The ‘sacred’ grass binding an ancient craft and modern science

Shaping a league of leaders with the Brisbane Broncos

Creating a clever country

Connecting the dots with big data
Grass-roots discovery

A microscopic discovery in spinifex grass has the potential to revolutionise everyday products, while creating an industry for remote Australian communities.
It is no coincidence that many of the world’s top-ranking universities are also residential campuses, as the links between living in a supportive campus environment and thriving as a student are compelling.

Generations of successful alumni with fond memories of a college or hall of residence will attest to this.

But in recent years, growth in UQ’s campus bed numbers has not kept pace with flourishing enrolments.

Now, we are at a point where the case for well-designed, distinctive, high-quality and competitively priced campus accommodation is stronger than ever.

The University was therefore delighted in late May when the Queensland Government approved a $251 million Queensland Treasury Corporation loan to build a 1300-bed residence for self-catering students on the St Lucia campus.

Design, intent, services and location will set this apart from the commercial for-profit student complexes that are mushrooming around inner-Brisbane.

UQ’s project will not only give more students the opportunity to live on one of the world’s most beautiful university campuses, it will also offer pastoral support, and foster skills required for happy co-existence, collaboration and negotiation with peers from around the world.

Terrific for international students, it will also be ideal for students from regional, rural and remote Australia – and we will encourage philanthropy to help place it within reach of talented, determined students on a tight budget.

Due to open in 2020, it will be an important component of the new Student Strategy, as it will deepen integration between the traditional campus and the digital economy. Coalescing with new investments in digital technology, student entrepreneurship and student-staff learning partnerships, the residential project will help young scholars hone the edge they will need to succeed in the global careers arena.

Relations with UQ’s neighbours are highly important, and a community consultation process is in train.

Significantly, the project will also improve childcare options for staff and students, because the Margaret Cribb Child Care Centre will be relocated to another site on campus, and doubled in capacity.

Some readers will know the Hood and Walcott Street sites on which the accommodation will be built. Part of the site was once dominated by the Vice-Chancellor’s home (until its demolition in the early 2000s) – which seems like fitting progress in our era of democratised higher education!

Historic Cairngorm, a cottage built for a family more than a century ago, will be refurbished so that it can be maintained and loved by new generations.

As architects, we have engaged Wilson Architects + Partners Hill. Led by UQ alumni, they have admirable records for educational and residential design, and for collaborating with UQ. Indeed, their work on the Translational Research Institute collected some 20 architectural awards and high commendations.

Just as the colleges and halls of residence have withstood the test of time, so too will this be an asset for the ages. It will influence how coming generations journey towards knowledge leadership, and how they enhance their local, national and global communities.

Some will do it as budding entrepreneurs using access to our IdeaHub (see page 8) and ilab facilities (see pages 28-31) to grow an idea to a product or service quickly.

Finally, I would like to salute a group of current and past students who are poised to boost community spirit by competing at the Olympics and Paralympics. They are primed for sports including (but not limited to) pole vaulting, walking, gymnastics, swimming, diving and triathlon. Meanwhile, some gifted alumni will provide vital services such as physiotherapy and psychology.

An attraction of UQ life is proximity to tremendous sporting facilities, but only an elite few who use them will ever attain Olympic selection. The rest of us can at least be inspired by the Olympians, as we chase our humble dreams of a more active, healthy lifestyle.

On behalf of The University of Queensland, I thank our Olympians and Paralympians for the pride they give us, and wish them all the very best for Rio.

Professor Peter Høj
Vice-Chancellor and President
Students at the Social Sciences and Humanities Library at UQ’s St Lucia campus.
Evolved learning for the new reality

The student experience at UQ is set for a game-changing makeover.

The University of Queensland will embark on a multimillion-dollar investment over the next five years to transform the student experience, with the aim of setting a new global standard in higher education while creating graduates who are ready for the new-world workplace.

UQ already holds a place among the world’s Top 50 universities, and this initiative will further assist students to acquire the knowledge, skills and intellectual flexibility needed to compete in rapidly evolving workplaces.

UQ’s Acting Provost and Senior Vice-President Professor Joanne Wright says the new Student Strategy is about developing a way of thinking that will help students create change, both in themselves and in the world around them.

“Graduate employability is UQ’s main priority and, as such, the student experience is focused on creating lateral thinkers and creative problem solvers who can evolve, innovate and adapt over the course of their working lives,” says Professor Wright.

The student-centred initiative has been developed through consultation with more than 7000 students, along with input from industry, employers, staff and stakeholders.

UQ has recognised four major goals in delivering its vision: game-changing graduates, student-centred flexibility, dynamic people and partnerships, and an integrated learning environment.

“One of the major planks of the strategy is to enhance the way learning is delivered,” says Professor Wright.

“We are very sensitive to the fact that fewer and fewer students are able to study full-time, and that they often graduate with significant debt.

“We want to ease the burden of debt and accommodate flexible study patterns through a more extensive use of the calendar year, intensive teaching blocks and technology-enhanced learning.

“We also know that students want more work-integrated learning and to be mentored by people with industry and business experience. We will be working hard with our extensive alumni base and industry connections to increase these opportunities for our students.”

Professor Wright says the key partners in UQ’s new Student Strategy will be students themselves.

“Students need to be self-motivated, active agents prepared to take responsibility for their own learning and to act as entrepreneurs of their own careers,” she says.

“UQ attracts many of the brightest students nationally and internationally, and their talent and potential is UQ’s greatest asset.”
Extraordinary technological change is revolutionising the way society lives, works, communicates and pursues new ideas.

As such, UQ is encouraging and teaching students to embrace new ideas, and harness new sources of growth to deliver the next wave of economic prosperity in Australia.

A major goal of UQ’s new Student Strategy is to produce graduates with intellectual capital, leadership skills and an innovative mindset to build meaningful networks, agile careers and creative solutions.

The strategy fuses disciplinary knowledge and expertise with a range of extension options and experiences that focus on professional and digital competencies, innovation, employability and enterprise.

Campus-based idea incubators and accelerators, like UQ’s IdeaHub, foster the entrepreneurial capability and enterprising activity of students, staff and alumni through well-connected networks.

IdeaHub is piloted by Executive Dean of Engineering, Architecture and Information Technology, Professor Simon Biggs.

Professor Biggs says IdeaHub provides students with an early-stage introduction into the world of innovation and entrepreneurship. “IdeaHub operates at the intersection of world-leading research, entrepreneurial behaviours, design innovation and industry to build a more innovative and entrepreneurial student community,” he says.

“We aim to excite and educate students on what is involved in venturing, as opposed to actually building a venture.”

Through IdeaHub, students learn the tactics and methods needed to build relevant products and services that can lead to new ventures.

Over a period of six weeks, teams of students, alumni and successful entrepreneurs form organically around ideas through a process of pitching and critique. Team topics and membership change as ideas are challenged and refined through workshops on topics such as ideation and research, prototyping, and market testing.

First-year Business Management student Andrew Walker is passionate about business, entrepreneurship and graphic design.

He says he applied for the IdeaHub this year because he thought it would be an opportunity to access great resources, as well as network and discuss other business ventures with like-minded people.

“Seminars were especially valuable to those students lucky enough to have their ideas critiqued and workedshopped by some experienced presenters,” he says.

“Every week we learned new skills that we were able to apply directly to our start-ups. The seminar presented on ‘The Art of Pitching’ was incredibly worthwhile to all students as pitching is a very important skill for every entrepreneur to master.”

“Through the IdeaHub, I was fortunate enough to meet my current business partners at GekCo. Systems, where I am now fulfilling one of my career dreams as the Branding, Marketing Manager and Web Developer of the company.”

Mr Walker says another one of the many benefits of the IdeaHub is that as a first-year student, he has met new friends who share the same entrepreneurial interests and goals.

“Many of these friends, especially the third- and fourth-year students, have been able to mentor me and help guide my ideas in the right direction.”

As part of its goal of producing game-changing graduates, UQ also focuses on supporting more students to develop workplace awareness, workplace skills and industry acumen by expanding work-integrated learning and student employability programs across the University.

Image: Professor Simon Biggs, right, working with students at IdeaHub.
Developing life skills through active learning

Today’s university students face some of the most uncertain and shifting work prospects of any time in history. Many are learning in fields where their future job doesn’t yet exist.

It’s no surprise that they are increasingly interested in trading traditional career paths for more innovative, entrepreneurial futures, including creating their own jobs (see ilab stories on pages 28-31).

UQ’s future students will be career changers and promotion seekers who want to balance a fulfilling work life with parenthood, global mobility, and ongoing personal and professional development.

A major goal of UQ’s Student Strategy is therefore to provide a flexible environment that supports and services all students, meets their priorities and expectations, and personalises their learning experiences. The strategy aims to shift the teaching focus to a blend of high-impact active learning on campus and flexible online delivery, feedback and study options.

As part of this, UQ is empowering a transition towards more ‘flipped classrooms’, also known as blended learning, where the traditional model of learning is turned on its head.

Instead of large lecture halls with one educator and a room full of students consuming knowledge, students can first learn about core concepts independently through videos, recorded lectures, quizzes, and readings.

This model frees up on-campus time for richer, active learning sessions where students develop their understanding and critical thinking skills with experts in the field, learn to ask the right questions and apply their knowledge to practical and challenging situations.

Associate Professor Carl Reidsema, Director of Teaching and Learning (Engineering), has led the successful development of the flipped classroom model for more than 1200 students in first-year engineering design course ‘ENGG1200 – Engineering Modelling and Problem Solving’.

