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University**FACULTY OF SCIENCE  
AND ENGINEERING**

August 2018

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## From the Dean

NEWSLETTER | AUGUST ISSUE

### Dear FSE Research Communication

I'm still buzzing from walking on water (or was that a non-Newtonian fluid?) at our recent Open Day. August is always a busy month on campus, with National Science Week events and Open Day activities to prepare for on top of our regular teaching, research and administration commitments. I think it's a testament to our staff to see so many interested and inspired people attending our events. Thank you, your enthusiasm is catching!

In research news, you can find out more about how we're searching for new antibiotics in 500,000 species of Australian microbes; collecting new data about the Greenland Ice Sheet to better understand exactly where and how fast it is melting; and how an avatar is improving the health of sick kids while they're awaiting specialist appointments. A Macquarie PhD student has come up with a way to turn coffee grounds into coffee cups; we've shown dumping fish waste back into the water can have concerning impacts on the behaviour of marine animals; microbes are revealing new insights into the ocean's health; and we're taking virtual reality into the classroom.

Congratulations to Earth and Planetary Sciences' Stephen Foley who was named an Australian Research Council Laureate Fellowship, and to Physics and Astronomy's Simon Gross who was awarded a Young Tall Poppy Science Award earlier this month. And happy retirement to Peter Tuchin who was awarded the first PhD from the Department of Chiropractic, and leaves the university after a 27-year career.

I'd also like to congratulate Jim Denier who is the inaugural Head of Department for our new Department of Mathematics and Statistics. Jim is well known in the world of mathematical sciences and we're looking forward to building an innovative and successful department. My thanks to Gillian Heller for her leadership of Statistics.

And finally, I'm looking forward to seeing who will win the Australian Museum Eureka Prize for Outstanding Early Career Researcher, which we proudly sponsor, and I'm

crossing my fingers that our own Neil Saintilan will win the Prize for Outstanding Mentor of Young Researchers. We will be cheering Neil on at the Prize gala this Wednesday evening at Sydney Town Hall.

If you want to know more about what's happening across the Faculty, follow our Faculty Twitter account [@MQSciEng](#) and my personal account [@BarbaraMesserle](#). If you've got news to share, please tweet about it and include our Faculty handle so we can see it and retweet. If you're not on Twitter, then email us at [fse.execdean@mq.edu.au](mailto:fse.execdean@mq.edu.au) and we'll share the news.

Regards,

Barbara

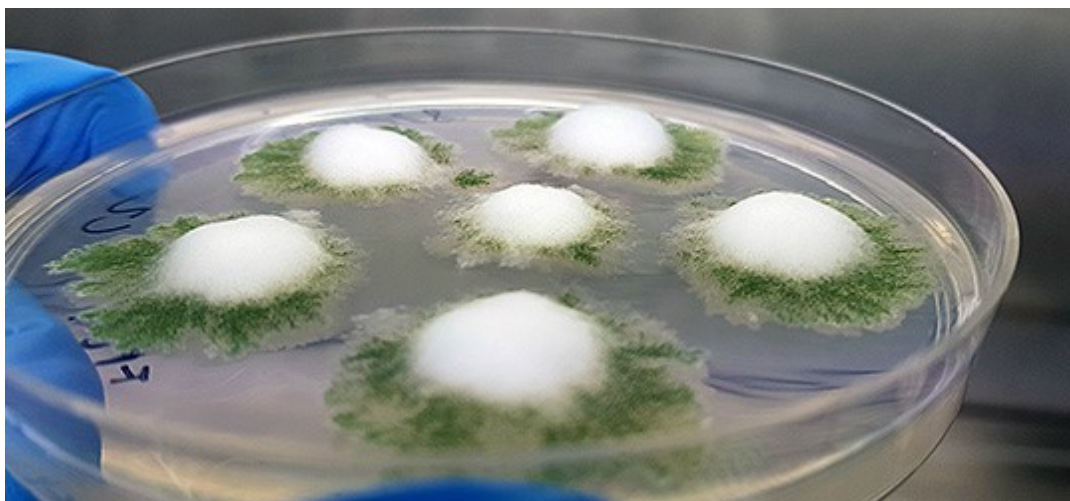
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**\$6.9 million quest for new antibiotics from Australia's unique microbiome**



Macquarie University and UWA scientists will join forces with two Australian companies to search for new antibiotics in 500,000 species of Australian microbes.

The project will be supported by a \$3 million CRC-P grant recently announced by Australia's then Assistant Minister for Science, Jobs and Innovation, Senator Zed Seselja.

"We have samples of over 500,000 Australian microbes," says Dr Ernest Lacey, Managing Director of Sydney-based company, Microbial Screening Technologies (MST), and the leader of the project.

