



29 July 2019

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## From the Dean

### NEWSLETTER

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As the world celebrates the 50th Anniversary of the first moon landing, it is fitting that much of our research published this month is space related.

We unveiled the hypothetical discovery of ['ploonets'](#) for instance, rogue exomoons that may explain astronomical several mysteries. Our researchers also pinpointed the exact origin of a powerful one-off burst of [cosmic radio waves](#). We also developed a new 'hit and run' theory for Vesta, orbiting between [Mars and Jupiter](#). The Faculty of Science and Engineering continues its long tradition of working to further knowledge and understanding of space.

Back on Earth, our researchers have discovered that [baby blue tongue lizards](#) are born smart. We are also working on determining which tree species will be resilient to [climate change](#) over the next 50 years.

There have also been new discoveries about testes size in cane toads which have the potential to help in the bid to stop the toads migrating further south and how fishing fleets are having a negative impact even on deep-sea sharks once they enter international waters.

Science and Engineering staff will be out in force over the next month, with O Week for Semester 2 taking place this week, [National Science week](#) events between August 10 and 18, and the Macquarie University [Open Day happening on August 17](#).

This month continues to be one of great change, not least for the 650 students who we welcomed onto campus during O Week. Our new Faculty General Manager, Amanda Croft has also started with us and has dived into a number of projects and learning about our Faculty with wonderful enthusiasm, showing a great ability to understand and work closely with the Faculty. We moved into the new faculty office this month, too – which means we now have everyone in one place for the first time.

Although I will be leaving Macquarie University towards the end of August, I will certainly keep my eye on what is happening at FSE because, no doubt, there is still a great deal of positive change to come.

If you want to know more about what's happening across the faculty, follow our 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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## Deep-sea sharks aren't safe from fishing fleets



Even in the most remote parts of the world's oceans migratory sharks are in severe danger from industrial fishing fleets, new research reveals.

In a paper published in the journal Nature, more than 150 scientists, including Professor Rob Harcourt

from our Department of Biological Sciences, uncover why large species inhabiting the open ocean account for over half of all identified sharks caught globally as fisheries targets or bycatch.

[Read more here.](#)

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### **Invading cane toads travel light**



Understanding the dynamics of cane toad dispersal is vital information for scientists helping native animals survive the spread of the poisonous invasive species. Previous work into the reproduction of cane toads in northern Australia has documented low reproductive frequencies among females at the invasion front.

Now we know, at least in part, why.

[Read more here.](#)

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## Baby Blue Tongue Lizards are Born Smart