Dr Reidsema says the motivation for this approach was a drop in lecture attendance, driven by the increased availability of recorded lectures.

“We are moving towards a more coherent engineering program curriculum,” says Dr Reidsema.

“This means that each semester we will have three theory-type courses and one ‘application’ course. This will allow us to ensure that our students are able to progressively develop their application skills and knowledge by being able to apply theory to practice through active learning.

“These courses will be problem-oriented rather than content-oriented, and students will have the opportunity to use their conceptual understanding to solve the type of authentic problems that engineers are confronted with in industry.

“UQ has made great strides in improving its use of technology to support student learning and has invested heavily in supporting academic innovation in this area with a wide range of eLearning tools and systems. Employers understand the importance of providing students with authentic hands-on design and problem-solving experiences in order to develop skills and attitudes, which are critical and can be difficult to develop from within a university setting.”

Image: Engineering students learning in a flipped-classroom environment.

Courtesy of Judit Losh
Dr Kelly Matthews, Senior Lecturer in Higher Education at UQ’s Institute for Teaching and Learning Innovation, believes passionately in involving students in their own education.

Leading a national ‘Students as Partners’ fellowship, she is exploring how student–staff partnerships are transforming the university learning experience, with initial findings showing such collaborations are mutually beneficial.

“Student–staff partnerships provide both parties with greater insights into the other’s experience,” Dr Matthews explains.

“For example, students gain new understandings of why academics set assignments and the expected learning outcomes, allowing them to better articulate what they learned – key for employment – and see how they are learning – central for life-long learning.

“On the flip side, academics find they better understand how their students are learning and the complexities of their lives, which better informs their teaching practices.”

Dr Matthews has experienced first-hand the benefits of collaborating with students, with student fellows assisting her as co-researchers on various fellowship projects and activities.

In May, the students accompanied Dr Matthews to Canada, where they co-facilitated workshops for an international audience on how to develop ‘students as partners’ activities.

Dr Matthews says such opportunities are vital for realising UQ’s goal of creating game-changing graduates.

“For our students to graduate with the capacity to truly create change, our degree programs have to instil leadership opportunities that allow them to gain complex skills through partnering with UQ experts.

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“My fellowship is about creating those opportunities for students, in partnership with academics and staff, to truly shape teaching and learning at UQ.”

Lucy Mercer-Mapstone, UQ PhD candidate and co-fellow on the Students as Partners fellowship team, was one of the students who accompanied Dr Matthews to Canada, and says such opportunities have both professional and personal benefits.

“Being involved in student–staff partnerships gives students the confidence, support and skills they need to see they can actively contribute something unique and valuable to the teaching and learning process,” she explains.

“That self-efficacy is invaluable in opening up future opportunities in both your professional and personal life.”

The Students as Partners fellowship has inspired a number of student partnership activities, with the aim of developing a University-wide UQ Students as Partners program.

It’s just one of a series of initiatives aimed at fostering a culture that supports innovation, adapts to change, and is shared, valued and enriched by both students and staff – one of the key goals of UQ’s Student Strategy.

Other activities currently underway include supporting academic staff to design and deliver content in new ways; involving more research-focused staff in teaching activities; and pairing students with peer, staff, alumni and industry mentors to support learning across the student lifecycle.

Image: The Students as Partners fellowship team (from left): Lucie Sam Dvorakova, Dr Kelly Matthews, Lucy Mercer-Mapstone, Lauren Groenendijk and Jarred Turner.
A home away from home

While today’s students expect near-instant online services and the latest in digital technologies, face-to-face communication is still important to them. To support the educational needs and expectations of students, UQ is investing in both physical and digital infrastructure to create an integrated environment that supports high-quality, contemporary learning and social environments.

Future UQ students will have access to a bright new living space that will nurture their academic success and career prospects, thanks to a $251 million student residences project planned at UQ’s St Lucia campus.

As well as offering students an attractive place to live on one of the world’s most beautiful university campuses, the space will provide a home-away-from-home for around 1300 students, with around-the-clock pastoral support and security, and easy access to campus sporting and cultural facilities and regular public transport.

The project, which is expected to be completed at the start of 2020, is just one of a number of infrastructure projects included in UQ’s investment in the evolution of the student experience, intended to create a vibrant, integrated, digitally enabled environment that enhances on-campus learning, community engagement, and student life.

UQ recognises the importance of providing high-quality, multifunctional spaces for students, and will continue to invest in developing these spaces across the campuses.

The UQ Library is a great example of such a space; transformed from the hushed study halls of old into a place where students can study in peace, but also collaborate, socialise, re-energise and feel part of a community. The Library has also partnered with Student Services to offer ‘one-stop-shop’ service points for students, providing both academic support and student advice.

Belinda Hennessy, who is in her final year of a Bachelor of Laws/Bachelor of Commerce degree and juggles part-time work as a research clerk in a law firm with study, says she appreciates the flexibility of the Library space.

“I work during the day, so it’s great to be able to come to campus and study in the library after work hours,” she says.

“The library offers areas where I can study and chat with friends, and discuss ideas in a group environment. And if I need quiet time, I can head upstairs and work independently.”

Other projects being considered include a dedicated student building that will provide virtual and face-to-face resources in a central, physical location, and a new building that will promote sustainability while adding a unique and modern feel to the St Lucia campus.

Enhancing the University’s digital infrastructure is another important aspect of the student strategy. Leveraging the latest technologies, UQ is investing in infrastructure that will enhance online service capabilities. The Future Students project, which consolidates all prospective student information into a single, user-friendly portal for future UQ students, is the first step in many IT projects that will create a simple, engaging, and personalised online experience for students. The next step is a new portal for current students, which is due to be rolled out in 2017. Designed to reduce complexity and improve the online student experience via an easy-to-use interface, the portal will provide an online hub for students to access personalised study and campus information, such as timetables, course requirements, library loans and study spots.

Image: An artist’s impression of the UQ student residences project.
Researchers bite back against Zika virus

Researchers at UQ and the QIMR Berghofer Medical Research Institute are using a $50,000 Australian Infectious Diseases Research Centre grant to develop new weapons to fight the devastating Zika virus.

UQ School of Chemistry and Molecular Biosciences Professor Paul Young says the UQ and QIMR Berghofer teams are contributing to international efforts to deal with the epidemic sweeping through South American countries and threatening to spread further.

“The mosquito-borne viral disease is responsible for millions of cases of fever, rash, joint pain and conjunctivitis, and has been linked to abnormalities in brain development in newborns,” says Professor Young.

Zika is of particular relevance to Queenslanders as it is carried by the Aedes aegypti mosquito (pictured), which is prevalent in North Queensland.

QIMR Berghofer researchers will assess the competence of Australian mosquito populations to transmit a variety of Zika strains under different climate conditions. They will also look at virus interactions with the Asian Tiger Mosquito Aedes albopictus, which is implicated in a dengue outbreak in Queensland’s Torres Strait islands.

Professor Young is working with fellow virologists Professor Alexander Khromykh, Professor Roy Hall and Dr Helle Bielefeldt-Ohmann at the Australian Infectious Diseases Research Centre and the School of Chemistry and Molecular Biosciences, and Professor Greg Devine and Professor Andreas Suhrbier at QIMR Berghofer.

The team is working to develop portable laboratory tests to detect Zika infection in people returning to Australia from outbreak areas, and to monitor local mosquitoes for the virus.

The UQ and QIMR Berghofer researchers are collaborating with other Queensland-based research groups at Queensland Health, the University of the Sunshine Coast and Mater Research Institute.

For more information about the Zika virus research, contact Professor Paul Young on +61 7 3365 4622 or email p.young@uq.edu.au.

Celebrating the works of Shakespeare

The world is celebrating the 400th anniversary of the death of William Shakespeare, author of one of the richest and most dynamic bodies of imaginative writing ever produced.

The University of Queensland, under the leadership of the UQ Node of the Australian Research Council Centre of Excellence for the History of Emotions (Europe 1100–1800), is celebrating the anniversary this year with a suite of lectures, concerts, film screenings, workshops, and a rare book exhibition, exploring the ways in which Shakespeare continues to inspire us 400 years after his death.

Centre Director Professor Peter Holbrook says Shakespeare has been taught at UQ since 1911.

“The first lecturer in English literature assigned Henry V, Twelfth Night, King Lear and The Tempest for students,” he says.

“Students need teachers who are passionate about Shakespeare’s plays to help bring them to life – a particular need is helping students come to terms with the language of Shakespeare’s time, which is often unfamiliar to us today.

“Universities, schools and other cultural institutions have a responsibility to assist future generations to comprehend, and appreciate, great creative works from the past such as Shakespeare.”

Launched on April 20 with a public lecture by Professor Indira Ghose from the University of Fribourg, Switzerland, The Delighted Spirit: Shakespeare at UQ 2016 will run throughout the year.

For more information and event schedules, visit hass.uq.edu.au/event/delighted-spirit-shakespeare-uq-2016.
Olympic athletes in safe hands

UQ alumnus Peter Wells will have Australia’s best athletes in his care during his role as Head of Physical Therapies for the Australian Olympic Team Headquarters Clinic at the Rio de Janeiro Games in August.

Graduating with a Bachelor of Physiotherapy in 1991, the self-described ‘sports tragic’ has played a pivotal role in the health of Australia’s athletes ever since. Through his Brisbane clinic RHP Physiotherapy, he’s worked with athletes in almost every sport, while at the London and Beijing Olympics Mr Wells was Head Physiotherapist for the Australian swimming team.

After eight years supporting Australia’s Olympic swimmers he decided to step back and let someone else “have their turn”. However, a recent tap on the shoulder changed all that.