"We've collected them from the soil in backyards, in paddocks, and forests. We've collected them from the guts of ants, reptiles, and fish. We've gone everywhere to find Australia's unique microbiome."

"Each microbe contains a unique cocktail of metabolites. When we find an interesting chemical, we'll be relying on Macquarie University researcher Dr Andrew Piggott and his team to help us to work out its structure and mode of action.

"Then Dr Heng Chooi from UWA will use genomics to unravel how the microbes assemble these metabolites and then boost their productivity."

"Advanced Veterinary Therapeutics (AVT) is led by Dr Stephen Page and will focus on animal health potential," says Ernest.

"The CRC-P Program helps businesses, industries and research organisations to work together on short-term projects to develop practical solutions to challenges in key industry sectors," Senator Seselja said at the project launch.

The three-year project, "*BioAustralis, towards the future*", will harness MST's unique collection as a source of next-generation antibiotics capable of overcoming microbial resistance.

"Antibiotic resistance is now one of the most serious threats to both human and animal health worldwide," says Molecular Sciences' Andrew Piggott.

"This project will allow us to identify new and more effective antibiotics already at work

in nature that are capable of defeating these deadly superbugs,” he says.

[Find out more](#)

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## How do the elements of life cycle through the Earth’s crust and mantle?



And where should we look for the minerals that our civilisation depends on? These are two of the big questions that Earth and Planetary Sciences’ Stephen Foley is attempting to answer.

Carbon, hydrogen, oxygen and nitrogen are arguably the elements of life. They cycle not just through the atmosphere but also through the Earth’s crust. For example, only 10 per cent of the Earth’s carbon is on the surface or in the atmosphere.

Understanding how these elements cycle through the Earth is essential to understanding the movement of the continents and the development of many mineral deposits.

Earlier this month, Stephen received a \$3 million Australian Research Council Laureate Fellowship to study how carbon, water and nitrogen cycle kilometres underground, how rocks melt, and how that influences the movement of continents and the concentration of minerals.

Stephen is just the sixth Macquarie staff member to be granted a fellowship in the history of the prestigious award.

He plans to establish a new generation of Australian scientists with a deep interdisciplinary understanding of earth sciences, and to pave the way for eventual unification of plate tectonic with climate systems.

“Professionally I came to Australia five years ago but this means I have now really

arrived," he says.

"This grant enables me to set up a dream team of early career researchers so together we can build a centre which will keep Australia on the global geology map."

Macquarie University will open a new high-pressure laboratory in 2019 that will enable Stephen and his colleagues to recreate the conditions of the deep Earth.

Stephen is also leading a bid for an ARC Centre of Excellence for Deep Earth Systems that will make hidden Australia visible, revealing the movements of copper, cobalt and the other metals needed for modern electronics such as smartphones.

Deep under Australia are all the minerals we need to create renewable energy systems, smart phones and the other technologies that will enable transition to a sustainable low carbon future.

But we don't know where to find enough of them at present. We don't know enough about the processes happening deep in the earth which lead to concentrations of minerals.

The centre bid will be considered by the Australian government over the next twelve months.

[Read more about Stephen's research on \*The Lighthouse\*](#)

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## Measuring the melting of the Greenland Ice Sheet



An international team of researchers has collected new data about the Greenland Ice Sheet to better understand exactly where and how fast it is melting, so that they can monitor its changes and more accurately predict sea level rise.

Led by Earth and Planetary Sciences' Kate Selway, they've taken the first-ever magnetotelluric (MT) measurements of the Greenland Ice Sheet, which measures

naturally-occurring electromagnetic waves to image the electrical conductivity of the Earth.

This allowed the team to image melt layers in the ice and the structure of the earth beneath it.

They deployed three long-period MT instruments to record data for a few weeks about the conductivity of the mantle to a depth of several hundred kilometres.

And they deployed three broadband MT instruments which provide information about the ice sheet and the Earth's crust, and are moved more frequently.

It may be summer in the Northern Hemisphere but working at 3,200 metres above sea level where the maximum doesn't go above -10C during the day makes for some challenging fieldwork conditions.

In the photo above, team members including Earth and Planetary Sciences' Sinan Özaydin are setting up an MT logger.

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### How an avatar is helping sick kids



An interactive e-health program that provides treatment advice to kids and their parents while they're awaiting a specialist appointment, has been awarded a \$493,706 grant under the NSW Health Translational Research Grant Scheme.

The program is called eADVICE (electronic Advice and Diagnosis Via the Internet following Computerised Evaluation) and facilitates the exchange of information between the child, their parents and specialists by using a virtual character or avatar called Dr Evie.

