



MACQUARIE
University

**FACULTY OF SCIENCE
AND ENGINEERING**

22 August 2019

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From the Dean

NEWSLETTER

This is my final newsletter as Executive Dean of Science and Engineering.

It has been an honour and privilege to serve in the role for the past four and a half years. To say I am sad to be leaving is an understatement. I am leaving a faculty of which I am immensely proud.

This month alone our researchers have won three [Tall Poppies Awards](#). We have finalists in four [Eureka Prize categories](#), won the [CSIRO ON Prime](#) facilitator's prize, and Professor Lesley Hughes has been honoured with the 2019 Australian Museum Research Institute Lifetime Achievement award for her outstanding work on climate change.

Many other staff have been out in force all over Sydney delivering talks, running workshops and inspiring the next generation of scientists and engineers during [National Science Week](#) and Macquarie University's Open Day.

Behind the scenes, the Faculty of Science and Engineering team has worked, and continues to work, tirelessly to bring about positive change for the faculty.

We have a new administration structure in place to better support our teaching and research. The reviews of Molecular Science and Chemistry, the merger of Environmental Science and Earth and Planetary Sciences, the merger between Mathematics and Statistics, and the creation of AAO Macquarie to complement our already strong position in space research, mean we have robust departments well equipped to take on future challenges. And through bringing in external partners to support us, we have changed how we communicate with our students, our community and the world.

The results of all these changes are already bearing fruit, with significant increases in external income from industry. Our growing reputation includes scoring well on rankings that matter to us. Our research outcomes are reaching larger and more diverse audiences, with this month's news stories – including ones on hope for [coral reefs](#), turning [bacterial resistance](#) into new materials, [smartphones detecting MRSA](#),

gender changing [baby turtles](#), and the adaptability of [crop pests](#) – reaching around the globe.

Students joining us for their studies have increased 10% this year alone and, with our commitment to women in STEM, more young women than ever are realising their potential in science and engineering and are choosing to study with us. We are also attracting an increasing number of students from countries across the world. This larger and more diverse student body means we are offering a more vibrant student experience across the board and, from day one with us, our students are beginning to form their own networks that span the globe.

We have worked hard on deepening our relationship with existing industry partners as well as signing agreements with new ones. It has been a pleasure working with Optus, Fujitsu, DELL, HORT Innovation Australia and ThermoFisher, to name just a few.

These changes have taken place through the strong leadership team in place and outstanding faculty staff who are willing to rise to such significant challenges in a tough budget climate. I would like to thank each and every staff member whose tireless efforts have made the Faculty of Science and Engineering into what it is today.

There is more change ahead and with it will come more challenges, too. A merger between Environment and Earth and Planetary Sciences is underway, as are a number of building projects designed to accommodate more research, more teaching and more spaces where our students can work on their projects.

We are working towards better support for our students through a revised curriculum. An improved Student Centre will provide connections and support, and help them thrive when they finish their studies with us.

I know I am leaving the faculty in good hands to deal with what lies ahead. and I have worked closely with Professor Bernard Mans, who will take up the role of interim Executive Dean when I am gone, for many years.

Thank you to our alumni, industry partners who kept in touch and provided us with expertise and opportunities. And thank you to my colleagues across the university who have supported me in this role and championed the faculty. Your continued support will ensure it rises further still.

Regards,

Barbara



The majority of 2500 reefs surveyed in a major international exercise retain the coral species that give them their distinctive structure. More than 80 marine scientists, including several from Australia, contributed to the study, which is published in the journal, *Nature Ecology and Evolution*.

[Read more here.](#)

Antiseptic resistance in bacteria could lead to next-gen plastics



The molecular machinery used by bacteria to resist chemicals designed to kill them could also help produce precursors for a new generation of nylon and other polymers, according to new research by scientists from Australia and the UK.

[Read more here.](#)

Australian scientists develop cheap and rapid way to identify antibiotic-resistant golden staph (MRSA)



A combination of off-the-shelf quantum dot nanotechnology and a smartphone camera soon could allow doctors to identify antibiotic-resistant bacteria in just 40 minutes, potentially saving patient lives.