“Wendy Braybon, who was Head Physiotherapist for the Australian Olympic Team Headquarters in London 2012, called and asked me if I’d be interested in applying for the head physio position. It was very unexpected and I was flattered to be asked,” says Mr Wells.

His eyes light up when he describes the experience of being part of an elite competition.

“From a sports physiotherapy perspective, it’s like Disneyland,” he says.

“Incredible athletes from around the world are all in the same place at the same time.

“You get to see the best athletes in the world, maybe even in the history of their sport, and they’re sitting down beside you having lunch in the dining room. It’s a surreal and bizarre place.”

Connect with Peter

Email p.wells@rhphysiotherapy.com.au or phone +61 7 3856 5566.
School of Pharmacy lecturer, Jacqueline Bond.
School of Pharmacy lecturer Jacqueline Bond’s passionate and innovative approach to education has led to curricular reform that inspires students and prepares them for future roles as ‘medicines experts’.

You have been recognised as an excellent educator since joining UQ’s School of Pharmacy in 2001. Why did you decide to move into teaching after more than a decade working in government and industry in Australia, and at a university research centre overseas?

I have had a most non-linear career trajectory, beginning my professional life as an industrial chemist. Prior to graduating, I worked for two summers at an oil refinery and loved every minute of being on-site.

After graduating, I moved on to quality control, research and development (R&D) and formulation roles in other industries. I was content for a few years, before succumbing to an intense case of wanderlust. I packed up and moved overseas to work at the Florida Center for Heterocyclic Compounds (University of Florida). During this period, I wanted a break from ‘the bench’, so I became an editorial assistant for a major chemistry journal called *Advances in Heterocyclic Chemistry*; edited a book called *Heterocycles in Life and Society* (1st edition) by Pozharskii, Soldatenkov and Katritzky; and oversaw all of the research publications of our centre. It was an incredible experience, and my first exposure to academia.

When it was time to come home, I moved to Canberra with little idea about what the next phase of my career would involve. Unexpectedly, I ended up working at Canberra Institute of Technology, teaching forensic chemistry to police! This led to my next position in a government forensic toxicology unit in Brisbane, analysing post-mortem samples for prescription and illicit drugs.

A chance encounter with one of my old chemistry classmates at a shopping centre led to the offer of a research role in UQ’s School of Pharmacy, as they were seeking someone with experience in drug analysis. Once at UQ, I began to give toxicology and medicinal chemistry lectures when colleagues went on leave. Over time, the lecture load increased, and so I eventually transitioned into a traditional academic role with teaching and research responsibilities. In the ultimate example of doing my career ‘back-to-front’, I started my PhD in pharmacy education just after my 40th birthday.

What were your goals when you started teaching, and have they changed over time?

To be honest, it was terrifying to stand at the front of a cavernous auditorium in the early days. Initially, I was selfishly focused on myself and surviving the ordeal. As I relaxed into the role, I began to reflect more on the experience my students were having. I realised that preparing them to become health professionals was a very different proposition than training them to become scientists.

As I committed deeply to understanding the professional context in which my students would ultimately practice, I learned that beyond being knowledgeable about drugs, they would require skills as caregivers, decision-makers, communicators, lifelong learners and teachers in order to deliver pharmaceutical care to patients.

How do you hope to influence the student experience at UQ?

My teaching philosophy is reflected in a wonderful quote from Maya Angelou: “I’ve learnt that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.” I want my students to feel that someone cares profoundly about who they are now, and the kind of health professionals they are in the process of becoming. It’s the little things, like learning names, initiating chats at the coffee cart, remembering past conversations and, most importantly, being real in the classroom, that allow for genuine connection.

What is your vision for UQ pharmacy students and graduates?

That they ‘pay forward’ our love, attention and investment in them by taking the very best care of their patients in the future. And that they find meaning through their professional lives.

How important are partnerships and industry collaborations to the pharmacy profession?

Critical. One of our obligations as academics is to drive the profession forward. We can’t do this from an ivory tower. Rather than ‘publish or perish’, I prefer the mantra ‘partner or perish’.

Find out more

To watch a video about Jacqueline Bond, view this article online at uq.edu.au/changemakers.
Spinifex grass growing on Indjalandji-Dhidhanu land on the outskirts of Camooweal, in north-west Queensland.
Cutting-edge science meets an ancient craft that’s as old as time: a microscopic discovery in spinifex grass has the potential to revolutionise everyday products, like latex and other rubbers, while creating an industry for remote Australian communities.

GRASS-ROOTS DISCOVERY puts remote Australia in the spotlight
Almost 200 kilometres west of Mount Isa, on the Queensland–Northern Territory border, lies the town of Camooweal.

With a population of just 315, there’s an eerie remoteness broken only sporadically by the sound of passing road trains.

The red dust strikes you most as you drive along the Barkly Highway into town. But it’s what’s growing in the dust that’s catching the world’s attention.

Spinifex – a tough, spiky tussock grass – dominates much of the red-sand desert and rocky ranges of central Australia. Thriving in arid soils, it grows as far as the eye can see around Camooweal.

Indigenous Australians have collected spinifex for tens of thousands of years, extracting the resin from the base of the stems for use as an adhesive – mainly for attaching stone cuttings to wooden handles to make tools.

Now, a discovery by scientists from UQ’s Australian Institute for Bioengineering and Nanotechnology (AIBN) is promising to revolutionise the technology behind everyday products, while creating a sustainable industry for remote Australia.

Working in partnership with traditional Indigenous land owners of the Camooweal region, the Indjalandji-Dhidhanu people, AIBN researchers have developed a method of extracting nanofibres from spinifex, which can then be used as an additive in latex products such as condoms and gloves.

The research – led by AIBN Professor Darren Martin and colleagues Dr Nasim Amiralian and Dr Pratheep Annamalai – has found that the nanofibres from spinifex significantly improve the physical properties of latex, and can be used to make condoms as thin as a human hair without any loss in strength.

Professor Martin says the discovery is like nothing he has seen before.

“The nanofibres that we can extract are long and thin, only tens of atoms wide but thousands of atoms long,” Professor Martin explains.

“As a materials scientist, this is exactly what we look for when we want to reinforce flexible materials.

“We tested our latex formulation on a commercial dipping line in the United States and conducted a burst test that inflates condoms and measures the volume and pressure and, on average, got a performance increase of 20 per cent in pressure and 40 per cent in volume, compared to the commercial latex control sample.

“With a little more refinement, we think we can engineer a latex condom that’s about 30 per cent thinner, and will still pass all standards.”

Professor Martin says the benefits of the nanofibre technology will interest latex manufacturers across the multi-billion-dollar global market, but could also revolutionise material science across multiple industries.

Work is underway to add spinifex nanofibres into other rubber compounds, plastics, and even carbon fibre.

AIBN materials engineer Dr Annamalai is also researching the benefits of adding the nanofibres into bitumen to create more durable road surfaces.

“I see this project creating change in a multifaceted way,” says Professor Martin.

“We’re changing the way people think about nanofibres, and our platform technology is starting to raise significant awareness about the differences between regular biomass and arid plants.

“If you look at the trends, most agriproducts have to be grown in more fertile areas. But those areas are being taken up very quickly.

“Making use of the arid parts of Australia to produce high-value nanotechnology products is very exciting.”

In 2008, UQ anthropologist Professor Paul Memmott led a multidisciplinary research team to look at the science of spinifex, working with Indigenous communities to source the grass and investigate harvesting methods. That project led Professor Martin and his team to Camooweal.

UQ and the Dugalunji Aboriginal Corporation have since signed an agreement to recognise local Indigenous traditional owners’ knowledge about spinifex and to ensure that they will have ongoing equity and involvement in the commercialisation of the nanofibre technology.

The research has received funding from the Federal Government’s Indigenous Advancement Strategy scheme, Myuma Pty Ltd, Dugalunji Aboriginal Corporation, Australian Research Council, the Queensland Government’s Advance Queensland Research Fellowships scheme and UniQuest.

To learn more about the AIBN, visit aibn.uq.edu.au.

Connect with Professor Martin at darren.martin@uq.edu.au.
It was a hunch that led Dr Nasim Amiralian to put the fibres from spinifex grass under the microscope.

After arriving at UQ from Iran in 2010, Dr Amiralian began studying the sticky resins as part of her PhD studies with UQ’s Australian Institute for Bioengineering and Nanotechnology (AIBN).

With a background in silk and other natural materials, her PhD project was designed around understanding the composition, extraction and purification of the resin.

“My background is textile engineering, so I didn’t have much knowledge about the chemistry behind spinifex,” says Dr Amiralian.

“I did some research on applied things, such as using the resin as an anti-termite coating for timber, and found that it worked.

“I found that the resin contains more than 100 different volatile and non-volatile components. Based on the interesting results from the resins, we figured that the fibrous part of the plant – the leaves of the spinifex – would produce something interesting as well.

“We had a hunch that this was a highly evolved desert grass, but we didn’t know just how different it was.”

Under the guidance of AIBN’s Professor Darren Martin, Dr Amiralian was able to discover unique nanofibres in spinifex grass.

“The first time I saw the nanofibres under the microscope, it looked completely different to anything I had seen before,” says Dr Amiralian.

“Instead of short, stubby nanofibres, we ended up with ropey, flexible, long and thin nanofibres with a diameter of less than 10 nanometres (one-billionth of a metre). When added to rubber products, such as latex, the long, thin and ropey nanofibres help to retain the elasticity of the rubber, making it stronger while still very flexible and soft.”