Under the supervision of their GP, families can use the program to get individualised treatment advice while they're awaiting a specialist appointment for less acute health



conditions.

“We know families commonly have to wait a long time to see a specialist, which can be frustrating for both patients and doctors, and can also have adverse impacts on a child’s health,” says Computing’s Deborah Richards who is leading the technology side of the project.

“We’re hoping programs like eADVICE and Dr Evie will empower families while they’re waiting, improve kids’ health and hopefully reduce waiting times.”

The program is first being tested with children who have incontinence and sleep disorders, because clinics for these conditions have waiting times of over 12 months.

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### Turning coffee waste into coffee cups



A Macquarie PhD student believes he’s come up with a way to turn coffee waste into biodegradable plastic coffee cups.

He’s developed a method to turn coffee grounds into lactic acid, which can then be used to produce biodegradable plastics, and is now refining the process as he finishes his PhD.

“Australians consume six billion cups of coffee every year, and the coffee grounds used to make these coffees are used only once and then discarded,” says researcher Dominik Kopp.

“In Sydney alone, over 920 cafes and coffee shops produced nearly 3,000 tonnes of waste coffee grounds every year.

“Ninety-three per cent of this waste ends up in landfill, where it produces greenhouse gases that contribute to global warming.”

However, 50 per cent of coffee grounds are made up of sugars, which are ideal

candidates to convert into valuable bio-based chemicals, or chemicals derived from plant- or animal-based feedstocks rather than crude oil.

“Our group is looking for new ways to convert biowaste—whether that be agricultural, garden, paper or commercial food waste—into valuable raw materials that can be used to produce high-value compounds in more environmentally-friendly ways,” says Molecular Sciences’ Anwar Sunna, who is Dominik’s supervisor and head of the [Sunna Lab](#).

Dominik sourced coffee grounds from one of the coffee shops on Macquarie’s campus and took them back to the lab.

“We assembled a synthetic pathway to convert the most abundant sugar in the coffee grounds, mannose, into lactic acid,” he says.

“Lactic acid can be used in the production of biodegradable plastics, offering a more sustainable and environmentally-friendly alternative to fossil fuel-derived plastics.

“You could use such plastics to make anything from plastic coffee cups to yoghurt containers to compost bags to sutures in medicine.”

Dominik was awarded the INOFEA Early Career Award for Applied Biocatalysis or Nanobiotechnology for the poster he presented on his research at the 18th European Congress on Biotechnology last month.

[Find out more](#)

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## How dumping fish scraps is putting stingrays at risk



Dumping fish waste back into the water can have significant and concerning impacts on the behaviour of marine animals, according to a new study from the Department of Biological Sciences published in *Marine Ecology Progress Series*.



Recreational anglers typically return to boat ramps and wharves after fishing to clean their catch, discarding the scraps and bones back into the water where they are scavenged by fish, crabs, snails and birds.

“It might seem harmless, but feeding wildlife, whether on purpose or not, can change animals’ behaviour, disrupt the food chain, and cause negative health impacts,” says lead author of the study, Joni Pini-Fitzsimmons.

The researchers looked at a small group of short-tail stingrays in Jervis Bay on the NSW south coast, which have scavenged fish scraps at a popular boat ramp for over 30 years.

They found that this seemingly small-scale and incidental feeding strongly influenced the behaviour and movements of the stingrays. The stingrays would arrive in anticipation of food even if anglers were not present and cleaning fish.

[Find out more](#)

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## Surfing bacteria reveal new insights into the ocean’s health



Australian scientists have recorded more than 175,000 tiny microbes dwelling in our ocean waters for the first time, providing an unprecedented baseline against which to measure the effects of climate change and human activities.

Invisible to the naked eye, microbes constitute almost 98 per cent of the ocean’s biomass and are responsible for keeping the marine ecosystem healthy.

A paper recently published in *Scientific Data* led by University of Newcastle’s Mark Brown and Molecular Sciences’ Martin Ostrowski, reveals the vast diversity of microbes and provides new knowledge about their environmental behaviour.

The unparalleled dataset is the result of an ongoing collaborative initiative involving 18

Australian universities, Commonwealth agencies and research institutes, which recorded more than 175,000 unique species of microbes at seven sites around Australia's coastline and into the Southern Ocean.

Martin says the project team is now building models to predict where organisms will live in the future and what functions they will carry out.

“We can now use the baseline data we have collected to make models that tell us how microbes respond to different environmental conditions and how we expect them to change given future climate projections.

“The primary production and carbon use by marine microbes determines how much food is provided to the rest of the food chain, so our forecasts will be incredibly relevant to scientists but also to industries such as fisheries and tourism.”

[Find out more](#)

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### Warning colours are getting warmer



As temperatures in Australia and around the world increase, for hibiscus harlequin bugs, the future is orange.

