2015 EDITION

INSIDE THE NEW SIMULATION HUB

BREAKING NEWS: LET THERE BE SISTERS ARE DOING IT FOR LIGHT MEDIA FOR THE MASSES

RESEARCH THE HEADLINES

SISTERS ARE DOING IT FOR THEMSELVES

School’s IN... for everyone

Life, SIMULATED

INSIDE THE NEW SIMULATION HUB
IT IS A GREAT PLEASURE TO WELCOME YOU TO THE 2015 EDITION OF YOUR ALUMNI MAGAZINE, NOT ONLY FOR THE YEAR, BUT IN THE NEW UNIVERSITY LIVERY AND UNDER ITS RESTORED NAME: SIRIUS.

Like the Macquarie Lighthouse, the traditional name of this publication has been restored to prominence as a well-loved part of our shared identity.

Our reflections on the past 50 years have uncovered many such examples of the rich and endearing history of this University, many of which have been given a new lease of life as we reconnected with our roots.

But as we look to the future, the time has come to consider not where we have come from, but where we are going. The future of the University is extremely bright and it has already begun.

In this edition, you will find stories exploring the contributions staff and students are making to the changing face of the media, women in business, and the prospects of students after graduation through the encouragement of innovative thinking outside the classroom.

Highlights of our research activities join the regular alumni reflections and recollections, as well as an update on the campus development in Future Calling.

As ever, I encourage you to keep in touch, and I send you good wishes for the year ahead.

S Bruce Dowton
The Vice-Chancellor and President

Come back and explore some of the exciting changes on campus on Open Day or at one of our many other campus events.
THE GREAT GARDEN GNOME HUNT
Relive the day garden gnomes took over Macquarie University

MEDIA FOR THE MASSES
As the media landscape shifts into the digital space, journalism has been transformed

WOMEN IN BUSINESS
Innovative programs are helping women alumni to make a real difference around the world

THE GREAT GARDEN GNOME HUNT
Relive the day garden gnomes took over Macquarie University

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Innovative programs are helping women alumni to make a real difference around the world

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The infamous Kokoda Track may help produce a cure for MND

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Catch up with old friends

JUBILEE YEAR
Celebrating the year in pictures
WHILE THERE AREN’T MANY GARDEN GNOMES AROUND MACQUARIE TODAY, THERE WAS A DAY BACK IN 1970 WHEN THEY TOOK OVER THE CAMPUS, FOLLOWING WHAT BECAME WIDELY KNOWN AS THE GREAT GARDEN Gnome HUNT.

According to Dr Brian Spencer (BA (Hons) 1972, DUniv (Honoris Causa) 2004), former Registrar and Vice-Principal of Macquarie University, events unfolded on the eve of the second Conception Day celebration.

“The first Conception Day had been a wet and a fairly unexciting affair, with the main event being a flour fight between groups of students on the lawn,” he says. Organisers were determined to do something more memorable for the second year’s festivities.

“Top secret maps identifying the location of all known local garden gnomes were prepared and handed out to students at midnight on Conception Eve. Their goal was to borrow the gnomes, make a note of where they lived, and later deliver ransom notes. All funds raised would go to charity,” Spencer says. Well, that was the plan, anyway.

As recorded by Activities Officer Phil Gibbs, after an evening of drinking and other activities of questionable legality, the safari suit-clad and pith-helmeted students took to their task with enthusiasm at midnight.

“By 3am, however, the organisers started to become concerned that in their exuberance the gnome hunters had exceeded their brief and collected every piece of garden ornamentation and furniture they could find,” Spencer reminisces.

“There were statues, cement cherubs, stone lions, tyre swans, storks, bird baths, frogs and a dazzling array of porcelain figures. And of course there were gnomes: crouching gnomes, standing gnomes, pouting gnomes, fishing gnomes and every other kind of gnome imaginable.”

Together, they formed an impressive but silent guard of honour on the University lawn as organisers, fretting over the by now tired and emotional gnome hunters’ sparse records, started to ponder the legal implications of the night’s work.

They were right to worry. Distressed owners had called local police who threatened to lay charges against the gnome-nappers. “Feelings were running high,” says Spencer, “but Vice-Chancellor Alex Mitchell intervened and saved the day, dispatching university attendants to round up the stone creatures, which were taken to Ryde and Eastwood police stations for concerned owners to reclaim them.

“As the truck drove off to take them to jail, the stony, forlorn faces of the gnomes peered out from the back of the truck, serenaded by the students who sang ‘Let my people go,’” he laughs.

The event attracted a lot of attention in the media, with outrage over the students’ high jinks on talkback radio and tongue-in-cheek opinion pieces concerned over the plight of the homeless gnomes.

“Other Conception Day hunts occurred in later years, and of course there have since been countless gnome hunts,” Spencer says. “But we like to think ours was the original – and the best.”

Top secret maps identifying the location of all known local garden gnomes were prepared and handed out to students at midnight on Conception Eve.
CONCEPTION DAY

While teaching at Macquarie began in 1967, the University’s first Conception Day was held in 1969 after students decided to establish a day of celebration similar to Commem Day at the University of Sydney and Foundation Day at the University of New South Wales. The date the University was officially founded occurred during the holidays, ruling it out, so the wily students cast about for something that better suited their schedules.

Eventually they backtracked from the eponymous Lachlan Macquarie’s birthday about nine months, and announced that the last day of classes before the September mid-semester break would henceforth be known as Conception Day, in celebration of both the University’s conception – and Governor Macquarie’s.
FEATURE

Words Rachel Sullivan
Images Chris Stacey
THE YEAR OF light

Light is fundamental to our lives, powering everything from photosynthesis to the internet. As light-based technologies are poised to take on an ever-greater role in our lives, Macquarie’s alumni are at the forefront of the field.

THE 2015 INTERNATIONAL YEAR OF LIGHT AND LIGHT-BASED TECHNOLOGIES STARTED WITH A GLOW AT SYDNEY’S NEW YEAR’S EVE FIREWORKS, WITH A GIANT LIGHT BULB ILLUMINATED ON THE HARBOUR BRIDGE DURING THE ‘INSPIRE’-THEMED LIGHT AND LASER DISPLAY.

It was a fitting place to launch the Year of Light: Macquarie has been pioneering research and development of photonic technologies since 1988 when it was awarded funding for what was then known as the ARC Special Research Centre for Lasers and Applications. At the time, it was one of only two federally funded Special Research Centres in the country.

The Centre was the brainchild of the former Deputy Vice-Chancellor of Research, Emeritus Professor Jim Piper, who is credited not only with bringing about huge leaps in optics and photonics research in Australia, but with setting Macquarie’s research on the way to the prestigious international rankings it holds today.

“Photonics is the science of generating, manipulating and controlling light,” explains Professor Michael Withford (PhD 1996), Director of what is now known as the Photonics Research Centre. “It is the optical equivalent of electronics.

“Where electronics moves electrical particles (electrons) in wires to convey information, photonics transfers packets of light (photons) along optical fibres, which is then converted to an electronic format [that can be interpreted by researchers and everyday equipment].”