The AIBN began its research into spinifex in 2008, after UQ Anthropologist Professor Paul Memmott’s initial study into the desert grass. This led to a five-year funding grant from the Australian Research Council.

“That was the first foray into renewable materials for most of the AIBN team working on this project,” says Professor Martin.

“Nasim had arrived via an international scholarship only months before and had the daunting task of looking at this spiky desert plant from a materials science perspective – something no-one had done before.”

“What we understand now is that spinifex grass has very high amounts of hemicellulose. That means it is easy to get in and break apart, and therefore easier to examine. You don’t need aggressive chemicals to break those interactions – just mild sodium hydroxide and a bit of mechanical energy.”
Indigenous opportunity sprouts from ‘sacred’ grass

Colin Saltmere knows the Camooweal region like the back of his hand. The Managing Director of the Dugalunji Aboriginal Corporation and proud Indjalandji-Dhidhanu man has lived and worked on his people’s traditional country in north-west Queensland all his life, and he’s passionate about other members of his community being given the same opportunities.

Mr Saltmere has overseen the establishment of Myuma Pty Ltd, an organisation that manages the ongoing development and expansion of Indigenous civil construction, hospitality, catering, labour hire and business training.

Myuma hosts UQ researchers and students at the Dugalunji Camp, located on the outskirts of Camooweal, and has developed cross-disciplinary research projects with UQ teams. One such project is the research into spinifex nanofibres by UQ’s Australian Institute for Bioengineering and Nanotechnology (AIBN).

UQ and the Dugalunji Aboriginal Corporation have signed an agreement to recognise traditional owners’ knowledge about spinifex, ensuring the Indigenous people are involved in the commercialisation of the nanotechnology while creating an industry for remote communities.

“We’re very excited by the prospects of commercialising the technology, but there’s a bigger picture out there and that’s remote Australia,” says Mr Saltmere.
“This agreement with UQ will enhance the opportunity for employment in remote regions.”

While mining and cattle farming provide some employment in north-west Queensland and parts of Western Australia, Mr Saltmere says remote Australia does not have a recognised industry to call its own.

“If you look at the demographic of local people in the labour market, there’s not much work available. Spinifex farming can allow a natural process for creating employment,” he explains.

“You can naturally harvest the spinifex – which Aboriginal people have always done – bring it back to a central point and process it, then send it on for homogenisation to extract the nanofibres.

“There’s potential to create industries from that product – like tyres, plastics and rubber – from a centralised location in central Australia.

“We’ve also envisaged using the region’s Indigenous rangers as a managerial process for the environment where the spinifex grows.

“We want to provide full-time employment so that we’re not drawing on government resources to employ rangers on country where the income from this industry could help these workers move into managerial roles.

“It’s about providing jobs to our people and reclaiming some integrity.”

There are 64 known species of spinifex grass growing in Australia, mainly in parts of western Queensland, the Northern Territory and Western Australia. Indigenous Australians have been harvesting and using spinifex for many purposes for tens of thousands of years.

“Spinifex grass is an ancient and sacred material to Indigenous people, but also a material we use all the time,” Mr Saltmere said.

“We’ve used it for building shelters, making beds, and as a glue in making instruments like spears and boomerangs.

And we know that the oils and the waxes can be used to treat wounds and for medicines.

“In Aboriginal culture, a product like that becomes a sacred thing. It belongs to country, and to us that’s what ‘sacred’ means.”

AIBN Director Professor Alan Rowan says that while the discovery of spinifex nanofibres is exciting from a scientific and commercial perspective, the real benefits lie in the translation aspects behind the research.

“The AIBN effectively exists to do cutting-edge research for society. With this connection with Indigenous people, we have the opportunity to give even more back by turning science into employment,” Professor Rowan explains.

“There’s a wonderful contrast. Here you see a process that has been done by Indigenous people for tens of thousands of years, and then suddenly we have nanotechnology, which has only been applied in the last five years.

“Now the two are connected and it tells us that we have so much more to learn by taking nature on board and examining it more closely.”

Find out more

To watch a video about the AIBN spinifex research at Camooweal, view this article online at uq.edu.au/changemakers.

Connect with Colin Saltmere at ColinSaltmere@myuma.org.au.
Global Change Institute (GCI)

GCI is an independent source of game-changing research, ideas and advice for solving the challenges of a rapidly changing world.

The Gatton Solar Research Facility produces enough energy to power 1000 average Australian homes.

Researchers have captured more than 500,000 underwater images through the XL Catlin Seaview Survey, leading to improved coral reef monitoring and management.

Located in the world’s 34th most environmentally friendly university building, the GCI ‘living building’ generates more energy than it consumes and attracted 1600 visitors in 2015.

For more information, visit gci.uq.edu.au.
Creating a clever country

Global change presents both challenges and opportunities. Professor Karen Hussey is helping to find the right balance.

Professor Karen Hussey has been a globe hopper since birth.

The Deputy Director of UQ’s Global Change Institute (GCI) was born in the Middle Eastern island nation of Bahrain to Irish parents, and attended 10 schools in five countries across three continents, with her last two years undertaken on a Murdoch Foundation scholarship to the United World College in Hong Kong.

It’s little wonder then that, as a child, Professor Hussey developed a strong appreciation for the diversity of mankind: the size of the world, the richness of the cultures in it, and an understanding of the way incredibly complex environmental, social and economic issues intertwine, which remains at the core of her work today.

As an adult, this worldly upbringing reveals itself through a healthy love of learning and adventure, the ability to immediately engage any stranger, a knack for joining the dots, and a wonderful mixed-bag accent.

Professor Hussey started her career at some of Australia’s best universities and abroad, training in political science and economics at the University of Melbourne, completing a stint at University College, Dublin, and cementing her position as an expert on policies and governance for sustainable development while at the Australian National University.

This high calibre of academic training, combined with her practical aptitude for uniting like minds and a desire to create positive change in the world, make Professor Hussey the perfect choice to help lead the GCI into the future.

“I’ve always been interested in knowing how different governments interpret their responsibilities in sustainability and how we face the enormous challenge of trying to achieve a balance between economic, social and environmental outcomes,” Professor Hussey told ChangeMakers.

She says her ‘aha’ moment came early in her career while on a visit to the Port Kembla Steelworks, a production giant in the southern NSW coastal region of Illawarra.

“I can remember feeling a combination of absolute awe at the size of the steelworks and the engineering that went into it, but also a sinking feeling over how it looked in the landscape,” she recalls.

“I was working for BHP Information Technology Pty Ltd then, so I knew the plant’s value in providing jobs and income to the local community and its importance for their survival, but the trade-off was clear. It was a crystallisation of the challenge of sustainable development.”

Since then, Professor Hussey has worked to help bridge the gap between the natural sciences and the social sciences, to find outcomes that are not just desirable to communities and businesses, but that also positively impact the environment.

“To me, the role of governments is crucial because the government has the express mandate to provide for the ‘public good,’” says Professor Hussey.

“The GCI is trying to find the right balance. We recognise that the economy needs to grow, but it’s vital we protect the underlying asset, which is the environment.

“Any country can develop, but the clever ones manage to do it sustainably and equitably. After all, no economic activity will endure if we’ve destroyed our underlying environmental assets.”

As its name suggests, the GCI is committed to addressing global change brought about by population growth, technological innovation, geopolitical shifts, and climate change.

“We must address the issues that arise but, equally, we have a responsibility to embrace the opportunities that global change brings,” says Professor Hussey.

“GCI takes an interdisciplinary approach that draws on the internationally recognised talents of scientists and social scientists already working on global change issues across UQ. By working closely with industry, governments of all persuasions, and with the community, we hope to bring about positive change.

“The GCI is the embodiment of the idea that you can only tackle complex issues if you bring together numerous relevant disciplines and you focus those great minds on a complex issue.

“That requires people who are excellent in their own research area, but who can also respect and understand other specialties. It takes discipline to be undisciplined! It’s a really exciting time to be doing research in these areas. It will take all our cleverness to ensure our future is as prosperous as our past.”
Broncos coach Wayne Bennett watches on as five-eighth Anthony Milford (right) attempts to evade team mates, including Darius Boyd (far left), during pre-season training at UQ.
The Brisbane Broncos have remained one of the most successful rugby league clubs of the modern era. The University of Queensland is a leader in education, research and discovery. Together, they are forging a culture of excellence and leadership across a range of disciplines.

Against the backdrop of UQ’s Forgan Smith building, the Brisbane Broncos players push themselves to their limits during the gruelling 2016 pre-season. Only months have passed since the club’s heartbreaking one-point NRL grand-final defeat to the North Queensland Cowboys in October 2015. But you can sense the excitement in the air, and almost taste the hunger, as the team prepares for its assault on the premiership race.

At the helm is master coach and mentor Wayne Bennett, pacing behind his charges – dissecting each play, analysing every player’s movements, and critiquing each mistake. As a leader, Mr Bennett is revered for his ability to get the most out of his players and for his ability to mould young men into the leaders of the future. His philosophy is simple.

“To me, leadership means not letting people down,” he explains. “You have to be responsible, accountable and trustworthy. You also need to have the ability to communicate, while having a clear vision, and focus on what you want to achieve. When it comes to shaping the types of young men at our club, I believe education is vital to the development of our players. Not only in a classroom situation, but in all experiences they have on their journey.

“That’s why it’s important to have good people in their lives at all stages of their development.”

It’s these values that have helped the Broncos maintain success on the field and in the business world. They are also values shared by UQ.

The Brisbane Broncos and UQ announced a landmark partnership in April 2015. As two of Queensland’s most successful brands, this union recognises a shared dedication to shaping future leaders and a commitment to excellence.