Many insects, such as hibiscus harlequin bugs, *Tectocoris diophthalmus*, also known as ‘stinkbugs’, have evolved bright colours to ward off predators.

It would be expected that all insects of the same species would have the same colours to deter their predators, yet there is often a large variation in colouring within a species.

A new study from Macquarie University tested whether environmental conditions could be behind the dramatic variation in hibiscus harlequin bugs' colours from pure orange to patterned with iridescent blue.

The researchers compared bugs from Sydney, Brisbane and Darwin and found that

bugs were less iridescent and more orange when they came from areas with higher temperatures and more rainfall.

However, when the bugs were kept in cold or warm temperatures, they tended to adapt their colouring to look more like the bugs native to that climate.

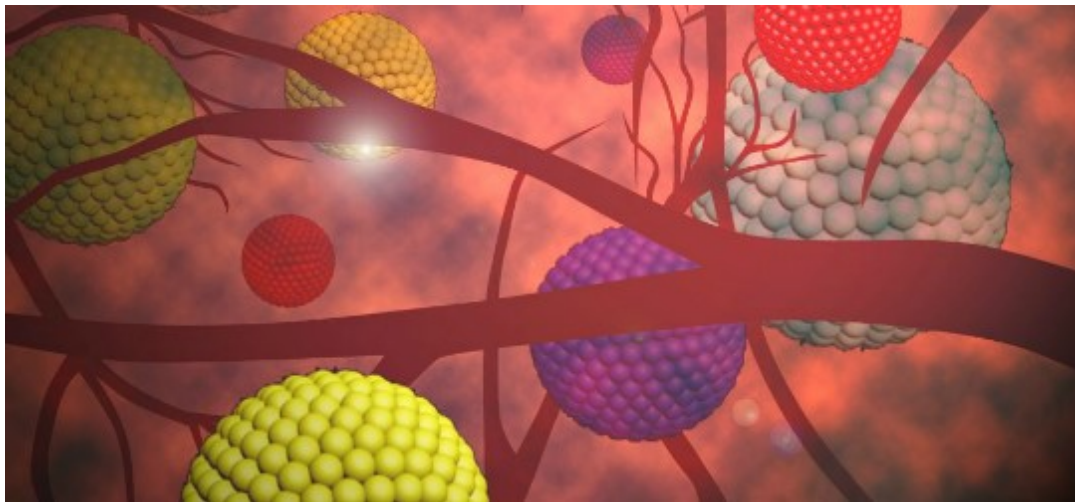
“Warning colours are often thought to be mainly driven by evolutionary responses to predation,” says lead author Scott Fabricant.

“However, our study shows that the environment where an individual lives can also change their colour, which means predators in different areas must learn and respond to the differing appearance of the bugs.”

[Find out more](#)

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### **New nanoparticles help detect deep-tissue cancers**



Researchers have developed a new form of nanoparticle and associated imaging technique that can detect multiple disease biomarkers, including those for breast cancer, found in deep-tissue in the body.

Reported in *Nature Nanotechnology*, the research opens up a new avenue in minimally invasive disease diagnosis and will potentially have widespread use both for biomedical research and for clinical applications.

“Specially designed nanoparticles can be placed in biological samples or injected into specific sites of the body and then ‘excited’ by introduced light such as that from a laser or an optical fibre,” says research author Yiqing Lu from the Department of Physics and Astronomy, and the ARC Centre of Excellence for Nanoscale BioPhotonics.

“Disease biomarkers targeted by these nanoparticles then reveal themselves, by emitting their own specific wavelength signatures which are able to be identified and

imaged.”

A major limitation, however, is that only a single disease biomarker at a time can be distinguished and quantified in the body using this type of detection technique.

“The tissue environment is extremely complex,” says Yiqing. “And introducing multiple nanoparticles to a site, operating at multiple wavelengths to detect multiple biomarkers, produces too much interference.”

So Yiqing and his team have engineered innovative nanoparticles that emit light at the same frequency (near infrared light) but that are able to be coded to emit light for set periods of time (in the microsecond-to-millisecond time range).

“It is the duration of the light-emission and the biomarker reaction to this timed amount of light (known as luminescence lifetime) that produces a clearly identifiable molecular signature,” he says.

“Multiple disease biomarkers can be clearly identified and imaged based on this approach as there are no overlapping wavelengths interfering with the reading.”

[Find out more](#)

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## **Harnessing the power of a quadrillion suns to fight motor neurone disease, find far-flung planets, and more**



Lasers to treat motor neurone disease; and chips that help optical fibres carry more information or identify planets beyond our solar system—Simon Gross from the Department of Physics and Astronomy is making these projects a reality.