Photonic technologies are used everywhere; from barcode scanners, DVD players and TV remote controls, to telecommunications, eye surgery and medical instruments.

“Photons research at Macquarie explores a huge range of areas, from discovering how light behaves at the nanoscale, to using lasers to create antibacterial medical applications.”

In the manufacturing industry they are used for laser-cutting fine parts, such as miniature components in mobile phones and Cochlear hearing implants.

In the past few decades, Macquarie researchers have been responsible for some groundbreaking discoveries that have changed the world, including the foundation work that led to the creation and proliferation of LED lights.

Preliminary research undertaken by Macquarie alumna Dr Cathy Foley (BSc (Hons)/DipEd 1981, PhD 1985), now chief of CSIRO Materials Science and Engineering, contributed to the development of blue LED lights, technology that received the Nobel Prize for Japanese physicists in 2014.

“Red diodes had been around for some time, but without blue diodes the energy-efficient LEDs we use in our home lighting would not exist,” Withford explains. “Those blue LEDs are founded on gallium nitride technology, a field for which Macquarie was a pioneer.”

They are brighter than incandescent light bulbs because they use phosphorus to intensify the white light and also last longer – up to 100,000 hours, compared with 1000 hours for incandescent bulbs and 10,000 hours for fluorescent lights – resulting in less consumption of materials overall.

“With around a quarter of global electricity consumption used for lighting, LEDs can have a significant impact on reducing consumption, as well as the power to change the design of buildings because architects can overcome the constraints of old-style lighting,” Withford adds.

They also have the capacity to produce a better quality of life for over 1.5 billion people around the world living in poor or remote areas and lack connection to electricity grids.

“Imagine the difference for children who can use a cheap LED lamp powered by a solar panel rather than a toxic kerosene lamp to do their homework,” Withford says.
Today, photonics research at Macquarie explores a huge range of areas; from discovering how light behaves at the nanoscale, to using lasers to create bacteria-resistant medical applications.

“Gold in its macro form appears gold, but at the nanoscale it changes to red,” Withford says. “Surprisingly, it’s something that has somehow been known since medieval times, when it was used by stained glass window painters to produce rich reds in their windows.

“Understanding the nanoworld helps us understand the macro world; biosensing technology researchers are using those nanoscale gold properties to help understand how nanoparticles are taken up by cells,” he adds.

For example, Macquarie researchers are applying this knowledge to understanding the dynamics of pancreatic cancer by using tailor-made nanoparticles such as luminescent nano-diamond to explore intracellular processes. They also recently discovered that diamonds can radically improve the quality of high-power laser beams, a discovery that will help meet growing technological demands in materials processing, environmental and remote sensing, and in defence applications.

Professional and Community Engagement (PACE) students work with CSIRO on developing smartskins for satellites to monitor bombardment by sand-sized micro-meteors. Not only will this help improve satellite protection, the research potentially has applications for cars and aircraft as well.
Another exciting area of Macquarie’s photonics research is in terahertz imaging, which uses an exotic part of the spectrum to look inside biological structures.

“The technology allows you to study a leaf inside an envelope and has applications for national security, where packages can be accurately scanned for the presence of drugs and other prohibited biological materials,” Withford says.

**SILKY GLOW**

Physicist Dr Douglas Little (BTech (Hons) 2005, PhD 2010) is exploring the optical properties of the silk produced by orb-weaver spiders.

“The cylindrical, smooth, transparent silks produced by these spiders resemble miniature optical fibres but are much finer, with thicknesses around 1/100th the width of a human hair,” he explains.

His research focuses on understanding how light interacts with the gossamer strands, which are harvested from a team of hardworking Macquarie spiders.

“We identified a way to measure the optical properties of the silk, in particular its refractive index, which is a measure of how much light slows down when it travels through a material,” Little says. “We now have sufficient precision to measure how the refractive index of spider silks responds to environmental conditions such as temperature, humidity, strain or pH.

“This is exciting, as it opens up the prospect of using spider silks in a diverse range of technological applications, including using the silk as a miniature optical fibre that connects optics and electronics; or as chemical, biological and medical sensors.”

Spider silk is suitable for biomedical applications because its protein composition makes it especially compatible with biological systems, and doesn’t trigger the same autoimmune response as other materials.

“When spider silk is used to guide light in the same way as fibre optics, because it is so fine light leaks through the strand (in what is known as an evanescent field) and interacts with surrounding materials, which makes it well suited for biological sensing.” Once it is no longer needed, the body’s natural processes break down the silk.

“In the future, we may very well be farming optical materials from spiders and other insects, rather than producing them in factories,” Little says.

Withford agrees that this is a great example of the way that harnessing light has the power to build a better future.

“Because light touches so many different parts of our lives, taking a cross-disciplinary approach to developing new light-based technologies will help create new cultural, economic and political links across the globe, while transforming the daily lives of millions.”

**FUTURE VISION**

Serial photonics entrepreneur and now Chief Executive of CSIRO, alumnus Larry Marshall was a student of Macquarie’s founding father of photonics Professor Jim Piper – and a dedicated Conception Day gnome-napper.

After completing a Bachelor of Science (Honours) as well as a PhD in Physics at Macquarie, Marshall went on to forge a hugely successful career as a venture capitalist and entrepreneur in the United States. He says his mentor Jim Piper was a man ahead of his time.

“Jim was unusual in that he advocated community engagement and developing industry-relevant applications at a time when most academics regarded that as dirty science.”

“It was great for us because it advocated community engagement and developing industry-relevant applications at a time when most academics regarded that as dirty science.”

While Marshall says his new role at CSIRO has stretched and energised him in ways not experienced since running his first start-up, he still has time to think of the future.

He believes that optical based data centres will reduce power consumption while allowing higher processing speeds and the development of brain-like search capacity. “This type of search [might] give us what we were really wanting, not with what [search engines] wants to sell us,” he says.
The media is in a state of paradox where the world increasingly relies on effective communication, while traditional media is cutting journalists and other objective commentary. Macquarie is preparing graduates to carve out careers that creatively combine their passion with entrepreneurial skills and their powers of persuasion across a range of platforms.

Newspapers have been the mainstay of journalism for centuries, but as the media landscape moves inexorably into the constantly shifting digital space, journalism has been transformed.

Digital space isn’t ‘owned,’ and it is (so far) barely regulated – prompting Alan Rusbridger, editor of The Guardian, to tell the audience at the 2014 Columbia Journalism Awards that in digital media, “no-one can really agree what journalism is any more. Or who gets to be a journalist. Or whether journalism itself can survive.”

The transformation of journalism is not new, and it’s not over; but it is improving, according to the 2014 annual Pew State of the News Media report, which identified a new sense of optimism for journalism’s future after more than a decade where traditional media haemorrhaged revenue, readership and reporters in an ever-descending spiral.

“No-one can really agree what journalism is any more. Or who gets to be a journalist. Or whether journalism itself can survive.”

“As a journalist, Borschke got her start in print at America’s oldest magazine, Harper’s, and then went on to develop some of the earliest web-based publications and to contribute to some of the industry’s best-known titles – The New York Times Magazine, The Times and Harper’s Bazaar.”

Today, she conducts research on networked media and innovative media practice.