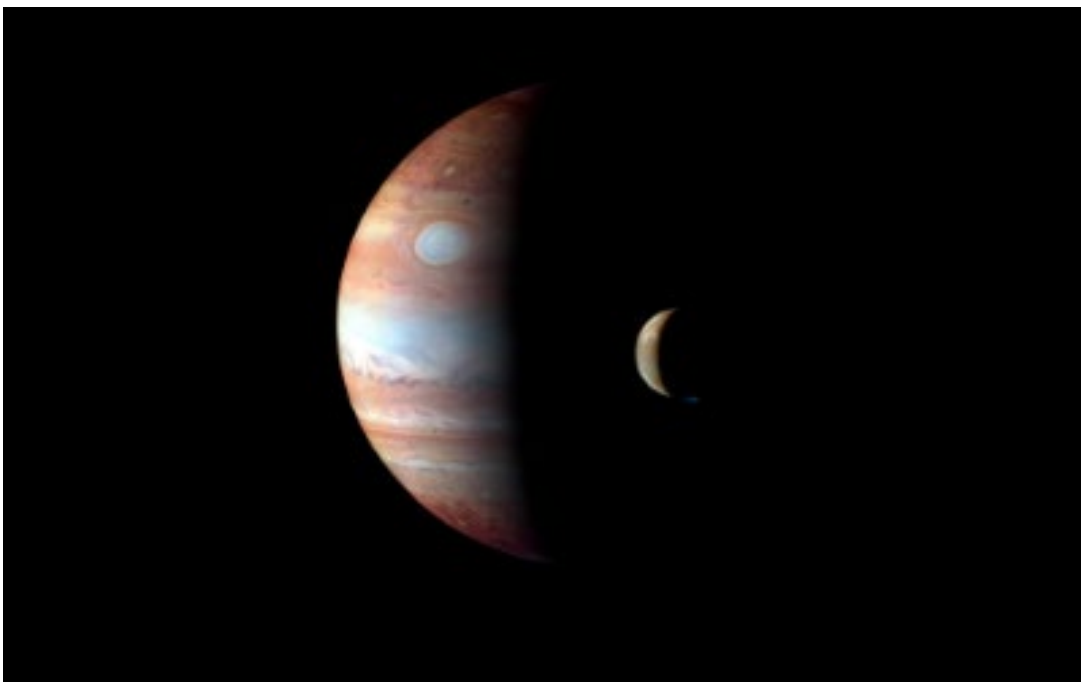


Life is hard for baby blue-tongue lizards. As soon as they are born, they are on their own, with neither parental support nor protection. And that means they have to be clever if they are to survive. Australian research finds these little lizards learn very quickly.

[Read more here.](#)

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## Exiled Moons may explain astronomical mysteries



Moons ejected from orbits around gas giant exoplanets could explain several astronomical mysteries, an international team of astronomers suggests.

Researchers led by Mario Sucerquia, from the Universidad de Antioquia, Colombia, and Jaime Alvarado-Montes from Macquarie University, modelled the likely behaviour of giant exomoons predicted to form around massive planets – and discovered that they would be expelled and sent packing.



Roughly 50% of these ejected moons would survive both the immediate expulsion and avoid any subsequent collision with the planet or the star, ending up as quasi-planets travelling around the host star, but in eccentric “Pluto-like” orbits - hence their new name, ploonets.

[Read more here.](#)

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## Asteroid Hit and Run



The asteroid belt between Mars and Jupiter preserves the processes of planetary formation, frozen in time. Vesta, the second largest object in the belt, provides an outstanding opportunity for scientists to investigate the origin and formation of planets.

In a paper just published in the journal ***Nature Geoscience***, Dr. Yi-Jen Lai of the Macquarie University Planetary Research Centre and Macquarie GeoAnalytical, together with colleagues, proposes a new evolutionary history for Vesta, which involves a giant impact.

[Read more here.](#)

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## Starburst shows the way home



Macquarie University researcher Stuart Ryder is part of an international team of astronomers who have made a long-awaited breakthrough, pinpointing the exact origin of a powerful transient phenomenon, known as a fast radio burst, or FRB.

Astronomers first identified FRBs in 2007, and since then 85 have been detected. Now, thanks to Dr Ryder and his colleagues, their exact nature has become a little clearer.

[Read more here.](#)

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## Hedging against climate change

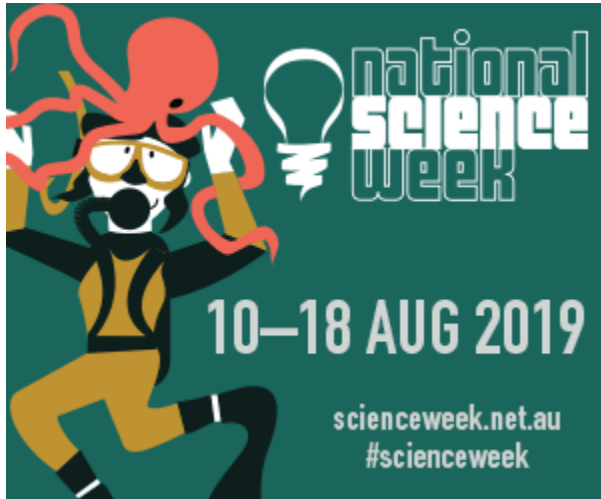


Globally, decision makers are increasingly acknowledging the many advantages of greening urban landscapes. Trees provide well recognised benefits to our health and wellbeing and, by regulating temperature and improving air quality, are a cost-effective way of creating climate resilient cities. But, given the changing climate, are the trees we plant now able to withstand conditions of the future?