He’s developing special techniques to make precision glass chips that can channel and process light in three dimensions.

The work has earned him a 2018 Young Tall Poppy Science Award, announced earlier

this month as part of the Sydney Science Festival.

The applications of Simon's technology are broad.

His techniques use an ultrafast laser that can be focused with pinpoint accuracy in three dimensions within blocks of non-conducting transparent glass, polymer or crystalline material.

The laser emits a burst of light for only a few millionths of a billionth of a second, but with the power of a quadrillion suns. This changes the structure of the material at the point which it is focused.

By moving the material through the tightly focused laser beam, an operator can inscribe in three dimensions the integrated circuits of fine photonic 'wires' that are about one-tenth the width of a human hair and similar to optical fibres.

The Young Tall Poppy Science Awards recognise and celebrate outstanding young researchers who are also passionate about communicating their science and engaging with the community. It is run in each state and territory in Australia by the Australian Institute of Policy and Science.

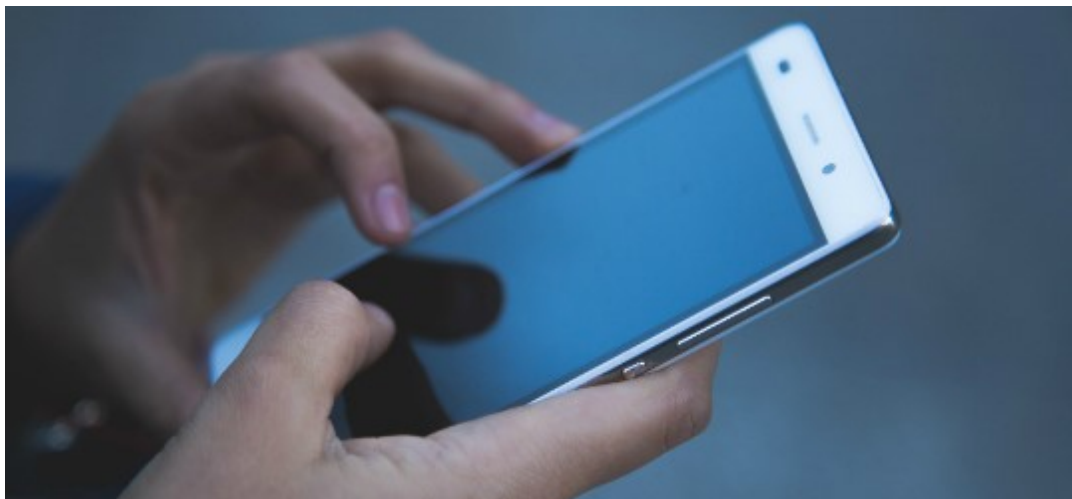
[Find out more](#)

It was Simon's second award in two days. The night before he had been part of the Modular Photonics team accepting a Sydney Engineering Excellence Award for future-proofing fibre-optic networks.

Modular Photonics is a Macquarie University spin-off that is commercialising technology to increase data rates in optical fibre networks and help the internet to grow.

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## Tracking through touch





The way we interact with our touchscreen devices can be used to track us, according to a recent study co-authored by the Optus Macquarie University Cyber Security Hub's Dali Kaafar and Hassan Asghar.

Hassan presented the paper at the 18th Privacy Enhancing Technologies Symposium in Spain last month.

Touch-based tracking has the potential to track users across multiple devices or identify different people using the same device, the researchers say.

That's because the way we swipe, tap or input keystrokes into our touchscreen devices can be unique enough to identify us.

The team developed a purpose-built app called 'TouchTrack' and collected some 40,600 gesture samples from 89 participating users over the course of two months.

"From those users we were able to demonstrate this behaviour is highly unique, and can be used to track users," says Hassan.

"The more information we can gather from a user while they're using a touchscreen enables us to narrow down who they are to a smaller and smaller group, and ultimately uniquely identify that person."

Hassan says it's similar to how we can narrow down who a person is once we know more identifying characteristics about them like their gender and their age.

"The swipes and taps on our devices are the touchscreen equivalents of these identifying characteristics," he says. "And show how easy it is to track someone through this data."

[Find out more](#)

[Read the paper](#)

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## **Taking virtual reality into the classroom**



Interactive, virtual reality (VR) experiences are being brought into Macquarie classrooms thanks to the work of a group of academics from across the university.

The Reality Embedded in Motion (REIM) project uses Samsung Gear 360 cameras and Oculus Rift VR units to bring VR technology into teaching and research.

Last month, Environmental Sciences' Kira Westaway presented the project at the 2nd Annual Digital Campus and Learning Transformation Conference.

