UNIVERSITY OF TECHNOLOGY

Campuses in Gardens Point and Kelvin Grove

- For general information about partnering with the university, visit www.qut.edu.au/research/partner-with-us
- To begin a conversation about a collaboration, contact **Mr Michael McArdle**, Director, Office of Research, on **+61 7 3138 5376** or m.mcardle@qut.edu.au

UNIVERSITY OF SOUTHERN QUEENSLAND

Campuses in Ipswich, Springfield and Toowoomba

- For general information about partnering with the university, visit www.usq.edu.au/research/work-with-us
- To begin a conversation about a collaboration, contact the **Office of Research Development** on ord@usq.edu.au

UNIVERSITY OF THE SUNSHINE COAST

Campuses in Caboolture, Fraser Coast, Gympie, South Bank and Sunshine Coast

- For general information about partnering with the university, visit www.usc.edu.au/connect/business-and-industry
- **The Innovation Centre Sunshine Coast**, located at the University of the Sunshine Coast campus, is a major hub for innovators, entrepreneurial startups and high growth companies. Find out more at: innovationcentre.com.au

WESTERN AUSTRALIA

CURTIN UNIVERSITY

Campuses in Bentley, Kalgoorlie, Perth city, Dubai, Malaysia and Singapore

- For general information about partnering with the university, visit engage.curtin.edu.au/industry
- To begin a conversation about a collaboration, visit research.curtin.edu.au/about/contact

EDITH COWAN UNIVERSITY

Campuses in Bunbury, Joondalup and Mount Lawley

- For general information about partnering with the university, visit www.ecu.edu.au/industry/collaborating-with-ecu
- To begin a conversation about a collaboration, visit www.ecu.edu.au/industry/contact or contact the **Office of Research and Innovation** on **+61 8 6304 2870** or research@ecu.edu.au

MURDOCH UNIVERSITY

Campuses in Mandurah, Murdoch, Rockingham, Dubai and Singapore

- For general information about partnering with the university, visit our.murdoch.edu.au/Research-and-Innovation/Resources-for-researchers/Knowledge-Transfer
- To begin a conversation about a collaboration contact **Professor Chris Hutchison**, Director, Research and Innovation, on C.Hutchison@murdoch.edu.au

THE UNIVERSITY OF NOTRE DAME AUSTRALIA

Campuses in Broome, Fremantle and Sydney

- For general information about partnering with the university, visit www.nd.edu.au/research/research-development
- To begin a conversation about partnerships and collaborations more broadly, contact NED-BDE@nd.edu.au

THE UNIVERSITY OF WESTERN AUSTRALIA

Campuses in Albany, Claremont and Crawley

- For general information about partnering with the university, visit www.web.uwa.edu.au/engage/business
- To begin a conversation about a collaboration contact **Mr Mark Stickells**, Director, Innovation and Industry Engagement, on **+61 8 6488 5326** or mark.stickells@uwa.edu.au or **Mr Anthony Fortina** on **+61 8 6488 8027** or anthony.fortina@uwa.edu.au

TASMANIA

UNIVERSITY OF TASMANIA

Campuses in Cradle Coast, Hobart, Launceston and Sydney

- For general information about current university partnerships visit www.utas.edu.au/research/partnering
- To begin a conversation about a collaboration, contact **Dr Darren Cundy**, Director Business Development and Technology Transfer, on **+61 3 6226 6299** or darren.cundy@utas.edu.au

NORTHERN TERRITORY

CHARLES DARWIN UNIVERSITY

Campuses in Alice Springs, Casuarina, Darwin, Jabiru, Katherine, Melbourne. Nhulunbuy, Palmerston, Sydney, Tennant Creek and Yulara

- For general information about current university partnerships, visit www.cdu.edu.au/business-government
- CDU is a foundation partner in the **Darwin Innovation Hub** which plays a critical role in the Darwin innovation ecosystem. Find out more: <http://dih.cdu.edu.au/>
- **The Office of Research and Innovation** supports CDU experts to work with government and industry for the benefit of the region and beyond. Find out more: www.cdu.edu.au/research/ori/rgbd
- To begin a conversation about a collaboration contact **Mr Brendon Douglas**, Director of Research, on ori@cdu.edu.au or **+61 8 8946 6090**





- ¹ Australian Industry Group (2016) *Joining Forces: Innovation Success Through Partnerships*, AiGroup Melbourne, accessed 8 November 2017, http://cdn.aigroup.com.au/Reports/2016/JoiningForces_Innovation_success_through_partnerships_Sept_2016.pdf
- ² Australian Industry Group (2016), p. 7
- ³ Palangara, A., Spurling, T. & Webster, E. (2015) 'Does Innovation make SME firms more productive?' in A. Moore & J. Simon (Eds) *Small Business Conditions and Finance 19-20 March 2015*, Sydney, Reserve Bank of Australia, accessed 4 January 2018, <https://www.rba.gov.au/publications/confs/2015/pdf/palangkaraya-spurling-webster.pdf>.
- ⁴ Australian Industry Group, p. 7
- ⁵ Davey, T., Plewa, C., Meerman, A. & Galán-Muros, V. (2017) *State of University Business Cooperation – Australia – University Perspective*, *Global University Engagement Monitor*, p. 26, accessed 25 January 2018, https://ecic.adelaide.edu.au/docs/State-of-Australian-UBC_FINAL-Report_HEI-perspective.pdf.
- ⁶ *Global University Engagement Monitor* (2017) p. 26
- ⁷ Plewa, C., & Carillat, F. (2014) *The Reputation Effect of University-Business Collaboration: A Customer Perspective*, poster session presented at the meeting of Agents of Change, Brisbane, Australian and New Zealand Marketing Academy.
- ⁸ Hughes, A. (2006) *University-Industry Linkages and UK Science and Innovation Policy*, Centre for Business Research Working Paper No. 326, University of Cambridge, pp. 4-5, accessed 4 January 2018, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.125.7070&rep=rep1&type=pdf>.



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