[Read more here.](#)

Chinese-Australian research finds climate change good news, and solves an evolutionary mystery

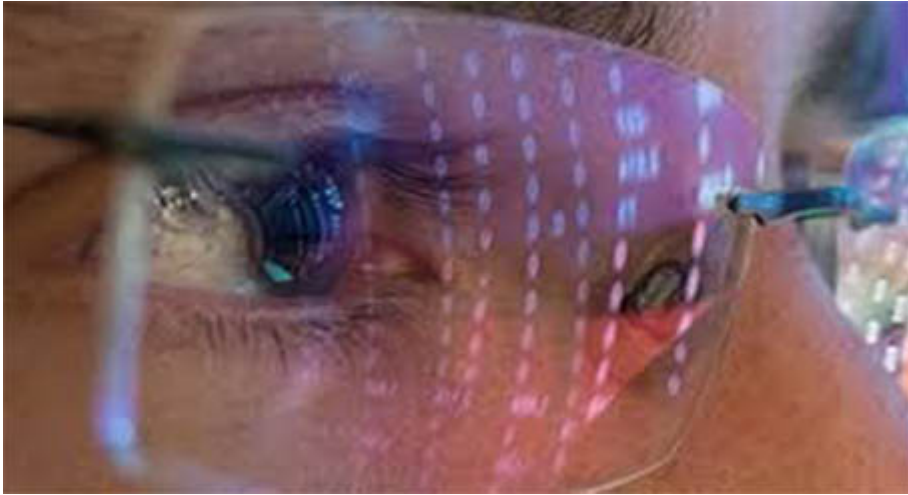


Baby turtles influence their gender by moving around inside their eggs, research has revealed.

The idea that an embryo reptile can act in a way that affects its chances of developing as male or female has long been thought impossible, but findings by scientists from China and Australia have now provided clear proof of the process.

[Read more here.](#)

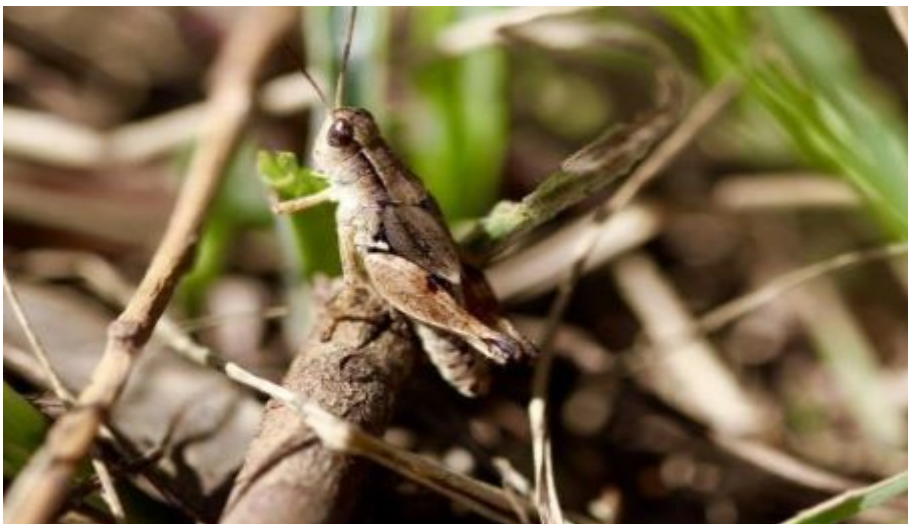
India beckons for NSW's cyber security startups



Eight of NSW's most innovative cyber security startups will visit India this year to participate in the NSW-India Cyber Security Exchange. The Exchange will build closer links between our cyber security startup communities and global firms, encouraging NSW companies to *go global* from inception.

[Read more here.](#)

The wingless grasshopper is prepared to flourish in a changing world



The native wingless grasshopper is a common agricultural pest in Australia. Adults can cause serious damage to pastures, and compete with livestock for clover in summer when green pasture is in short supply.

Macquarie University researchers set out to discover whether increasing temperatures will affect the movement and spread of this pest, and how the wingless grasshopper is adapting to the diversity of environmental conditions it occurs in.