"In this period of uncertainty and change in curriculum design, it's reassuring to know that Macquarie is still one of the leaders in innovative approaches to learning and teaching," she says.

REIM is currently creating a bank of 10 VR stations at Macquarie that enable lecturers to take VR experiences into the classroom to offer their students unique, significant and valuable learning experiences.

"We're the only university in Australia to offer mobile VR experiences that can be embedded into existing practical content," says Kira.

"We're leading the field with our broad range of VR content including 3D models and 360 degree footage.

"We're also the only university to be using photogrammetry models, which allow students to stand inside a real world rather than just watch footage, so they can interact and solve challenges."

Photogrammetry is supported by [Pedestal 3D](#), which is Macquarie's web content management system for 3D data that can be used in learning, teaching, research and outreach.

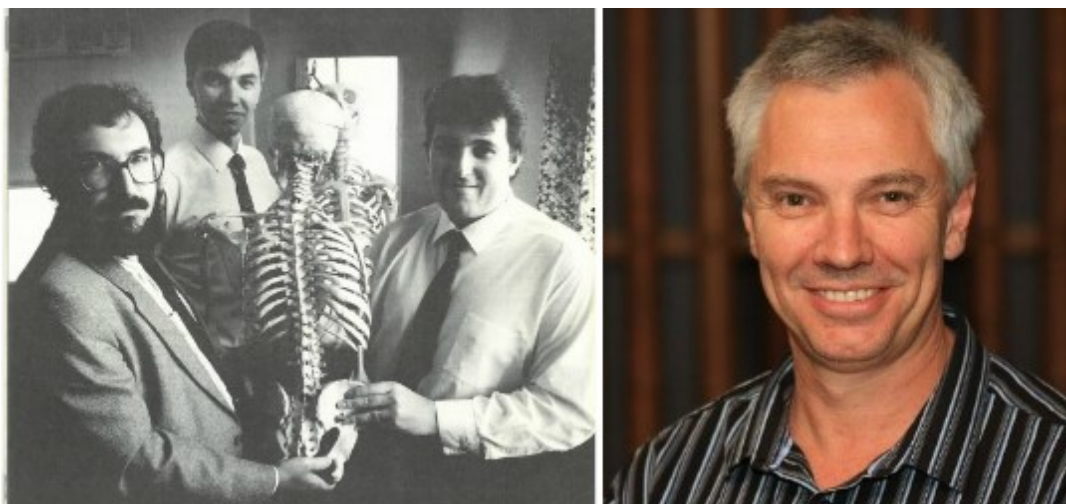
"Our approach is unique in its in-built student interactivity that ensures the students are not passive observers in their VR experiences," says Kira.

The REIM project was well received by the conference attendees with many questions and positive comments.

“If the future of education is digital, it’s good to know that Macquarie is not only on board but leading the change,” she says.

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### Macquarie’s first Chiropractic PhD retires



The Department of Chiropractic farewelled Peter Tuchin earlier this month.

Peter was the first person to be awarded a PhD from the Department of Chiropractic, and then went on to pursue a 27-year career at Macquarie as a dedicated academic, respected clinician and innovative researcher.

Peter has published more than 55 papers and presented at more than 100 conferences, both in Australia and overseas. Recently, he conducted one of the largest clinical trials of chiropractic treatment of migraine in the world to date.

Peter has made significant contributions to the chiropractic profession. He served on the Chiropractic and Osteopathic College of Australasia (COCA) National Executive for over 20 years, which last year honoured him with life membership; played notable roles in the World Federation of Chiropractic Disability and Rehabilitation committee and the Chiropractic Board of Australia; , and is a fellow of the Australian College of Chiropractic and the Royal College of Chiropractic.

We are sad to say goodbye to such a rich source of knowledge and expertise, and we appreciate all the success Peter has shared with the Department.

Peter, we wish you a long and happy retirement, filled with many opportunities to return to your beloved ski slopes.

[Read Peter’s December 2017 interview with COCA News \(pages 8-9\)](#)

## Judyth Sachs PACE prize winners announced



Congratulations to all the winners of the 2017 Professor Judyth Sachs PACE Prizes, especially those from our Faculty.

Pia O'Donnell was a joint winner of the long activity category for her work with Environmental Sciences' Emilie Ens and the Yugul Mangi Rangers in the Northern Territory last year. Pia took part in a collaborative biodiversity survey with the local community, as well as spending time learning from the Rangers about their culture and country.

Emily Hegarty and Suraya Amini were the other joint winners of the long activity category for their work with the Warrumbungle Dark Sky Project, under the supervision of Richard McDermid in Physics and Astronomy. Emily and Suraya helped with the design and establishment of a monitoring program required to maintain dark sky accreditation and raised awareness of the project among local children.