“I tell my students, change is the only constant,” Borschke continues, adding that this volatility creates all kinds of possibilities.

“The same technologies that disrupted the industry make it possible to report and tell stories in new ways.

“More importantly, there are new platforms for journalism, new ways to find an audience for your work, to build a community around your passions and to interact with them as routine part of your practice.”

Content vs Commerce

Specialising in one form of media over another won’t prepare future journalists for the new reality, she says; they need to have a broad suite of competencies that will allow them to meet a wide range of demands.

Some of these skills – such as promoting your work, or building a personal brand – mean that journalists are also renegotiating traditional boundaries between content and commerce.

Media executive Marina Go jumped ship from traditional print media into digital eight years ago, and says that her recent transition back into print publishing has given her a real advantage.
Currently the General Manager of Hearst-Bauer Media, Go graduated from Macquarie with a BA majoring in Mass Communications in 1988.

At just 23, Go was editor of *Dolly* magazine, and spent the next 17 years running women’s magazines, picking up an MBA, a husband and two sons, and several board appointments (including Chair of NRL club Wests Tigers) along the way.

But media was changing. Around her fortieth birthday, Go decided to immerse herself in the platforms that she could see heralded journalism’s new world.

“Journalists are no longer just ‘words people,’” Go says. “That’s been a challenging transition because people tended to specialise – to be either a words person or a visual one.”

Journalists still need to have storytelling skills, a curiosity and willingness to find out the whole story, and to strive for balance, she says; but now they need to take a really flexible approach to tell stories.

“Now we want journalists to write copy, make videos, to do podcasts, to use social media, to be witty and write headlines and shoot images. We want all of these things in one person.”

**INGRAINED SKILLS**

While Go admits the new generation of journalists face a challenging remit, she says that she’s been consistently impressed by the young graduates who join her team.

“They are always the most impressive people in the team because these skills are ingrained. They’ve never lived in a world without a computer, or without social media; for as long as they can remember, they’ve been on Facebook and other platforms, navigating new media in a way that older journalists have had to learn.”

They also often operate without the hierarchical safety net of traditional newsrooms, with a subeditor and several editors between writing and publication; publication is often instantaneous now.

“Going viral is a goal in nearly all newsrooms,” explains Emily Bell, Director of Columbia University’s Tow Centre for Digital Journalism during the recent Hugh Cudlipp lecture on journalism in London.

But the web was never designed with journalism in mind, she says. Nor are journalists prepared for this new universe, where autonomous search engines, social networks and platform companies direct content to vast new potential audiences.

She argues that journalists must become more technically proficient – and that technology organisations need technology experts who are also proficient in news.

Macquarie has taken big steps towards addressing the challenges journalists
face. Macquarie alumna Catharine Lumby (PhD 2000) is Professor of Media in the Department of Media, Music, Communication and Cultural Studies. She worked for *The Sydney Morning Herald*, the ABC and *The Bulletin* before entering academia in 2000.

She says that few media graduates today will have the opportunity to work for a traditional media organisation like *The Sydney Morning Herald* or the ABC or a TV newsroom. “There are very few jobs there; those business models are broken.”

Lumby says that many future media practitioners will work freelance, providing content to a range of places.

“Some of it might be traditional journalism, but they might also provide creative content for a website, for a whole range of organisations, and that content might be anything from a 60-second video that could be tweeted, to a longer audio that they will post to YouTube.”

Working across different platforms and for a range of clients will raise issues that staff journalists have never had to face, she adds, saying that entrepreneurial skills – the ability to brand yourself, to develop your own business model – will become critical.

“Journalists might work for a government organisation, a corporation, or a not-for-profit and, in each case, will have to think very selectively about how to accommodate the needs of these different organisations.”

Talking about clients was anathema to traditional journalists, she says, but today, there is a merging of the roles of journalist, PR practitioner and even advertiser.

This will raise new kinds of ethical challenges. “Journalists will have to decide what kind of media producer they want to be, what their values are and how to manage situations where a client may ask for something that offends those values.”

Lumby says these are issues that students in the Master of Future Journalism course are able to explore in a university environment.

“Here at Macquarie, we have the best media and social media production facilities in the country, with a purpose-built green-screen studio, all installed last year into our Futures Lab,” she says.

Students are able to broadcast live from the Lab, which is also tailored to allow the production of social media content.

“There’s a lot of focus in the course on the practical components, which lets students develop a portfolio as they go. It does have a very real-world focus.”

**EVOLUTIONARY PROCESS**

Lumby is quick to point out that social media – in fact, all new media – is both emergent and evolutionary.

“Students who complete the Master of Future Journalism degree walk out with a set of portable skills and principles, which they can adapt to the evolution of this very, very fast evolving landscape. That’s why the entrepreneurial element in this course is so important.”

She says media academics have faced a real challenge in getting up to speed with this new environment.

Lumby recently partnered with Google on a major project to research the regulation of content in a convergent media era, and how to rethink media and content regulation.

“A top-down approach from government can’t work when such a diversity of content is produced across the spectrum of professional and amateur,” she says.

“Instead, we explored a role for platforms like Facebook, Twitter and Google to give media users tools to notify them about inappropriate content and to fund content education programs for consumers.”

However, while students get access and experience with high-end tools and new platforms, Margie Borschke says they also learn what can be done with very little money – because many will be running their own show.

There’s also still a focus on core journalism skills, she adds.

“Journalists still need to know, how do you identify a reliable source? How do you report and tell an engaging story that is also fair and accurate? These are persistent, fundamental techniques and standards that apply whether you’re putting together a feature, a Buzz Feed listicle or live-tweeting an event.

“We’re in the business of asking good questions and telling stories that matter.”
A QUICK GLANCE AT ACCIDENT STATISTICS TELLS A GRIM STORY – ALCOHOL OR DRUGS AND DRIVING OR ANY OTHER SKILLED ACTIVITY DON’T MIX.

But while the relationship between drug or alcohol consumption and impaired performance is well known, until now, researching this relationship has been difficult: giving someone a stiff drink and putting them behind the wheel of a car crosses ethical boundaries.

Now with the launch of Macquarie’s world-first integrated Simulation Hub in February 2015, researchers will be able to see just what happens to drivers affected by prescription drugs or alcohol. They will also be able to explore the interaction of different drugs on users and their ability to undertake complex tasks, all in the safety of a lab environment.

It’s just one of many Simulation Hub initiatives that will have real impact in the lives of people far beyond the University campus, and transform our understanding of important health issues.

“The new Simulation Hub is providing insights into everything from the triggers for excessive alcohol consumption to teaching archaeologists how to fly drones over fragile dig sites.”

Director of the Simulation Hub, Professor Mark Wiggins.

“For instance, we can look at disruptive classrooms where we can see how children learn, or archaeological sites where we can teach new archaeologists what to look for in testing or confirming their theories,” he explains. “Working with companies like Cochlear Ltd, we can investigate when [hearing] devices are more or less effective and offer some solutions to improve the devices into the future.

“There is a strong emphasis on the workplace, with simulations that enable us to investigate performance in a variety of different contexts.”