Continued overleaf
The partnership has many levels, including opportunities for undergraduate student placements and access to elite athletes for higher degree research student projects.

The Broncos support UQ’s Emerging Leaders program, and work with the University to engage with prospective students from rural and regional Queensland, as well as Aboriginal and Torres Strait Islander students.

The Broncos have remained one of the most successful rugby league clubs since their inception into the NSW Rugby League (now the National Rugby League) competition in 1988, winning premierships in 1992, 1993, 1997 (Super League), 1998, 2000 and 2006.

Broncos Chief Executive Officer Paul White says that on top of sporting success, the club has well-established corporate partnerships, including existing links with UQ.

“The Broncos hold a unique place in the business and corporate worlds, given we are a publicly listed company and the only sporting club in the country that has that structure,” says Mr White.

“That gives us a solid foundation from which to grow our business and then, in turn, invest in our people, our partnerships and our communities.”

Mr White says partnerships with UQ and other organisations went well beyond the business world.

“Partnerships are about offering genuine opportunity, sharing knowledge and driving change.

“With UQ, we already have more than 20 interns working in all aspects of our business, from our performance sciences department, to media, game-day presentation and sponsorship.

“That gives us the opportunity to share best-practice learnings with students, while we have the chance to benefit from some dynamic new thinking from the student cohort as we strive for continual improvement.

“Our partnership with UQ is enormously valuable to our brand because it challenges the traditional thinking around how educational institutions can work with sports teams, well beyond a traditional sporting sponsorship.”

UQ Vice-Chancellor and President Professor Peter Høj says students, staff and alumni benefit from partnerships that present new opportunities for learning, discovery and leadership.

“This partnership will help UQ and the Broncos continue to foster their relationship, based on our mutual strengths and areas of interest”, says Professor Høj.

“The Broncos are synonymous with success. They have fans right across the state’s regional and rural centres, plus plenty of loyal followers interstate.

“As one of the world’s top universities and one of Australia’s outstanding sports clubs, both organisations aim to achieve at the elite level, without being elitist.”

“Partnerships are about offering genuine opportunity, sharing knowledge and driving change.”

To watch a video about the UQ–Broncos partnership, view this article online at uq.edu.au/changemakers.
Partnerships

Looking at the record of the Brisbane Broncos, it’s clear to see they have made a habit of winning.

The Broncos have won six premierships, including one Super League premiership, since joining the NSW Rugby League (now National Rugby League) competition in 1988, as well as two World Club Challenge titles.

They have also achieved four minor premierships and, between 1991 and 2009, never failed to qualify for the finals.

While the Broncos have been blessed with some of the greatest natural talents the game has seen, including Darren Lockyer, Allan Langer and Justin Hodges, the training methods and game-day preparation behind the scenes cannot be underestimated.

Broncos High Performance Manager Jeremy Hickmans says there is no doubt the availability and advances in technology over the last 10 years have challenged performance departments to be more accountable and specific in the way players are trained.

“The advent and application of GPS (Global Positioning System) and accelerometer technology has allowed us to be far more prescriptive, while providing an ongoing, field-based measure to assess the effects of these interventions,” Mr Hickmans explains.

“The use of virtual reality decision-making systems, sleep research and wearable technology will further advance our knowledge of an athlete’s optimal preparation and performance strategies.

“However, it is key that the ‘art’ of coaching is not lost. Technological advances are designed to support and challenge the on-field delivery and decision-making involved in performance optimisation, not replace them.”

Mr Hickmans says that with the help of UQ, the Broncos have been able to develop a high-performance research department tasked with identifying and leading the way in delivering key performance enhancement strategies.

The Broncos support three PhD research scholarships in the fields of talent development, sleep and recovery, and performance nutrition; eight Honours students across the School of Human Movement and Nutrition Sciences; and numerous practicum students working with both the club’s NRL and National Youth Competition (NYC) squads.

Mr Hickmans says it is important the club provides students with a practical, realistic experience of what is required to work in elite sport, while also providing a positive bridge between theory and practice.

“Partnering with world-leading researchers challenges us to stay at the cutting edge of technological advances and intellectual innovation,” he says.

“The program also provides us with a ready-made succession plan, with a steady supply of new, well-trained staff.

“Already, students who have participated in our program have gone on to gain employment in other football codes, state sporting institutes and associated sports science providers.”

One of those students actively involved is UQ PhD candidate Johnpaul Caia, who is studying sleep and other recovery methods for rugby league players.

“I’m involved on a day-to-day basis in the recovery program delivered to the athletes,” says Mr Caia.

“This can range from taking the players through a hydrotherapy session, to monitoring and providing feedback on sleep behaviour.

“I also have the responsibility of athlete monitoring for our NYC squad.

“It’s a fantastic opportunity to perform applied research while working with some of the best athletes – and best practitioners – in the country.”

Students play key role in winning culture

Research students at Broncos training.
Nurturing seeds of innovation

ChangeMakers spoke to ilab Director Bernie Woodcroft and UQ engineering alumnus John Scott about their experiences in start-up industries and the role ilab plays in helping young innovators bring ideas to market.

Bernie’s perspective

Ilab is an incubator/accelerator based at UQ’s Long Pocket precinct that helps founders move their start-up idea into an investable company that has a validated market, early-stage product and initial revenues.

Since 2012 when UniQuest, the University’s main commercialisation company, took on the operation of ilab in partnership with the Queensland Government, we have supported more than 120 start-up companies, providing programs, workspaces, business mentors, events and, most importantly, strong connections with industry.

It is important to understand why accelerators like ilab can help move your idea into a reality. The truth is that most ideas are not unique. There are a lot of people in the world, and it is highly likely that someone has thought of your idea before you. The key to success is in the execution.

Accelerators such as ilab make you focus on cranking up your new business. You operate alongside other start-ups, and have access to experienced and practical mentors who challenge and guide you on marketplace, technology, and setting priorities. You also have the opportunity to pitch your ideas to investors who can help fund and fast-track your product development.

It is great to see the establishment of student entrepreneurial programs such as IdeaHub at the St Lucia campus. Here you can start to immerse yourself in what it means to traverse the gap between your idea and creating something that customers actually want, and hear from some great entrepreneurs. Accelerators like ilab are the next step in the pathway when you are ready to work on your idea full-time.

Start-up founders working at ilab, such as engineering alumnus John Scott, marry advances in technology and science with customer needs and rapidly translate the outcome into businesses that change the way people do things. Mr Scott co-founded Cartesian Co., a company that developed a 3D printer for electronics. He now leads the hardware development for MOVUS, another start-up that went through the ilab program. Another ilab start-up, Rumbl, is focused on reducing food wastage; Language and Learning is building speech therapy apps for children; Turbine Machine Genes is using complex computer processing to simulate jet engine behaviour; Skyborne Technologies is developing new drone technology; Agalytics is finding cheap ways to test soil on site to avoid over-fertilising; and Evorce is providing online mediation and divorce. The world is changing at high speed, and that pace is only accelerating.

Ilab is deliberately focused on external engagement. A successful founder team requires a range of talents, networks and experience. Many entrepreneurs and founders are not UQ alumni – ilab is providing a home to attract entrepreneurial talent from anywhere. These entrepreneurs then have the opportunity to reach back into the University to find the knowledge and expertise they need to move their businesses forward.

MOVUS is a great example of the mutually beneficial relationship between ilab and UQ. Since the company has been at ilab, MOVUS has been able to access the University’s Properties and Facilities group for some of its product testing, and has facilitated some early product sales back into UQ. This opportunity has been incredibly helpful in helping MOVUS achieve momentum.

Redback Technologies, which provides intelligent solar storage solutions and has attracted $2 million worth of investment since commencing at ilab, is another great example.

Since starting at ilab in 2015, Redback has established strong partnerships with UQ researchers,
facilitated through UniQuest, and has also established a relationship with UQ Solar. Redback has also made its first sales, grown its staff to 20 people including UQ graduates, and is currently raising a Series A funding round.

Start-up accelerators are also great places for interns. Interns receive opportunities to participate across the breadth of a new business, to influence direction and to see it take off. Start-ups are always looking for help with technology, marketing, and anyone with initiative and enthusiasm.

From my own perspective as a UQ Electrical Engineering alumnus, and having spent the majority of my career helping build businesses globally, it is both inspiring and satisfying to engage first-hand with new founders as they seek to change the world.

A job today may not be a job tomorrow. Many companies today will not exist tomorrow. Those people who will succeed best, like Mr Scott, will be those with the mindset to make their own jobs by creating new business paradigms. Learning to nurture ideas and effectively execute them, whether in your own start-up or by helping companies reinvent themselves, are important skills to have if you want to impact the future.

ilab is a start-up accelerator owned by UQ Holdings Pty Ltd, a wholly owned subsidiary of UQ that supports early stage, high-tech companies. ilab has incubated more than 140 start-up companies and helped them raise more than $80 million in grant and investment capital to fund their growth and generate nearly 800 technology jobs. As ilab’s Director, Bernie Woodcroft is responsible for all start-up programs, facilities and operational aspects of the accelerator, specialising in executive leadership, innovation and design, start-ups, customer and stakeholder engagement, commercialisation, business development, management, strategy and governance.