Researchers from Macquarie University and Western Sydney University's Which Plant Where Project have looked at whether the tree species that characterise our urban landscapes will be resilient to climate change projected for the next 50 years.

[Read more here.](#)

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## **National Science Week Events**

We are proud to be part of National Science Week again this year with many of our staff joining in to showcase science across society. National Science Week is an annual celebration of science in Australia, an opportunity to join together to enjoy and explore the wonders and benefits of science.

### **7 August**

#### **Another Pale Blue Dot: The SETI Institute's search for exoplanets**

Dr. Franck Marchis, planetary astronomer and science outreach manager at the SETI Institute, will discuss new projects which aim to deliver an image of a cousin of Earth, or another Pale Blue Dot, a planet similar to our own. [Event details](#)

### **8 August**

#### **Keynote presenter at APOS**

Ask Dr Helen Maynard-Casely what neutrons are and how they're being used in research to solve some of the world's greatest challenges. Dr Maynard-Casely is an instrument scientist at the Australian Nuclear Science and Technology Organisation (ANSTO) and is the 2019 Australian Institute of Physics' Women in Physics touring lecturer. [Event details](#)

#### **The science of hoarding - Sydney, NSW**

What is hoarding disorder, why does it develop and how can it be treated? Join Associate Professor Melissa Norberg, the deputy director for the Centre of Emotional Health at Macquarie University, to learn why we can be motivated to acquire possessions we do not need. [Event details](#)

## **9 August**

### **Science at the Extreme - Carlton, VIC**

From the frozen tundra of Antarctica to the deserts of central Australia, and from the lava flows of Hawai'i to the depths of the world's deepest abyss off the east coast of our continent, this night will bring together a panel of science adventurers, including our very own Dr Kate Selway, sharing their journeys and discoveries to launch National Science Week in Victoria. [Event details](#)

## **11 August**

### **RoboRoos Robot Scrimmage — Banksia Park, SA**

Want a chance to see FIRST Tech Challenge Robots in action? FIRST – which stands for For Inspiration and Recognition of Science and Technology – and the Student Robotics Club of SA, known as the RoboRoos, are holding a scrimmage, competing against teams from around the stats. [Event details](#)

## **12 August**

### **Are smart phones making us dumb? Professor Mark Williams—Mosman, NSW**

Professor Mark Williams explores the idea: Are smart phones making us dumb? Mark is a Professor of Cognitive Neuroscience at Macquarie University. Discover how our use of digital devices may be affecting our brains and therefore the reality we 'see'. [Event details](#)

### **Science Talks at Warringah Mall Library—Brookvale, NSW**

Celebrate Sydney Science Festival & National Science Week at the Library with talks by Prof. Annabelle McIver, Rokiah Alford and David Bishop.

**Professor Annabelle McIver - Socially responsible technology:** Professor Annabelle McIver whose technology research at Macquarie University addresses such questions as: "what does it mean for your data to be secret?" and "what does it mean for an algorithm to be fair?"

**Rokiah Alford - Tiny tools for a tiny tradie:** Rokiah Alford is a PhD candidate at UNSW Sydney, who will talk about the saws, bricks, cement and delivery trucks of the nano-world, as well as her own addition to the toolbox.