DIVERSE APPLICATIONS

Developing the $3.5 million facility, which also features a simulated bar environment, a virtual reality space, flight simulator, car and train driving simulators, a sport and movement lab, rooms in a simulated home, and a therapist’s office, involved the cooperation and support of many parts of the University.

Wiggins says that Macquarie has an illustrious record in a number of areas, particularly psychology and cognitive science.
The Hub is part of an ambitious strategy to become a centre for translational research across a wide range of disciplines, with emphasis on participation and cooperation between non-traditional research partners.

“This is a theme consistent with the vision of the University, where academics from different disciplines work together to solve real-world problems in partnership with the community that Macquarie serves.

“Academics and students from disciplines including psychology, computer science, anthropology, physiotherapy, music, media, engineering, marketing, ancient and modern history, education and medicine will be involved in various projects that are planned for the Simulation Hub.”

It will also create opportunities for new partnerships with business and industry.

“We have industry partnerships that look at cognitive skill acquisition among train drivers and pilots and how they make decisions in complex, time-critical situations. Simulators provide a near-to-real environment to examine the acquisition of these skills,” Wiggins adds.

The sports simulator will draw together physiotherapists, psychologists, elite athletes, technology experts and staff from Macquarie Sport and Recreation to explore issues around sports performance and competitive behaviour, and may even find a definitive answer to that great Australian cricket conundrum – when is bowling actually ‘chucking’.

“The possibilities for collaborative insights generated by the Hub are immense, and complement Macquarie’s extensive medical simulation facilities, so that simulation now forms a central pillar across the University,” he says.

VIRTUAL SURGERY

Taking a more hands-on approach to simulation, Macquarie’s Surgical Skills Centre was completed in 2010, and features cutting-edge technology, including advanced microscopy and surgical equipment, as well as the comfortably named ‘sawbones’ room, where orthopaedic surgery is simulated.

Associate Professor Richard Appleyard, Director of Clinical Skills Training at the Faculty of Medicine and Health Sciences, says that surgical simulators allow surgeons to practise operations by looking at a virtual surgery through a monitor or headset, and can also give tactile feedback through handheld instruments.

“These are fantastic tools, as the surgeon can practise common procedures such as laparoscopic or arthroscopic surgery over and over until they become competent with the instruments and camera systems they will use in surgery.”

The Centre’s reputation for excellence has grown rapidly, and is today recognised as one of the most prestigious training labs in Australia. Its training programs are widely sought after by surgeons.

However, not everything in the Surgical Skills Centre works on a virtual environment.

Because every patient is unique in their anatomy and state of disease, Appleyard says that, in real surgery, the surgeon often does not know what he or she will find until after the operation has started.
“This is where the University’s surgical training facility is highly beneficial, as it allows surgeons to hone their skills on the human cadavers of consenting donors,” Appleyard explains. “The fact that someone has given their body to science is of great significance to our educators, surgeons and researchers. It is a gift that we greatly appreciate and value immeasurably.”

While the Simulation Hub is unlikely to use cadavers in its research, Wiggins says Macquarie students will be able to use simulation tools to improve performance and apply their knowledge and skills in future workplaces or in their future roles as clinicians.

The PACE program also gives students from across the University the opportunity to put their own studies into practice, whether working in the control room during a simulation or sharing ideas on a research activity, so that when they go out into the real world and look for work they have experience that will help them stand out from the crowd.

“We also want to make sure that this facility is available to our partners in the community,” Wiggins says.

For example, orthopaedic surgeons at Macquarie University Hospital will be integrating aspects of the sports and movement simulator into their care management plans for patients, while audiologists from the Speech and Hearing Clinic can test hearing under different conditions from driving, to flying, to the sports field.

“Learning theories specify that memory retrieval will be greater when testing conditions match the conditions of learning,” she explains.

“It’s always broken free of the traditional thinking that has driven other universities, with the result that we have a unique facility for understanding how humans interact with their environments, even if, for the time being, they exist only on a screen.”

The knowledge gained will help basic research into learning mechanisms, as well as applied research that helps people extend what they learn in an educational setting into their life.
From space, more than 100 kilometres above the Earth’s surface, Australia’s Great Barrier Reef looks like “a string of iridescent aquamarine jewels”, according to US astronaut Ed Lu.

The world’s largest coral reef system is made up of around 3000 individual reefs spread across more than 34 million hectares, and it is greatly under threat from various forms of environmental degradation.

Monitoring the health of the Reef, as well as the many thousands of other reefs world wide, is a gargantuan task, but Dr Elizabeth Madin may have found a solution.

Madin is an ARC and WWF research scholar in the Department of Biological Sciences who was named Macquarie University’s 2014 Early Career Researcher of the Year in Science and Engineering.

Her research explores the effects that humans have on ocean ecosystems through fishing and other activities.

“Humans change predation risk in oceans by catching bigger fish, which then makes it less risky for smaller fish to get eaten, so they change their behaviour and take more risks in their own search for food.”

The ‘behavioural cascade’ that results can lead to wholesale changes in the structure of ocean ecosystems, she says.
Professor Ian Paulsen is on the trail of ‘superbugs’, the drug-resistant bacteria that don’t respond to typical antibiotic treatments, and which pose a growing, worldwide health threat.

Drug resistance in bacteria is spread by a sinister capability – they can augment their capabilities by sharing DNA with each other.

“Once one organism has learned how to become resistant to something, it can pass information on, exchange DNA with its neighbours and soon, the whole population has become resistant,” says Paulsen cheerfully. This is the main reason superbugs are becoming such a problem in hospitals, he says.

Paulsen was named the 2014 Macquarie Excellence in Research winner for the Faculty of Science and Engineering for his discovery of Acel, a new type of bacterial drug efflux pump.

Acel is a protein made by the superbug bacteria *Acinetobacter baumannii*, which makes the bacteria resistant by pumping antiseptics out of its cells.

Paulsen says that the recent development of next-generation sequencing techniques has given biologists new tools to investigate bacteria and microorganisms. He says that while more than 99 per cent of microbes can’t be cultured in a laboratory, now scientists can take environmental samples, isolate and sequence the DNA and identify what’s there.

“It was really difficult, before, to know how these ‘superbug’ bacteria did in response to different conditions. However, with the sequencing-based approach, we could observe how all of the genes in a cell changed and which ones got switched on in response to the addition of antiseptic, for example.”

The technique exposed a capability of the organism that no-one had previously known about: these cells had a new resistance mechanism that created a protein that pumped the antiseptic out of the cell.

“We’ve only used antiseptics for the last hundred years or so – this particular antiseptic was first used in the 1960s or 70s,” Paulsen says.

“What we now know is that this gene is found across bacteria that are separated by hundreds of millions of years of evolution. So the gene must have some natural function that probably has nothing to do with antiseptics, but the bacteria have put it to this use more recently – presumably in response to increasing antiseptic usage.”

The very short lifespan of bacteria means that evolutionary gains are very fast. “They typically reproduce or replicate every 20 minutes or so, though an individual cell can live for a long time,” he adds.

“We are now looking for a compound that will inhibit the actual pump, the gene that makes the protein that pumps the antiseptic out of the cell, and reverse the drug resistance.”