To learn more about ilab, visit ilab.com.au.
John Scott graduated with a Bachelor of Mechanical and Aerospace Engineering in 2012. After working as a site engineer for a large building and engineering company, John and fellow UQ graduates Ariel Briner and Isabella Stephens founded Cartesian Co., a company that developed a 3D printer for electronics. The company was accepted into iLab’s Germinate program in 2013 and raised more than $137,000 through a Kickstarter campaign. Mr Scott is now leading the hardware development for MOVUS, another start-up that went through the Germinate program. MOVUS provides industrial Internet of Things solutions, helping businesses optimise their resources with new thinking and innovation.
John’s perspective

After graduating from UQ with a Bachelor of Mechanical and Aerospace Engineering in 2012, I joined a large building and engineering company as a site engineer. I quickly realised that I wanted to make something of my own and feel like I was really creating value, and I didn’t feel like I could do that working for a large engineering company.

At the same time, my long-time friend Ariel Briner, who had graduated from UQ with a Bachelor of Electrical Engineering, was working on some simple prototypes for a 3D electronics printer. He had originally approached me about the idea while we were at university and now, not enjoying my job very much, I said to him, “let’s do this”. Together with another engineering friend we met through university, Isabella Stephens, we applied to ilab and got in, and that was how the company Cartesian Co. started.

3D printers print physical things, mainly out of plastic. Our vision was to make the electronics equivalent of a 3D printer. If you want to build a circuit board, which is in every phone, computer and most electronic devices, you need to test that circuit board before you go into production. Often there are quite a few revisions that you need to go through while refining your design. The problem we found from our experiences, and from talking to other electrical engineers, was that the process of sending a board away to a manufacturer and waiting for it to come back took about two weeks. Our idea was to make an electronics printer so people could design, refine and make their own circuit boards within a few hours, rather than waiting for them to be produced by a third-party manufacturer.

We entered the three-month Germinate program at ilab at the beginning of 2013, and this experience was critical to refining our business model and getting it off the ground. It was a shock at first, as we were all engineers without any experience in business. Engineers are trained to think in a safe, analytical way, and there was this whole other world of business and start-ups that opened up to us through ilab.

The program ended in April 2013 and we spent the rest of that year working on a prototype. We launched a campaign through Kickstarter, a funding platform for creative projects, which raised more than $137,000 and pre-sold 120 units. This gave us the confidence that people actually wanted the product. We used the money we raised to bring on two employees, move to a larger office and buy the equipment we needed to manufacture the printer. We shipped the first batch of products at the end of 2014.

We then decided to expand the company, as there were a few competitors at that stage, and the best way was to move to the US. We were accepted into Techstars, another accelerator program based in New York, and also raised some money from a Sydney-based Angel Investor, which helped us relocate.

We had some success in the US. We were the first company to market with this type of product and sold more than 250 printers to customers all over the world, including huge companies like Google and NASA.

We wound up the company in December 2015. There were a few reasons for this, the main one being that the market for the product we made – that is, a consumer hobbyist sort of product – wasn’t there like we thought it was. We looked at hobbyist 3D printers and thought people would buy an electronics version, but we discovered it was mainly businesses that wanted this type of capability.

I decided to return to Brisbane as I thought the start-up scene here was growing a lot, and I wanted to be part of it. I’m now working for another start-up company, MOVUS, which also went through the Germinate program. We are developing a wireless sensor that can attach to any piece of equipment that has a rotating component and give advance warning if the equipment is about to break down. I’m leading the hardware development and am excited about what we are doing. MOVUS has an experienced team and I’m learning a lot from them, but I also think I’m teaching them some things based on my own start-up experience.

I don’t have any regrets about starting a company – I think it’s the best thing I’ve done. It was scary putting myself out there, and I had no idea what was going to happen, but I believe if you give it your all, only good things can come of it.

Find out more

To learn more about MOVUS, visit movus.com.au.
How big data is drawing a global picture

By Professor Xue Li
School of Information Technology and Electrical Engineering

Big data provides us with a new way of perceiving the world, where everything is an object, every object is associated with or interacts with other objects, and every object can be ranked by criteria such as importance, interest, influence, risk, or a combination of these.

The main goal of big data research is to ‘become aware of unawareness’. This has two levels of meaning. Objectively, there are known facts and unknown facts. Subjectively, there are things we know and things we don’t know. Big data helps us to learn about what we don’t know and is done in two ways: ‘from small to big’ and ‘from big to small’.

At UQ’s School of Information Technology and Electrical Engineering (ITEE), we develop methods of data fusion – the process of integrating multiple data and knowledge into an accurate representation – to ‘connect-the-dots’ and derive a global picture (from small to big) of situations. For example, data fusion techniques can be used to gain an overall picture of market feedback on products and services, the overall performance of a business, and trending social opinions in communities on social networks.

We also develop analytical approaches to identify relevant individual objects by detecting outliers in a huge collection of objects (from big to small), such as security threats, emerging events on social networks, personalised medical recommendations for patients, and performance predictions for a given organisation.

Most big data applications consist of three basic aspects: big data fusion, big data analytics and big data visualisation, the latter of which presents data in a pictorial or graphic format such as a knowledge graph used by Google. At UQ, the Data and Knowledge Engineering research division of ITEE, led by Professor Xiaofang Zhou, has been working at a world-first level on all three of these aspects in Australian Research Council (ARC)-funded projects.

“The main goal of big data research is to ‘become aware of unawareness’.”

Game-changing big data research is also being undertaken at UQ to tackle challenges relating to social computing. Social media has fast become an ingrained part of human life. Every minute, hundreds of thousands of messages, photos and video clips are posted online.

People communicate with each other in private groups or in communities on social networks based on their shared interests or habits.

The performance of different organisations can be influenced by social opinion. For example, government elections, local housing prices and stock markets are all influenced by the attitudes, feelings and moods people express online.

Social media is also closely related to public wellbeing. Recently, an increasing number of cases have been reported about privacy violations and public security threats associated with the contents of social media, while an alarming number of cyberbullying-related teenage deaths have also occurred.

We need to discover ways of ensuring the positive use of social media in our society to eliminate these misfortunes.

A timely project titled A Big Data Showcase – Social Media Analysis for Public Wellbeing (Health and Security) is investigating these and other impacts of social media on our society.

Funded by the UQ Vice-Chancellor Strategic Initiative Project 2015–2017, the research is using big data analytics to learn more about communities within different social networks and reveal the social structures of users.

As part of the project, machine-learning and artificial-intelligence technologies are being used to analyse social opinions and moods towards certain issues, as well as emerging trends such as influenza outbreaks and
patterns, feedback on government and private health services, chronic disease management, politics and security.

When people write about different topics in different times and locations around the world using social media, we can detect and analyse the sudden changes of frequencies of those words relating to topics, such as influenza, in order to pinpoint trends for early prevention.

People form communities online when commenting or sharing opinions, re-tweeting, or tagging other social media users, and influential social opinions can quickly develop. Sometimes, untrue or spamming opinions can also spread widely with lightning speed.

An imminent challenge for us is to understand the propagation patterns of all kinds of social opinions and protect our society values and national security when needed.

Big data fusion and visualisation technologies are also being employed to highlight opinions about the ‘who, where and when’ of social activities and provide a global view of social networks.

Researchers are faced with new challenges in dealing with the volume, variety and velocity properties of big data.

For example, questions have arisen such as how much data is enough for analysis? Can we design algorithms and indexes to effectively work with a large volume of high-dimensional yet sparse data? How can we design and implement algorithms that optimise the use of terabyte-scale memories in current cloud computing platforms?

There are also challenges related to data storage.

Big data analytics require the automation of scalable computational resources. Corporate data can be stored and managed in an on-demand and private database by third parties. Large computing centres and open cloud computing platforms are also becoming a popular choice for organisations to develop their big data applications with minimal effort.

Despite these challenges, the benefits of big data research involve delivering the correct information at the right time to the right people in order to make the right decisions.

The Internet has mapped our physical world to a new world – cyberspace – and it is important that we understand the direction we are headed and leverage that knowledge to influence the future and create positive change.

About the author

Xue Li, pictured, is a Professor in the School of Information Technology and Electrical Engineering. He leads a research team working on two ARC-funded projects on Social Computing research. His team has recently created a new software system, Opinion Search Engine (OSE). OSE searches social opinions from social communities across all publicly available social networks using big data fusion techniques, offering users a comprehensive dashboard visualisation tool on issues discussed on social media.

Over the past 15 years, he has published more than 160 research papers. The Australian Financial Review named him on its list of the 50 most powerful people in Australia in 2015 for his work on big data.

To learn more about the UQ School of Information Technology and Electrical Engineering, phone +61 7 3365 2097 or visit itee.uq.edu.au.

Connect with Professor Xue Li at xueli@itee.uq.edu.au.
UQ has established a new venture to accelerate its biomedical research with the goal of developing life-changing therapies.

The Queensland Emory Drug Discovery Initiative (QEDDI) is home to a dedicated group of experienced drug-discovery scientists recruited from industry to translate research into real patient benefits.

Based at the Queensland Bioscience Precinct within the Institute for Molecular Bioscience (IMB), QEDDI offers UQ researchers the opportunity to access best-practice techniques in drug discovery and development leveraging the cutting-edge research infrastructure available at the institute.

With funding support from the Queensland Government and UQ, QEDDI is operated and managed by UQ’s main commercialisation company UniQuest to bridge the gap – the so-called ‘valley of death’ – in translating innovative discoveries into new drugs.

UniQuest Executive Director of Intellectual Property Commercialisation Dr Mark Ashton says finding funding opportunities for translating biology into promising lead molecules for subsequent preclinical and clinical development is traditionally challenging.

“It’s for this reason that a large amount of innovative and important research in academic institutions remains undeveloped in the lab of the university researcher, instead of progressing to the clinic to provide potential patient benefits,” Dr Ashton explains.