Mariam Chendeb won the prize in the short activity category after an internship with the Clinical Trials Unit in the Faculty of Medicine and Health Sciences, where she shadowed clinicians, interacted with patients and observed how the unit functions. Since her internship Mariam has been hired as a casual staff member in the unit.

ENVS339 students from 2017 have also been highly commended in the long activity category for their work with local landowners and community partners assisting in river management throughout catchment areas in coastal New South Wales. The group consisted of Freya Wadlow, Brendan Fallon, Carl Helander, Danielle Wigston, Kailyn McLennan, Kelly McGuire, Kieran Mackowski, Lara Beencke, Liam Clerke, Ryan Macmanus, Scott Chrystal, Steven Honan, Stuart Fredericks, Tess Nelson, William Xu and Alexandra Dickie. Freya Wadlow also received a leadership award for her efforts in coordinating the group's application so that everyone had the opportunity to participate and contribute.

## Research in tweets

**We've been sharing snippets of our recently published research and Faculty members being mentioned in the media on Twitter.**

Here are some recent highlights from [@MQSciEng](#).

RT @tallstarman: @MQSciEng is making inroads in India's higher education landscape, particularly in engineering [Read the article](#) @MQEngineering

RT @SkyNewsAust: @CulumBrown on shark nets: Their primary job is to catch sharks, but the reality is that they catch everything. SMART drumlines, on the other hand, alert us to when sharks are caught so we can release them. [Watch the video](#)

"While most people had assumed what we were seeing was water on the moon, or certainly supporting evidence for water on the moon, this is really a smoking gun," says @MqEPS' @thecraigoneill QT @abcnews: First direct evidence of water ice on the surface of the moon [Read the article](#)

RT @SimonClulow: Fresh off the press: we have revived sexually mature #frogs from #cryopreserved sperm. Proof of concept for genome resource banks and assisted reproduction to help in wildlife #conservation. @MQBiology @MQSciEng @lizard\_lab @Uni\_Newcastle @Rose\_Upton1 [Read the paper](#)

RT @CareerswithSTEM: Fatemeh, a lecturer in #Engineering at @Macquarie\_Uni was once told she'd never make it in the male-dominated industry of engineering. Now, [she's inspiring every single female \(and male\) student to pursue their careers fearlessly](#). @MQSciEng #STEMed

RT @Macquarie\_Uni: How much do you know about sting rays? PhD student Joni Pini-Fitzsimmons (@MotherOfRays) has been studying sting ray behaviour and she's [giving us a peek into their secret lives with this video](#) Make sure to support her work with a vote! #scienceweek

RT @tallstarman: Check out my interview and recommendations just published in Nature Careers: "[Top tips for building and maintaining international collaborations](#)" @MQPhysAstro @MQSciEng

RT @FionaJ\_Lib: [Great stories](#) from @MQSciEng staff about what ignited their passion for science! #ScienceWeek @SydScienceFest

Love dogs & cats but can't have your own right now? Then let @MQBiology's @MBulbert [introduce you to the five-minute pet](#) #LighthouseNewsflash

"[Citizen science is] about the balancing of knowledge," says @EnvScMQ's



@EmilieEns. "It involves people. People take ownership, they're the ones learning & discovering & maintaining their environment. Their knowledge is valuable & valued as well as Western science." QT @GuardianAus: Australia's 'golden age of citizen science': your chance to take part [Read the article](#) #citizenscience #citsci

RT @DrShariGallop: Check out our work on #ripcurrents on a double-barred beach in Raglan, New Zealand. Wave breaking over the outer bar increases surf zone retention. Published in #MarineGeology [free access this month here](#) @KRB\_CoastsRule @waikato @CoastalScoop @EnvScMQ

RT @PaulsenLab: "Synthetic biology underpins an intl mkt of \$355 billion/yr, climbing to \$1.1 trillion in 5 yrs. Aust should be part of that - we have the talent to build the #microbes, world class #agricultural industries & a well-trained workforce" #synbio @MQSciEng [Read the article](#)

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## Faculty bulletin

**New staff | Current vacancies | FSE Student Awards Night | New Colombo Plan projects | Women for the Environment Breakfast | Funding drive for Wuyagiba Study Hub**

### Welcome to new Faculty staff

A warm welcome to all the new staff who have joined the Faculty within the past month.

Please join me in welcoming **Brandon Mahan** who is a postdoctoral research fellow in isotope metallomics with Earth and Planetary Sciences, and joins us from the Institute de Physique du Globe de Paris.

**Tara Hamilton** is an associate professor with the School of Engineering and comes to Macquarie from Western Sydney University.

**Andrea Westerband** has joined Biology as a postdoctoral research fellow in plant functional ecology from the University of Hawai'i at Mānoa.