BRIEFS

Madin is using satellite and other aerial imagery to monitor interactions among groups of species on coral reefs. “These images can tell us about the effects that herbivore species are having on the landscape of the reef by looking at patterns called grazing halos,” she says.

The majority of the world’s coral reefs are in shallow waters – less than 50 metres deep – and certain vegetation, like a primary producer algae or sea grass, can often be easily identified in the shallows of these reefs.

“It requires high-resolution imagery, which isn’t widely available yet for many of the world’s remote reefs,” she says. The Landsat global satellite imagery database has a pixel size of 30 metres, which is not detailed enough when grazing halos are generally tens of metres wide.

So Madin enlisted a group called Conservation Drones to help her trial the use of drones to collect imagery, with some great results: The wide availability of drones and cheap, lightweight cameras means that there’s an alternative aerial monitoring option for coral reefs in remote areas where there may be no commercially available high-resolution satellite imagery.

Her aim is to determine the extent to which grazing halos respond to changes in fishing pressure or the change in recovery of predators after an event such as the implementation of a marine reserve.

“All we need is a monitoring tool that will extend to places in the world that don’t have adequate funding for coral reef monitoring.”
Operating theatres can be hotbeds of innovation – witness the giant forward leaps in health care that arose from inventive techniques like organ transplants and laparoscopic surgery, and from the development of devices like pacemakers and stents, which have all saved and improved millions of lives.

But an operating theatre can also be a very risky place to try something new. One slip of the scalpel and the outcome can be dire, with some patients harmed or even killed by surgeons experimenting with new techniques.

This dilemma is at the heart of Professor Wendy Rogers’ research. She is a bioethicist whose focus is on ethical issues in health care, and takes a different approach to surgical innovation: by exploring ways to tell when surgical innovation occurs – and finding ways to support it effectively and safely.

She says that there’s an inherent expectation that surgeons will constantly refine and improve their surgical technique, but if they do this through an unswerving commitment to innovation, patient care can be compromised.

“Surgeons worry that identifying procedures as innovative will trigger heavy-handed regulation.”

“Measures to support responsible innovation include things like briefing the surgical team appropriately, considering the impact on anaesthetics, getting more explicit patient consent that might include divulging anything you haven’t done before, and perhaps discussing it with their head of department.”

One thing that she doesn’t want to do is introduce processes that stifle innovation.

“Surgeons worry, of course, that identifying procedures as innovative will trigger heavy-handed regulation. It can be argued convincingly that many surgical innovations that have gone on to become quite important improvements in practice happened almost by accident,” she says.

This is why definitions and checklists can work so well, she adds.

“Surgical research in general lags behind medical research because it’s much more difficult to perform. It’s pretty difficult to arrange placebo-controlled surgical trials, for example.”

Her hope is that discussion triggered by redefining surgical innovation and the checklist will help to transform the sometimes over-enthusiastic culture of surgical innovation – and reduce accidental harm to patients.

Macquarie alumnus Professor Joseph Pugliese (BA/DipEd 1985) has spent his career focusing on social justice issues, exploring deep themes like the relationship between knowledge and power, the way discrimination and injustice are meted out in today’s world, the concept of state violence and institutional racism, and ideas around regimes of colonialism and empire.

Today, Pugliese is the Professor of Cultural Studies and also Research Director of the Department of Media, Music, Communication and Cultural Studies at Macquarie, and he has been immersed in dark, dark work in recent years.

His research into acts of torture and imprisonment during the War on Terror received the Faculty of Arts Research Excellence Award 2014, and was Highly Commended in the 2014 Macquarie Research Awards. His book State Violence and the Execution of Law was short-listed for both the 2014 Hart Socio-Legal Book Prize in the UK and the 2014 US Law and Society Herbert Jacob Book Prize.

Over the past two decades, Pugliese has explored the operations of state colonialism on Indigenous people in Australia, where the institution of law was subverted to legitimate the aims of the powerful.

“From Governor Macquarie onwards, genocidal campaigns were conducted to usurp Indigenous lands and establish colonial state sovereignty,” he explains.

This historical colonial context meant the concept of governments continuing to subvert law for these purposes wasn’t a surprise.

“What did shock me was that people could continue to do that on such an expanded scale with the drone assassinations of children and civilians and the torture of hundreds of innocent civilians [during the War on Terror],” he says.

His research has seen him immersed in volume upon volume of reports of some of the darkest, most disturbing acts human beings have performed; and he admits that sometimes, he was personally shaken and traumatised by the experience.

Surgeons worry that identifying procedures as innovative will trigger heavy-handed regulation.
“Going through the detailed documentation of the quite incomprehensible tortures that were inflicted on a lot of the innocent victims was pretty traumatic.”

His research looked at the way that language was used to portray human subjects as ‘non-human animals’, and how this worked to legitimise violent actions contravening domestic and international law and treaties, and conventions against torture.

The responses of commentators and military investigators following the release of photographs depicting US military torture at Abu Ghraib typifies our horror at these actions.

“The reaction was that this was an exceptional case down to a few rotten soldiers. But as a cultural historian, I saw direct links back to lynching and torture perpetrated by white supremacists on African Americans up until the 1930s, and the more recent torture practices performed on African-American prisoners in some of Chicago’s police stations. There’s still a lot of work that’s uncovering and exposing the targets of these practices of state violence.”

Ultimately, he hopes his work will transform the understanding of how these tactics are used by media and by governments to legitimate torture and other practices that violate international law.

In the famous Milgram experiments in social psychology, performed over 50 years ago, subjects were instructed to give electric shocks of increasing intensity to another person (an actor pretending to be another subject) each time the person failed an experimental task.

Prompted by the defence of Nazis who claimed they were just following orders, the experiments were designed by Yale University psychologist Stanley Milgram to measure the willingness of study participants to follow the orders of an authority figure, even when the acts conflicted with their own conscience.

Although he staged 25 versions of the experiment in May 1962, 14 participants were secretly filmed in the one experiment that saw most people (65 per cent) obey, with Milgram claiming the film as evidence that most people obeyed orders regardless of their own feelings of distaste.

“I think Milgram was an incredibly skilled dramatist,” says Professor Kathryn Millard who, in her role as Professor of Film and Creative Arts in the Department of Media, Music, Communication and Cultural Studies, has revisited Milgram’s documentary.

“Millard’s film restaged the experiments, exploring the choices people make when they obey or disobey authority.

“What I wanted to do was restage and reinterpret Milgram’s obedience to authority experiments for a contemporary audience with characters that we might identify with,” she says, adding that Milgram’s black-and-white film, which featured middle-aged white men, feels very ‘remote’ to today’s viewer.

Though the effect of the experiment on the subjects was widely assumed to be traumatic, most of the 659 of the 800 volunteers who provided feedback at the end of the experiment said they were glad to have participated, and felt they had made an important contribution to science.

“What always interested me was that in his film, people clearly don’t blindly obey – they are quite anguished, torn between their desire to contribute to what seems to be a valuable experiment, and their concern about whether they’re harming somebody.”