“Only a few are fortunate enough to license the early-stage intellectual property to a pharmaceutical company or a biotech company, which has the resources to develop the project to a point where a large pharmaceutical company could apply extensive clinical resources to bring a product to market.”

UniQuest Chief Executive Officer Dr Dean Moss says QEDDI offers UQ researchers the ability to collaborate with an experienced team that operates like a biotech company while leveraging all the resources of a global top 50 university.

“QEDDI will enable UQ to develop the intellectual property further before partnering, which will result in commercial deals with greater value for the University, because the critical, early process of eliminating risks will have been carried out in-house,” Dr Moss says.

“The QEDDI model also offers unique opportunities to progress research towards the clinic and, ultimately, towards direct benefits for the patients.”

QEDDI was conceived and modelled based on leading centres worldwide, including the Emory Institute for Drug Development (EIDD) at Emory University in Atlanta in the US, the MRC-T Centre for Therapeutic Discovery in London, and the Lead Discovery Centre originally set up by the Max Planck Institute in Germany.

The EIDD is led by Professor Dennis Liotta, an inventor associated with 10 Food and Drug Administration (FDA)-approved antiviral drugs. Professor Liotta and Emory University have provided their advice and expertise in the translation of academic research during QEDDI’s implementation and continue to be strategic partners.

QEDDI was established in 2015 as a business unit of UniQuest, which has a strong track record in commercialising UQ’s biomedical research to provide significant healthcare outcomes.

This includes the commercialisation of Gardasil®, the Human Papillomavirus vaccine for cervical cancer.
For more information about the Queensland Emory Drug Discovery Initiative and UniQuest, visit uniquest.com.au.

UniQuest Executive Director of Intellectual Property Commercialisation Dr Mark Ashton and Queensland Emory Drug Discovery Initiative Senior Director Dr Andrew Harvey.

that was co-created by UQ researcher Professor Ian Fraser AC and the late Dr Jian Zhou, licensed to CSL Limited and ultimately Merck & Co., before achieving FDA approval in 2006.

Another example of UniQuest’s commercialisation success includes a multimillion-dollar deal for a chronic pain treatment arising from the work of UQ researcher Professor Maree Smith. The research was further developed within Spinifex Pharmaceuticals, a start-up biotech company founded by UniQuest. In June 2015, Spinifex was acquired by Novartis for an upfront cash payment of $US200 million, plus additional milestone payments.

UniQuest will be working with its UQ collaborators through QEDDI to develop and license drug candidates to pharmaceutical partners who can take these therapies to market for the benefit of patients. UniQuest hopes to identify many other UQ success stories like Spinifex.

Find out more

For more information about the Queensland Emory Drug Discovery Initiative and UniQuest, visit uniquest.com.au.
Institute for Molecular Bioscience senior researcher Dr Tina Schroeder working with nuclear magnetic equipment, used to determine the structure of molecules in the development of new drugs.
DISCOVERIES
inspired by life

The natural world is inspiring researchers at the Institute for Molecular Bioscience (IMB) to develop treatments for disease and solutions for agricultural and environmental issues.

Whether it’s developing pain drugs from cone snail venom or biofuels from algae, or eradicating cane toads using their own toxins, IMB scientists are tapping into the world’s vast resources to create better health and improved products and processes for industry and the environment.

IMB Director Professor Brandon Wainwright says the problems facing the world today are complex and multifaceted.

“Complex problems require multidisciplinary teams, different ways of thinking and collaborations with other researchers, industry and clinicians,” he says.

“At IMB, we are a true life sciences institute whose scope ranges beyond the medical, meaning we can follow through on research whose application lies in other areas, such as our algal biofuel program.”

Some of the problems IMB researchers are tackling include chronic pain, superbugs, inflammation and rare diseases.

Chronic pain affects one in five Australians, affecting their relationships and ability to work, while inflammation underlies many major diseases with devastating impacts, such as diabetes and obesity, arthritis, stroke, cancer and liver disease.

Superbugs are a serious and growing threat that, if left unchecked, could take us back to an era when over half of all deaths were from bacterial infection. And while rare diseases may be uncommon individually, collectively one in 12 Australians suffer from one.

The quality of IMB research in these and other areas has been recognised independently.

The institute regularly achieves double and even triple the national average success rate on competitive grants, which are reviewed and awarded by scientific peers from across the country.

The Nature Publishing Index, a ranking of the affiliations of high-quality research articles, puts IMB at 13th in the nation if it were a standalone institute, ahead of many entire universities and all other Australian research institutes.

But IMB’s focus is not just on excellent research. Professor Wainwright says innovation is rightly viewed by governments around the world as critical to economic progress and quality of life.

“In 2016, we are reinforcing our commitment to translational and commercial research so discoveries with the potential to benefit patients, industry and the community will be encouraged and supported as early as possible in their development to ensure their application and use.”

Find out more

For more information about the Institute for Molecular Bioscience, visit imb.uq.edu.au or call +61 7 3346 2134.
Work being undertaken at a laboratory at Brisbane’s Institute for Molecular Bioscience (IMB) could change the way people around the world take medicine.

Tablets or injections are common ways of dispensing pharmaceutical treatments, but IMB’s Professor David Craik is hoping to transform sunflower seeds, tea leaves and even potato chips into the drug delivery packages of the future.

“Our goal is to produce plants capable of growing pharmaceuticals, creating a new generation of affordable, accessible drugs to treat a range of conditions including cancer, pain and obesity,” says Professor Craik. “Plant-grown medicines would be particularly impactful for people in the developing world.

“Current pharmaceuticals can be out of reach for many in developing countries due to their high price and the lack of infrastructure available to transport and store specialised drugs, such as those that require refrigeration.

“Pharmaceuticals contained in seeds, leaves or food would be much more affordable and the infrastructure to transport, for example plant seeds, is much simpler and already in place even in remote corners of the world.

“These plants could also be provided to people directly, opening up the possibility of patients growing medicine to treat themselves in their own backyards.”

Professor Craik and his team, in collaboration with Professor Marilyn Anderson AO of La Trobe University in Melbourne, are turning their vision of plants as ‘biofactories’ to produce pharmaceuticals into reality through clever chemistry.

Plant-grown drugs are based on molecules called cyclotides, circular proteins that plants naturally produce. Their circular shape means cyclotides are stable and harder for digestive enzymes to break down.

“Cyclotides bridge the gap between traditional oral drugs such as common painkillers, which are expensive but non-specific in their function, and protein-based drugs such as insulin, which are very specific but expensive and require injection,” Professor Craik explains.

The cyclotide drugs the IMB team are developing are specific, which means they are less likely to cause side effects, and can be taken orally.

The team is focusing on optimising a pain relief drug already in development in Arabidopsis plants, producing anti-obesity peptides in potatoes, and producing anti-cancer peptides in sunflower and soybean.

The research has already attracted the support of the Clive and Vera Ramaciotti Foundations and IMB is currently seeking industry partners for this research.

Find out more
To learn more about supporting this research through clinical trials, contact Maureen O’Shea at m.oshea@uq.edu.au or +61 7 3346 2185.
Institute in Focus

Microalgae shines light on solar fuels

For decades, governments and scientists have searched for a sustainable solution to fossil fuels.
Now, it appears the answer could come from tiny green algae, growing naturally in our waterways for billions of years.

A collaboration between UQ’s Institute for Molecular Bioscience (IMB), global engineering company Kellogg Brown and Root Pty Ltd (KBR) and renewable energy company Muradel Pty Ltd is focusing on developing renewable solar fuels, like microalgae, that are carbon dioxide (CO2)-neutral and reduce competition for arable land and fresh water.
IMB Professor Ben Hankamer says the research partnership has the potential to help society transition from a finite fossil fuel resource to a sustainable solar energy supply.

“By 2050, the human population is forecast to expand to nine billion people, requiring 50 per cent more fuel, 70 per cent more food, and 50 per cent more fresh water,” he explains.

“At the same time, Intergovernmental Panel on Climate Change data shows that we must reduce CO2 emissions by up to 80 per cent to limit the rise in average global temperature to two degrees Celsius, the limit agreed to at the 2015 UN Conference on Climate Change.

“Achieving this reduction necessitates the rapid development of clean fuel technologies.”

Microalgae have evolved over three billion years to convert sunlight and carbon dioxide into energy for its own growth — or for producing fuels, foods and other high-value products.
Microalgae can be grown in saline or waste water and agricultural runoff, while production systems can be located on non-arable land, reducing competition with food production and water resources.

Professor Hankamer says the next challenge is to make solar fuels cost-competitive with fossil fuels.

“For these products to be cost-effective, we need to better capture and distribute sunlight through these systems.

“We are studying microalgae cell lines to understand the photosynthetic machinery and increase the efficiency of sunlight conversion to biomass.

“Other researchers have demonstrated that the crude oil yield from microalgae can be increased, and there is plenty of potential for further optimisation.”

Microalgae has the potential to deliver much more than renewable fuels.
Microalgae biotechnologies can also power the production of products such as dengue virus vaccines, antibiotics, and animal and aquaculture feeds.

“Having multiple markets for a range of algae products supports the refinement and cost reduction of microalgae systems, and ultimately helps to bring solar fuels closer to price parity with crude oil,” says Professor Hankamer.

To watch a video about Professor Hankamer’s research, view this article online at uq.edu.au/changemakers.
Dr Joan Norton with her horse, Cartouche USA, at the UQ VETS Equine Specialist Hospital at UQ Gatton.
ONE HEALTH
for all creatures
great and small

In a world facing climate change, intensified demand for meat and dairy products, and increased human-animal interaction, the veterinary industry has evolved significantly in the last few decades to play a crucial role in solving immense challenges.