**David Bishop - Algae & Motor Neurone Disease:**

The rate of motor neurone disease in Griffith, NSW is approximately seven times the national average, and has been linked to a molecule produced by blue-green algae. Join David Bishop from UTS, and learn how new methods of identifying this molecule has led to its detection in a number of waterways in NSW. [Event details](#)



**13 August**

**“Is Bigger Always Better?” with Richard de Grijs — St. Ives, NSW**

Astronomy is in a golden age, with ever more exciting prospects on the horizon. Join astronomer Richard de Grijs to learn about the next generation of extremely large telescopes and the ground-breaking discoveries they promise to deliver. [Event details](#)

**Exploring medical brain research — Castle Hill, NSW**

Join Dr Lindsay Parker, a researcher at Macquarie University, as she discusses how she is trying to create better medicines for Alzheimer’s, chronic pain and brain cancer, by targeting unhealthy cells in the brain. [Event details](#)

**14 August**

**The language of little ones — Merrylands, NSW**

Meet Titia Benders, a lecturer in linguistics at Macquarie University who analyses children’s speech to gain insight in language development in the infant, toddler, and pre-school years. [Event details](#)

**Science Talks at Manly Library—Manly, NSW**

Join us in celebrating Sydney Science Festival and National Science Week at the Library with talks by three experts in their field.

**Giulia Filippini - Life in our lagoons:** Discover the microbial communities that live in the lagoons on the Northern Beaches of Sydney and how scientists study the ecological condition of these unique environments with Giulia Filippini from Macquarie University.

**Raffaella Abbriano & Audrey Commault - Phytoplankton factories & Microalgae:**

Can microalgae solve some of humanity’s biggest problems? Join Researchers at UTS Raffaella Abbriano & Audrey Commault as they discuss how ocean-dwelling microscopic organisms can be transformed into biofactories to make renewable and sustainable products for food, medicine, and even fuel. [Event details](#)

**15 August**

**Young people and e-cigarettes — Auburn, NSW**

What role does social media have in vaping? Macquarie University’s Dr Samia Amin is a researcher who aims to understand how friends, family, advertising, and other kinds of interactions on social media influence people’s perceptions and use of e-cigarettes. [Event details](#)

## **16 August**

### **Green building for the sea: Kate Dodds—Mosman, NSW**

Learn about the innovative Living Seawalls project that is returning marine life to urban shorelines with Macquarie University Marine Ecologist and PhD researcher Kate Dodds. [Event details](#)

## **17 August**

### **Cosmic to Microscopic: Hidden spaces and new evidence from the pyramid field at Giza — Yarralumla, ACT**

By harnessing cosmic rays, a new chamber was discovered in the Great Pyramid of Khufu, which dates from about 2560 BCE. This lecture by Macquarie University archaeologist Dr Karin Sowada explores new stories from the Giza plateau, and the role of science in moving debate about the site beyond speculation.

Presented by National Science Week ACT, the Royal Australian Chemical Institute (RACI) and the Embassy of Egypt in Canberra. [Event details](#)

## **18 August**

### **Indigenous Science Experience @ Redfern and Wagga Wagga**

What can Aboriginal astronomy tell us about the night sky? How is our native flora used in bush medicine and soap making? How do Indigenous Australians make axes from stone and other artefacts? What can we learn about sustainable living from 60 000+ years of Indigenous culture?

The Indigenous Science Experience @ Redfern is a celebration of Indigenous and Western science, and Indigenous youth and Elder achievements.

Redfern schools sessions **Wednesday 14 to Friday 16 August** [Event details](#)

Family Science Fun Day: **Sunday 18 August** [Event details](#)

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## Four/Five top 100 subjects in Global Ranking of Academic Subjects (GRAS) 2019



Global Ranking of Academic Subjects (GRAS) 2019 has ranked more than 4000 universities around the world across 54 subjects. Six subjects from Macquarie University ranked in the top 100. Three of these subjects are in the Faculty of Science and Engineering; Earth Sciences, Ecology, and Telecommunication Engineering. [Read more here](#)

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## Faculty news and notices

### Welcome to new faculty staff

A warm welcome to Benjamin Ashton, Gioacchino Tangari and Louisa Wang who have joined the Faculty in the last month.

### Opportunities

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

**Postdoctoral Research Fellow, Department of Molecular Sciences:** [more info](#)

**Administrator, Finance and Staff:** [more info](#)

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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).

### Connect with your Faculty online:

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

- Barbara on Twitter: [@BarbaraMesserle](https://twitter.com/BarbaraMesserle)

**Got a story?**

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