Stay up to date with research breakthroughs at mq.edu.au/research-impact
Innovative programs are not only helping women students juggle multiple commitments to get the education they seek, but are also empowering students and alumni to make real differences in the lives of underprivileged women around the world.
OF THE 20,000 OR SO AUSTRALIANS WHO GRADUATE FROM MBA PROGRAMS EACH YEAR, LESS THAN ONE THIRD ARE FEMALE. IT’S A DEPRESSING STATISTIC, AND ONE THAT THE MACQUARIE GRADUATE SCHOOL OF MANAGEMENT (MGSM) IS DETERMINED TO TACKLE.

It recently launched the $8 million Women in MBA program – the largest investment of its kind in Australia – which aims to boost the number of women achieving their MBAs by offering financial assistance and direct mentorship during their studies.

Focus group research conducted by MGSM showed that the cost of MBAs, and the lack of tax breaks for women who had taken time out from their careers to raise a family, were both significant barriers.

Dean of MGSM Professor Alex Frino says they also wanted to address the lack of leadership positions for women in business.

“Even if a woman completes an MBA, her prospect of employment in leadership positions is worse than 35 per cent, so we needed something that would not just make MBAs more affordable but also locked in employment prospects,” he says.

LONG TRADITION

While the Women in MBA program is unique, it is just one of many ways that Macquarie University has been changing the lives of women through education.

As far back as 1960, when the modern feminist movement was taking its first steps, the Macquarie University Mothers Group – founded by Commonwealth Scholarship recipient Norma Hayman – provided support for women (and one man) struggling to juggle the competing demands of education and children.

The group also helped found Gumnut Cottage, Macquarie University’s first on-campus childcare centre.

More recently, in 2014 Macquarie’s Women, Management and Work Conference marked 26 years of bringing women together to share ideas and build collaborations that produce real business benefit.
The results of Macquarie’s legacy in women’s education show in the stellar line-up of female graduates, including Stephanie Lorenzo (BIntComm 2006), founder and CEO of Project Futures. Along with Jennifer Star of Tara.Ed (see page opposite) she was recognised at the 2014 Women of Influence Awards.

Project Futures is a not-for-profit organisation, based in Sydney, that works to raise awareness and funding to support anti-trafficking projects in Australia, Cambodia, and Nepal.

One of the first graduates from Macquarie’s Bachelor of International Communication, Stephanie first became aware of the terrible cost of human trafficking when she read the autobiography of a Cambodian woman sold into prostitution at a young age.

“I was about 21, and my background was in marketing and communications, and thought to myself, what can I do to help this woman?” Lorenzo says. “I’ve got no skills in international development but I can probably organise an event and raise some funds.”

That event – a cycle challenge through Cambodia – went on to raise $80,000, and the idea for Project Futures was born.

“We’re not a service provider, we raise funds and raise awareness through our networks in more fortunate countries such as Australia, to get people to understand the issue of human trafficking,” Stephanie says.

The funds raised by Project Futures go to service providers such as Maiti Nepal, Child Wise, The Salvation Army Safe House, and the New Somaly Mam Fund, which work directly with the victims of human trafficking.

While communication is an essential part of her work as CEO of Project Futures, Stephanie says her time at Macquarie also helped teach her the power of networks, and the value of relationship building.

“It’s all about building good relationships; that is the number one key to it,” she says. “You have to be able to understand that building a good relationship and a good rapport with these companies is what’s going to keep them staying with you as opposed to supporting you one year and then supporting something else the next.”
Another stand-out graduate has also found her calling in the developing world. Jennifer Star (BA (Hons) 2010), CEO of Tara.Ed and 2012 NSW Young Australian of the Year, has dedicated herself to improving the quality of teaching in India by building relationships between Indian and Australian teachers.

“A lot of NGOs come in and build new schools, then leave without thinking about the future, so we come in and take the schools to the next step,” says Star.

“We don’t need to build new schools, we need to make the ones that are already here better.”

Educational training in India is a world away from the opportunities given to aspiring teachers in Australia, who undertake a four-year degree, have continuing professional development, access to technology in the classroom, and extensive support from colleagues and school.

Tara.Ed takes Australian teaching students and places them in Indian schools, where they are paired with an Indian teacher and work together towards a particular outcome, such as creating teacher aids, producing a specific language-based program, or putting together a maths program. The Australians also often bring resources along that can be left with the teacher, such as computers, picture books or flash cards, Star says.

Having started with one school, 12 teachers and 250 children, the program now involves more than 200 teachers, and is aiming to reach 200,000 students by 2020.

It’s a far cry from her Ancient History roots at Macquarie, but Star says her studies were just part of her Macquarie experience. Her role as President of Rotaract and the Macquarie Ancient History Students Association, as well as her involvement with Macquarie Marketing, rounded out her education, teaching her valuable skills such as how to chair a meeting, and the ability to say ‘no’ to something.

“While my study may not have been directly relevant to what I’m doing now, the skills and life experience I got though Macquarie are definitely contributing to the direction I took and to where Tara is today,” she says.

Back home, gender inequality is still at frustrating levels on boards and in senior management. Macquarie is continuing to blaze the trail for women in business, including offering a scholarship partnerships program in which the University matches, dollar for dollar, any investment made by a corporation to support a female MBA applicant.

In addition, the NAB/Macquarie Applied Finance Centre (MAFC) Women’s Mentoring Program pairs up-and-coming early-career female MAFC students with senior female NAB leaders. The program’s goal is to inspire, motivate and educate students on employment options and development programs for future leadership in the finance industry.

Now in its 27th year the annual Women Management Work Conference, hosted by the Faculty of Business and Economics, is another opportunity for young women to collaborate and be inspired by business leaders.

“[Across the University’s business programs] diversity is something that we’ve really taken on,” Alex Frino says.
School’s IN

Many of Macquarie’s groundbreaking educational programs reach beyond the University precincts and out into the world.
Driven by alumni, the business of learning reaches far beyond the university campus, with innovative, research-backed thinking that is transforming the lives of students of all ages.

Literacy organisation MultiLit – short for Making Up Lost Time In Literacy – has just celebrated its 20th anniversary. One of Macquarie’s most successful spin-off companies, MultiLit’s activities, which include customised tutoring, publications, clinics, consultancies and professional development all aimed at improving children’s literacy, now extend into 25 per cent of Australian schools as well as remote communities.

“MultiLit’s programs are uniquely placed to be effective because they are all grounded in scientific evidence-based best practice,” explains Professor Kevin Wheldall AM, Director of Macquarie University Special Education Centre (MUSEC), where MultiLit had its foundations.

“For two decades, we have provided assistance to thousands of students in a variety of settings, including schools, our own Literacy Centre, and community-based literacy projects, with partners including the Exodus Foundation and the National Centre of Indigenous Excellence.”

Many MultiLit staff, including the Literacy Centre director, tutors and members of the product development team, are Macquarie graduates in special education, while others were also educated at Macquarie in disciplines as diverse as psychology and media.

“We are now developing materials for initial instruction in reading and related skills,” Wheldall explains. “We’re also working to improve teacher knowledge and practice more generally in the areas of both reading and classroom behaviour management.”

Opening Real Science is another unique program being hosted by Macquarie.