[Read more here.](#)

Event: Join us for Astronomy Open Night



Join us for an incredible evening of astronomy, astrophysics, photonics, astrophotonics and all things physics – including a large outdoor area full of telescopes where you can observe celestial objects for yourself. Weather permitting, there will be up to 30 telescopes aimed at the glittering night sky, operated by both Macquarie University astronomers and amateur astronomers alike. Tickets available [here](#).

Congratulations corner

Macquarie University Tall Poppies



Chris Reid – complex biological systems

Dr Chris Reid's research looks at biological complex systems such as ant colonies, honeybee hives and slime moulds to understand how simple interactions between individuals lead to the sophisticated capabilities observed at the group level.

Noushin Nasiri – breath tests for disease detection

Dr Noushin Nasiri is an engineer working with nanotechnology. Her research is aimed at developing breath tests that can diagnose diseases such as diabetes and breast

cancer in their very early stages, when treatment options are wider and the prognosis more hopeful.

Simon Clulow – conservation biology

Dr Simon Clulow is a conservation biologist who combines a passion for conservation with research interests in reproductive biology and ecology. He is hoping to stop species extinctions through combining traditional approaches with modern biotechnology. [Read more here.](#)

Congratulations to Eureka Finalists



Macquarie University has four finalists in the prestigious Australian Museum 2019 Eureka Prizes

They are:

- The Weed Futures project – led by Professors Michelle Leishman and Lesley Hughes – which is predicting how Australia's exotic plants will respond to climate change (Eureka Prize for Environmental Research);
- The National Indigenous Science Education Program (NISEP) – coordinated by Associate Professor Joanne Jamie, Dr Ian Jamie and Associated Professor Subramanyam Vemulpad – which places Indigenous secondary students in STEM leadership positions (Eureka Prize for STEM Inclusion);
- The Blue Carbon Horizons project – including Professor Neil Saintilan – which reveals why coastal wetlands are an important element of climate change mitigation (Eureka Prize for Environmental Research);
- And Dr Sophie Calabretto, a mathematician who is determined to change the perception that maths is only for very smart people (Eureka Prize for Promoting Understanding of Science).

CSIRO ON Prime



Congratulations to the School of Engineering team (comprising Dr Noushin Nasiri, Assoc. Prof. Anita Ho-Baillie, Assoc. Prof. Shujuan Huang, Dr Shuying Wu, Dr Supriya Pillai and Prof. Graham Town) which participated the CSIRO ON Prime program and won the facilitator's prize of \$5000 for its project on "Next-Generation Integrated Photovoltaics". In addition to the cash prize, team members will receive travel grants to attend the "On Tribe Forum 2019" in September in Melbourne, which will showcase high impact research projects. ON Prime is a national program designed to empower Australian researchers translating research to market, supported by the CSIRO.

National Science Week



Many thanks to all staff who participated in National Science Week and the Sydney Science Festival this year. Science and Engineering academic and professional staff were at events all over Australia, including those at the Australian Museum, the Powerhouse Museum, many local libraries and on radio.

New Associate Fellow

Congratulations to April Abbott for becoming the first Faculty of Science and Engineering associate fellow for the new higher degree supervision program.

Faculty news and notices

Welcome to new faculty staff

A warm welcome to Vahik Avakian, Emma Wang, Wenhai Luo, Louisa Wang, Yuchen Zhang, Alan Kan, David Arnold, Pedro Da Silva Costa and Ram Maharjan who have joined the Faculty in the last month.

Opportunities

Come and work with us in Science and Engineering. Our current job openings are:

Lecturer in Statistics (3 positions): [more info](#)

Postdoctorate Research Fellow in Bacterial Genomics: [more info](#)

Lecturer OR Senior Lecturer in Statistics: [more info](#)

Research Scientist: Mouse Population Genomics: [more info](#)

Professor in Computing (Networks and Distributed Systems): [more info](#)

Postdoctoral Research Fellow in Molecular Sciences: [more info](#)

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.

Connect with your Faculty online:

- Website: science.mq.edu.au
- Faculty on Twitter: [@MQSciEng](https://twitter.com/MQSciEng)
- Barbara on Twitter: [@BarbaraMesserle](https://twitter.com/BarbaraMesserle)

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