And **Krishnatej Nishtala** is a research associate with Molecular Sciences and joins Macquarie from Narayana Nethralaya in India.

### Current vacancies

We're looking for someone to set the future directions for discovery, industry engagement and business development for the Faculty's newest department as

### [Director, Australian Astronomical Optics – Macquarie.](#)

The Department of Physics and Astronomy is seeking a highly motivated individual to join the CNBP program to develop and apply novel advanced imaging tools as a [postdoctoral research fellow in advanced optical imaging](#).

The Department of Computing is seeking a [senior lecturer/associate professor in computer games](#) and a [postdoctoral research fellow to work on different aspects of distributed algorithms in dynamic networks](#).

And the Department of Molecular Sciences is seeking two postdoctoral research fellows: [one to work on a project on reverse chemical proteomics](#), and the [other with molecular microbiology experience to work on a research project on the nosocomial pathogen \*Acinetobacter baumannii\*](#).

### **FSE Student Awards Night**

Congratulations to all the students who received awards at the annual FSE Student Awards Night earlier this month. We're very proud of everything you've achieved.

In alphabetical order they are: **Adam Pam, Andrew Greig, Archana Bulathsinghala, Belinda Araghi, Brayden Vigerzi, Brendan Wouterlood, Caitlin Zuzartee, Charles Hadeed, Christian Marando, Christopher Atakliyan, Danelle Agnew, Daniel Aspinall, Dirk Crafford, Elyse Mcdonough, Emma Jackson, Erin Kummerow, Hannah Zhu, Hugh Entwistle, Jackson Grace, Jay Elliott, Jeremy Asimus, Jibo Wang, Jocelyn Johns, Joel Morrissey, Jonathan Blunden, Kara Fry, Katie Wang, Kin Long Victor Lee, Liam Ramage, Mahfruha Hasan, Matthew Joliffe, Matthew O'Brien, Matthew Smith, Matthew Timms, Max Mclennan-Gillings, Melissa Pehlivan, Michael Hobbs, Nicholas Mangano, Nicholas Solomon, Patrick Ryan, Peter Brouwer, Phoebe Rollin, Sean Diprose, Sebatino Barbieri, Shelly Wang, Timothy Ghaly, Yasmin Asar, Yvette Bauder, Zachary Nast and Zackery Robison.**

### **New Colombo Plan projects**

The Faculty has won funding for three projects under the Federal Government's New Colombo Plan Mobility Program.

Our undergraduate students will have the opportunity to study the marine environment and biology in Indonesia as well as astronomy in China.

Up to 10 FSE students will have the opportunity to take part in a winter school at Udayana University in Bali, and undertake study and fieldwork in either mangrove ecology or tropical reef restoration.

Students will also have the opportunity to study tropical biology and marine conservation at Udayana University for an entire semester.

And physics and astronomy students will get the opportunity to be exposed to cutting-edge astronomy research through spending a semester at the National Astronomical Observatories of the Chinese Academy of Sciences.

These new outbound projects add to the ones we've already got running with Harbin Institute of Technology and Jilin University in China, FPT University in Vietnam and Tohoku, Osaka and Hokkaido universities in Japan.

All provide students with funded opportunities for study, fieldwork, research or internships within the Indo-Pacific region.

The students taking part in the New Colombo Plan projects will be selected in late 2018 or early 2019, with the first cohort departing for Indonesia in late June 2019.

### **Women for the Environment Breakfast**

Bush Heritage Australia is hosting a women for the environment breakfast in Sydney on **Thursday 6 September**.

The event will include a panel investigating some of the critical environmental issues of our time, and how women are playing a leading role in solving them.

Biology's Michelle Leishman and Rebecca Spindler, who is a member of our Faculty Advisory Council, will both be on the panel for what promises to be a thought-provoking and informative discussion.

[More about the event.](#)

### **Funding drive for Wuyagiba Study Hub**

Macquarie University has been working with members of Ngukurr and Numbulwar communities of south east Arnhem Land to establish a remote Study Hub at Wuyagiba outstation.

We are doing a funding drive to get some basic infrastructure, and funding for local Aboriginal staff and equipment so we can trial the idea in September-October this year.

We have already received some substantial donations and support from Macquarie University but we need about \$50,000 more by September to cover all expected costs. The Study Hub will be free to students and all equipment provided. Any donations would be gratefully accepted.

[Find out more on the Wuyagiba Study Hub website.](#)

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## Connect with us

If you have comments, questions or research news you think might be of interest to the rest of Faculty, I'd love to hear from you. Drop me a line at [fse.execdean@mq.edu.au](mailto:fse.execdean@mq.edu.au).

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