Federally funded, the project will drive a significant improvement in the quality of mathematics and science learning by creating collaborations with world-leading mathematicians, scientists, ICT experts and educators to change the way science and maths are taught in schools across the country.

It will help build the competence and confidence Australian teachers need to inspire and equip their own students to ask and investigate motivating questions.

“As teacher educators, we face a significant challenge to both equip new teachers with skills and encourage a passion for inspiring their students – something we have seen happen through ‘real’ mathematics and science,” says project leader, Associate Professor Joanne Mulligan (PhD 1992).

“If we don’t equip teachers with real science, we miss out on the extended benefits of a scientifically literate society, and all the positive impacts that come out of this knowledge.”

THINKING BIG

From the specific target of childhood literacy and scientific education, at the other end of Macquarie’s educational outreach is the broad and ambitious sweep of Big History.

Big History’s profile continues to grow both domestically and internationally, helping children – and adults – understand history as a continuum, rather than the approach of teaching scientific, literary and historical events as discrete, isolated and unconnected to other things that are happening in the world.

“Big History is a great example of the research and teaching nexus,” says Andrew McKenna (MA IntlRel 2013), Executive Director of the Big History Institute. “Big History is powerful because it is the result of not only a sustained and fundamental research effort, but also an effort to teach and engage students so effectively.”

Big History has grown at a phenomenal rate, since the Institute’s founding in 2012 with six pilot schools. This year, 108 Australian schools are teaching Big History, with another 540 schools actively investigating the resource. Interest is also taking off in the United States, India, China, Korea, Russia, the United Kingdom, the Netherlands, Canada, among others.

“We have a triple focus across our top priorities: teaching, research, and outreach,” McKenna says.

He says their vision is for a university institute that embraces not just academia, but the broader educational, research, government, corporate and non-profit sectors.

“Universities are at their best when they not only conduct cutting-edge research and provide world-class teaching, but also engage effectively with the communities they serve,” McKenna explains. “Outreach is essential to maximise research and teaching impact, and generate genuine social benefit.”

See the big picture with the free Big History course at bighistoryproject.com
SPORT HAS ALWAYS BEEN A BIG PART OF UNIVERSITY LIFE, AND IN THE EARLY DAYS MACQUARIE’S STUDENTS CHOSE FROM THE USUAL SUSPECTS – RUGBY, HOCKEY, ROWING, CRICKET AND TENNIS. DARINGLY, FOR A NEW SOUTH WALES UNIVERSITY, MACQUARIE ALSO FIELDED AN AFL TEAM AS EARLY AS 1969.

Today, it’s a different story, with sports scholars from fields as diverse as ice hockey, archery, cyclocross (cross country cycling), lifesaving, rugby, aerobics, swimming, diving, sailing, fencing, karate, athletics, rowing, waterpolo and women’s biathlon all making up Macquarie’s dynamic sporting stable.

In 2015 alone, the University is supporting 105 national and state level athletes including Olympians and national champions along with more than 45 emerging athletes.

Support for a huge range of sports and the special needs of elite athletes was reflected in Macquarie’s sporting achievements for 2014, with students competing in the 2014 Sochi Winter Olympics and Glasgow Commonwealth Games as well as meeting with high levels of success in local team sports and university games.

While elite athletes certainly command attention, there’s also plenty to tempt other students. And in line with the changing lifestyles of Australians, people are looking outside traditional organised sports for their fun, as well as health and social benefits, according to Bill McMahon, Sport Club and Alumni Coordinator.

“With so many sports on offer, there is something to suit all abilities,” he says. “All our sports are hugely popular and growing rapidly not only with students, but with alumni too.”

“Alumni are welcome to join our sporting teams and are also eligible for a membership discount at the Sport and Aquatic Centre. There’s no excuse for not joining in the fun.”

Discover more about your alumni benefits on page 32, and learn more about our sporting history at the University’s Sporting Hall of Fame located on level 1 at the Sport and Aquatic Centre.
1967: Rugby Union Club – First training session
1969: Melbourne Cup race
1972: Tennis, Ian Pollard
1979: Rowing team in action
2014: Bubble Soccer
2014: Women’s Biathlon, Lucy Glanville
2014: Ultimate Frisbee
2014: Quidditch
THE UNIVERSITY HAS BEEN GIVEN A NEW LOOK IN MORE THAN ONE WAY.

Whilst the Shared Identity reinvigoration project has reintroduced the Macquarie Lighthouse across the University community, on the ground definite changes to campus have been taking shape.

The biggest changes you will notice when you next visit are the re-routing of University Avenue, and the disappearance of the former home of the Department of Psychology. Buildings C4A and C4B were demolished at the end of last year to restore the University Library forecourt to grassland and allow the further development of Sir Christopher Ondaatje Avenue connecting the library with the central courtyard.

Connecting the academic and recreational hearts of the campus is central to the master plan, and I am delighted that we have been able to do so by reintroducing a bright, open and green space amongst our buildings. This work contributes not just to the facility of the University, but also to the park-like setting for which it is rightly famous.

This year several of our older buildings will undergo restorative work to upgrade their working spaces and facilities, and revive their interiors. Whilst their brutalist architectural style divides opinion, they remain striking and vital landmarks on campus and we will continue our investment in the homes of our learning, teaching and research activities.

I am confident that, as we grow, we do so in a way that looks to our future and enables our continued growth for decades to come.
FUTURE calling

Connecting the academic and recreational hearts of the campus is central to the University’s master plan.
ALUMNI benefits

There’s a lot to be gained from staying in touch.

**HEALTH AND WELLBEING**

- **SPORTS AND AQUATIC CENTRE DISCOUNT**
  Receive a special membership price at Macquarie’s Sports & Aquatic Centre.

- **SPEECH AND HEARING CLINIC – ALUMNI DISCOUNT**
  Receive discounted consultation at the state-of-the-art Speech and Hearing Clinic.

**FURTHER STUDY**

- **MGSM EXECUTIVE EDUCATION OPEN PROGRAMS**
  Receive a 20 per cent enrolment discount for over 15 Executive Education courses.

- **FREE LIFELONG LEARNING OPPORTUNITIES**
  Enjoy FREE access to Macquarie’s Open 2 Study online courses including Climate Change, Financial Literacy and Becoming Human: Anthropology, and coming soon: Big History.

**CAREER SUPPORT**

- **CAREER ADVANTAGE**
  Receive substantially reduced rates for professional advice to help get ahead in your career.

- **CAREER HUB**
  Looking for a job? Log in to the Career Hub – exclusive for Macquarie students and alumni.

**EVENTS**

- **LECTURES, PANEL DISCUSSIONS AND SOCIAL EVENTS**
  Attend a range of professional and personal development lectures and discussions as well as reunions and social events – in Sydney, interstate and around the world.

**LIBRARY**

- **BORROWING PRIVILEGES**
  Borrowing access to the University Library is free for alumni.

- **ONLINE DATABASE ACCESS**
  Access more than 10,000 online resources, including professionally relevant and general interest sources.

**ALUMNI NETWORK BENEFITS**

Get more from your alumni experience. Visit: goto.mq/benefits
WHERE ARE THEY now?