As the gatekeepers of the interface between humans and animals, veterinarians have many roles. While the local ‘pet vet’ who vaccinates and treats beloved Fido may be the most recognisable, veterinary practice in Australia encompasses much more diverse fields, including small and large animal practice, emergency medicine, animal production, public health and disease control, quarantine and biosecurity, research and education, pharmaceuticals and commercialisation, animal welfare and therapeutic treatments, and wildlife conservation.

Over the last decade, the veterinary profession has progressively shifted its focus to a more holistic and integrated approach, which links animal, human and ecosystem health to promote all components through interdisciplinary cooperation.

Concepts of One Health have gathered momentum from an initial focus on understanding and controlling significant recent Emerging Infectious Diseases (EIDs) such as Ebola, Avian Influenza, and Hendra viruses.

Continued overleaf
Many recent EIDs originate in animal populations and pose threats to human and environmental health. Veterinarians are playing vital roles in collaborative teams to combat these diseases.

The scope of One Health activities is now extending to embrace broader issues that span animal, human and environmental health, such as sustainable food systems, climate change, biodiversity, animal welfare and many others. A truly integrated approach requires multidisciplinary expertise, including sociological, agricultural, ecological and non-technical knowledge and skills.

An example of such an approach being used to combat recent challenges is the work UQ School of Veterinary Science epidemiologist Dr Ricardo Soares Magalhaes has been conducting, which informs disease control policy by better understanding the link between geographical distribution of animal and human infections and their associated morbidity.

One of his recent projects has involved studying avian influenza – better known as ‘bird flu’ – and rabies with the Food and Agriculture Organization of the United Nations, the China Animal Health Epidemiology Centre and the China Centres for Disease Control.

Dr Magalhaes is also currently using Big Data to map and develop rapid responses for the West African Ebola virus, with important applications to other emerging infections such as the South American Zika virus.

“Cross-disciplinary research is crucial to resolving these infectious diseases,” says Dr Magalhaes.

Researchers from the School of Veterinary Science are also investigating the prevalence and molecular epidemiology of antimicrobial drug resistance in pathogens and commensal organisms in food producing and companion animals in Australia and overseas (in Vietnam and the Philippines). Beyond their human health impact, antimicrobial resistant bacteria threaten the health and welfare of animals and people’s food security and livelihoods.

This research has already improved veterinary teaching methods. Students in developing countries are now taught improved antimicrobial awareness and mitigation, and have increased awareness of usage of antimicrobial agents (such as antibiotics) and resistance in the pig industry and in avian species.

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To keep up in an ever-changing industry environment, veterinary education increasingly focuses on self-sufficiency. UQ’s Professor Paul Mills has worked across many sectors of the industry in the last three decades, including government, emergency medicine, and education, and knows first-hand that students need more than just scientific or practical skills to succeed.

“Setting up our students for success means teaching them not only the vital skills they need to hit the ground running from day one, but also how to learn for themselves so they can continue to develop as veterinarians, but also more broadly as scientists, for their whole careers,” says Professor Mills.

“We are trying to make sure they’ve got that ability to change, to think for themselves, to work for whatever job they can do, so they are not pigeon-holed.”

Part of this process involves regular training throughout the five-year veterinary science program in skills that are vital to success after graduation.

“From the beginning of their degree, students must participate in activities that prepare them for day-to-day life as a practitioner,” says Professor Malcolm Jones, a parasitologist who works closely with students in the veterinary science program.

“This includes a boot camp called Vets for Life at the beginning of their degree that establishes their expectations and provides them with support mechanisms for their studies. Later in their coursework, they conduct mock interviews to prepare them for dealing with difficult clients; take courses that develop their business-management, client-management and people skills; and learn techniques to help them manage their feelings and actions in a high-stress environment.

“We are really keen to support our students’ development as resilient, critical thinkers.”

Student Sarah Babington is completing a Bachelor of Veterinary Science and says UQ has prepared her well for a career after graduation.

“Studying veterinary science at UQ has not only taught me the importance of practical skills, such as client communication and business management, but also the essential role veterinarians play in today’s world of human public health on an international scale.”

Life-long learning key to career success

To learn more about the Vets for Life program, visit veterinary-science.uq.edu.au/student-life.
UQ’s Dr Philip Chamberlain instructs first-year Nong Lam University students in Vietnam on a field trip about cattle health.
The changing nature of the student cohort in recent years has in many ways shaped the way institutions teach and reach out to meet their needs.

“Students today are increasingly more connected, strategic, and globally minded,” says UQ Professor Paul Mills. UQ’s School of Veterinary Science has been accredited with Australasian, American and European veterinary associations, meaning graduates can work anywhere in the world, which both attracts international students and promotes international partnerships.

For example, since 2010, UQ and Nong Lam University (NLU) in Ho Chi Minh City, Vietnam, have collaborated to improve veterinary education in Vietnam through an advanced, English-speaking program.

“We are trying to make sure that they have got the curriculum, they can adapt to Vietnamese conditions and make sure everything flows smoothly, making it a centre for excellence for veterinary education in South-East Asia,” says Professor Mills.

Lecturers from both institutions have transferred knowledge with students in the other country. To this end, a group of UQ students headed to Vietnam earlier this year to learn more about the country’s production animals.

Funded by the Australian Government’s New Colombo Mobility Program, this project provides students with direct experience of animal production systems and animal health in our near neighbours.

Another group of clinically focused final-year students will travel to Brazil this year under the Endeavour Awards Scheme to gain experience in clinical practice and working with native Brazilian animals, broadening their skills and seeing how veterinarians in Brazil function in their practices.

So where does this lead?

The Head of UQ’s School of Veterinary Science, Professor Glen Coleman, believes the intersection between human and animal medicine can only become more closely entwined as scientists and practitioners from all disciplines work together to address new challenges as they arise.

“Animal and human medicine will mutually benefit from shared One Health research outcomes to overcome increasingly challenging medical issues of our time,” he says.

Find out more

To learn more about the collaboration with Nong Lam University, visit veterinary-science.uq.edu.au/vet-school-activities.
Women in Digital founder and business graduate Holly Tattersall.
Driving diversity in the digital age

UQ business graduate Holly Tattersall is logging into a global network to empower women in an ever-changing digital landscape.

Born in Papua New Guinea and raised in Fiji, New Zealand and Australia, entrepreneur and UQ business graduate Holly Tattersall developed a great appreciation for the world’s diversity early in life.

This served her well when she later embarked on a career in the global digital industry.

As Founder and International Director of Women in Digital (WID), an international organisation that promotes diversity and inclusion for women in digital industries at all levels, Ms Tattersall is creating change for women in a typically male-dominated industry.

“After graduating with a Bachelor of Business Management in 2010, with a triple major in Human Resources, Industrial Relations and International Business, I had a keen desire to apply my international business expertise,” says Ms Tattersall.

“So, I moved to Colombia where I founded a tour company.

“This was a challenging but positive experience for me, both personally and professionally. I was simultaneously learning a new language and navigating the intercultural nuances of starting a business in a foreign country.”

Ms Tattersall received advice from a mentor early on in her career to be authentic in all she did, which led her to pursue an entrepreneurial career path, rather than climb the corporate ladder.

“I founded Women in Digital after realising the power of a mentoring relationship and wishing that all women could have the same experience in their career.”

In two years, the organisation has grown from a local Brisbane meet-up to an international organisation with branches reaching as far as Silicon Valley in the US, and Tel Aviv in Israel.

Ms Tattersall is passionate about the role digital technology can play in empowering under-privileged women, which has also led her to provide sponsorship and skills mentoring to her partner organisation, Women in Digital Bangladesh.

“By providing services that support and inspire women to be strong, confident and skilled, I hope to act as a change agent who will create more female leaders in digital industries,” she says.

When Ms Tattersall is not busy expanding WID across the globe, she is Treasurer and Executive Council Member for the Australian Institute of International Affairs, as well as a member of both Women in Technology and the Digital Industry Association of Australia.

In 2014, she was recognised as an industry authority by acting as a panel judge for the Lord Mayor’s Business Award for Digital Strategy.

Ms Tattersall’s impact as a change maker in the digital landscape was officially recognised when she was named a finalist in the 2016 Queensland Young Achiever Awards for Online Achievement.

Her insights into technology led her to believe that the best Australian universities will begin to utilise gaming, augmented and virtual reality to support students’ learning styles and offer a more immersive learning experience.

“These shifts in technology will in turn empower teachers to provide tailored education and teaching styles to better suit their students,” she says.

Ms Tattersall credits UQ with providing and encouraging networking opportunities for alumni that have helped her achieve business success.

“Joining the UQ Young Alumni Board helped me realise the value of networking and maintaining connections to the University,” she says.

“When you study at UQ you not only gain a degree that endorses your academic learning, you gain access to a network of successful and supportive individuals who hold a sense of loyalty to their fellow UQ alumni.

“Spending my formative years abroad led to a fascination with others’ life experiences and upbringings, and the friendships forged and experiences shared with fellow students from Australia and around the world remains one of my greatest university highlights.”

For more information about Women in Digital, visit womenindigital.org.
If you would like to connect with UQ’s young alumni community, visit alumni.uq.edu.au/young-alumni.

Connect with Holly Tattersall at holly@womenindigital.org.
For me, it all started at UQ

Taylah, UQ Graduate

Taylah used the opportunities and knowledge she gained at UQ to secure an internship at Google, which has led to an exciting career. She now travels the globe, searching for innovations that will shape our digital future. By learning to see the world differently, Taylah is creating change. See her story at uq.edu.au/createchange