SOULA-MARIE PERDIS, BACHELOR OF ECONOMICS (ACTUARIAL STUDIES) (1991)

Soula-Marie Perdis didn't just graduate with a Bachelor of Economics majoring in Actuarial Studies, she met her husband Napoleon, who was also a student, and laid the foundations for their cosmetics empire.

Soula-Marie says that her family has been based in Los Angeles since 2006, but she hasn't lost touch with Macquarie.

“Even though we’ve been based in L.A., I have been following the University news all of these years, and was thrilled to be invited to speak at the recent Women in Management and Work Conference gala dinner.

It is wonderful to see how the University continues to inspire and educate generations to come,” she says.

JOANNA OLIVERA, BACHELOR OF INTERNATIONAL STUDIES (2011)

An interest in international affairs led Joanna Olivera to study a Bachelor of International Studies at Macquarie – an interest she has turned into an exciting career.

Joanna is currently working as a trade development manager for UK Trade and Investment at the British Consulate-General, Sydney, where she helps British companies export to Australia.

Since starting work, Joanna says she has tried to keep in contact with the friends and colleagues she met at Macquarie, and has attended a number of alumni events since graduating in 2011.

“Studying at Macquarie offers a great network of friendships,” Joanna says. “As you are starting out in your career, it’s important to stay in touch with as many people as possible, and alumni events make this possible.”

ANDREW FORMICA, MASTER OF ECONOMICS (1993)

Andrew Formica turned a passion for numbers into a brilliant international career. Originally from Sydney, Andrew earned a Master of Economics from Macquarie in 1993.

He is currently the CEO of Henderson Group, a London-based asset management firm with a £3 billion market capitalisation, and is the driving force behind a groundbreaking business initiative.

When made responsible for graduate recruitment at Henderson, instead of recruiting from the ‘usual suspects’ – highly academically gifted individuals – he sought to increase the diversity of people coming into the firm by looking for other skills and characteristics, such as compassion, commitment and dedication.

“Since the program (named Investment 2020) was launched five years ago it has been a resounding success, he says. “The people we have hired have come with an enthusiasm and energy that has become infectious throughout the firm.”

This is not just about altruism; it makes strong business sense, he adds. “The trainees we have put through our program, and their families, are now our best ambassadors.

“We have clients who, on hearing about the program, say it tells them much about our ethos and culture and that we are a firm with which they want to do business.

“All of us have a strong responsibility as alumni to make sure we don’t just focus on our own careers, but also on those coming along behind us.

“Macquarie has given me the strong belief that we should focus our energies on supporting activities that mean the most to us rather than focusing only on academic or financial success.”

ALEXANDER ARRIOLA, PhD (2013)

While Alexander Arriola’s PhD research focused on using lasers to fabricate sensors to measure the concentrations of Parkinson’s biomarkers in the blood, after graduation he spent a year in Edinburgh focusing on astronomy.

His quest for Earth-like planets around newly formed stars brought him back to Macquarie a year later, where he remains as a postdoctoral researcher. Today, he designs, fabricates and tests optical circuits for telescopes in Coonabarabran and Hawaii.

“The work uses photonics circuits and Macquarie is a world leader in this field,” Alex says.

“When I studied for my PhD, my colleagues came from 10 different nationalities, united by their passion for physics. They have become some of my best friends,” he says.

CHRIS WISE, BACHELOR OF ARTS, DIPLOMA OF EDUCATION (2010)

After a short stint of casual teaching in Sydney following graduation, Chris Wise now teaches in London.

“Teaching here is really creative and draws on a lot of the different skills learned during my degree, as well as a lot of imagination. It’s really inspiring to work with the teachers here.

Chris attended a recent alumni event in London, which he says could have had the power to make a lasting impact on the lives of the students he teaches.

“One man I met that night is an education short course coordinator at Christie’s auction house and has invited me to take my students in to learn about the art world,” Chris explains. “They will make some art works and have a mock auction in the actual auction house. These are children from a very depressed part of London so it will be an excellent and memorable experience for both my students and myself.”
Walking Kokoda FOR A CURE

With the incidence of Motor Neurone Disease (MND) increasing by more than 250 per cent in the past 25 years in Australia, the race is on to find a cure. Researchers are thinking outside the lab to help them raise funds to fight the insidious disease.

THE ICE BUCKET CHALLENGE WAS A HUGELY SUCCESSFUL FUNDRAISING INITIATIVE FOR MND RESEARCH DURING 2014, RAISING $103,000 FOR MACQUARIE UNIVERSITY’S MND RESEARCH CENTRE DURING THE YEAR.

In 2016 Macquarie MND supporters will walk the Kokoda Track to raise funds for much-needed equipment, and alumni are invited to join the trek.

“Motor Neurone Disease is one of the most difficult diseases people can face, with no two people's experiences the same,” says Professor Dominic Rowe, Professor of Neurology at Macquarie’s Faculty of Medicine and Health Sciences.

“Each year more than 800 people – loved mothers, fathers, brothers, sisters, sons and daughters, die from this disease. While 10 per cent of MND is caused by genetic factors, 90 per cent of MND cases are known as sporadic, that is, there is no known cause for the disease.”

However, new research into sporadic MND clusters occurring near fresh water bodies indicates that an environmental toxin may be to blame for a significant percentage of cases. The toxin, known as BMAA (or beta-Methylamino-L-alanine), is produced by blue-green algae.

“We are working in collaboration with researchers both in Australia and internationally to understand the mechanism of how BMAA accumulates in the nervous system and inappropriately incorporates proteins, causing cellular disruption”, Rowe says.

The trek will be led by Rowe and Professor Gilles Guillemin and supported by travel company Inspired Adventures. Funds raised will purchase and operate equipment that can detect tiny changes in proteins, which could help pinpoint MND’s cause.

“The hard road of Kokoda is similar to the hard road of research into this insidious disease,” he says, likening it to the trials of Greek god Sisyphus who was condemned for all eternity to push a huge, enchanted boulder up a steep hill. The story was immortalised in a philosophical essay by Albert Camus and prompted much learned discussion around the issue of interminable toil for no gain.

“Similarly, the Kokoda Track is fraught with difficulty and danger, and to those who were forced to march its length, it must at times have seemed a pointless journey – although it ultimately allowed thousands of Australians to escape from invading Japanese during WWII.

“If, despite the inevitable challenges of the journey, we are able to raise awareness of MND and to purchase equipment that will allow us to identify either the trigger or potential therapies, then the effort of walking the track will be miniscule in comparison to the relief felt by the families of the afflicted.”

To join the walk, telephone Megan Pope, Development Manager, Medicine on T: 02 9850 1389 or E: megan.pope@mq.edu.au
Learn more: mq.edu.au/mnd
ALUMNI FOCUS

Jubilee Alumni Reception, Hong Kong, 1 November.
02: Jubilee Alumni Reception, New York, 15 May.
03: Backpack to Briefcase, Sydney, 3 November.
04: Jubilee Alumni Reception, Shanghai, 6 November.
05&06: Pioneers Morning Tea, Sydney, 26 May.

Jubilee year
Celebrating 2014 in pictures