



**MACQUARIE**  
University

**FACULTY OF SCIENCE  
AND ENGINEERING**

21 November 2019

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## From the Dean

### NEWSLETTER

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This month, as I make my way back from leading a delegation to China, I am proud that Science and Engineering continues to bring to light new discoveries that tell us about the past and help us predict the future. These inroads establish new ways of collaborating across Australia and beyond.

Science and Engineering is part of two new Australian Research Council funded Centres of Excellence which will lead the way in [synthetic biology](#) and [Australian agriculture](#).

Much of the research published this month focusses on the sea. It includes a world-first for [dolphin snot collection](#), grandmothers investigating [lethal sea snakes](#), the [social life of sharks](#) and the complications of [coral bleaching](#).

Other highlights include the [galactic halo effect](#) of fast radio bursts and new insights into [extinctions](#).

Our researchers are also gaining national and international recognition. Dr Vanessa Pirotta has been named as a finalist in the *Australian Financial Review* 100 Women of Influence Awards for 2019, Dr Lizzy Lowe has been selected as one of 25 global finalists in the Green Talents Competition, and three of our young researchers are included in Fresh Science 2019.

With so much happening, I would like to encourage you follow the Faculty on Twitter at [@MQSciEng](#) and myself [@mans\\_bernard](#) to discover our latest news in real time.

Regards,

Prof Bernard Mans  
Interim Executive Dean

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## **'Fantastic grandmothers' get up close and personal with venomous sea snakes**



A group of snorkelling grandmothers has taken to photographing potentially lethal sea snakes in the waters off the city of Noumea. The results are helping scientists Dr Claire Goiran from the University of New Caledonia and Professor Rick Shine from Macquarie better understand marine ecology.

[Read more here.](#)

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## **White sharks hang with their mates**

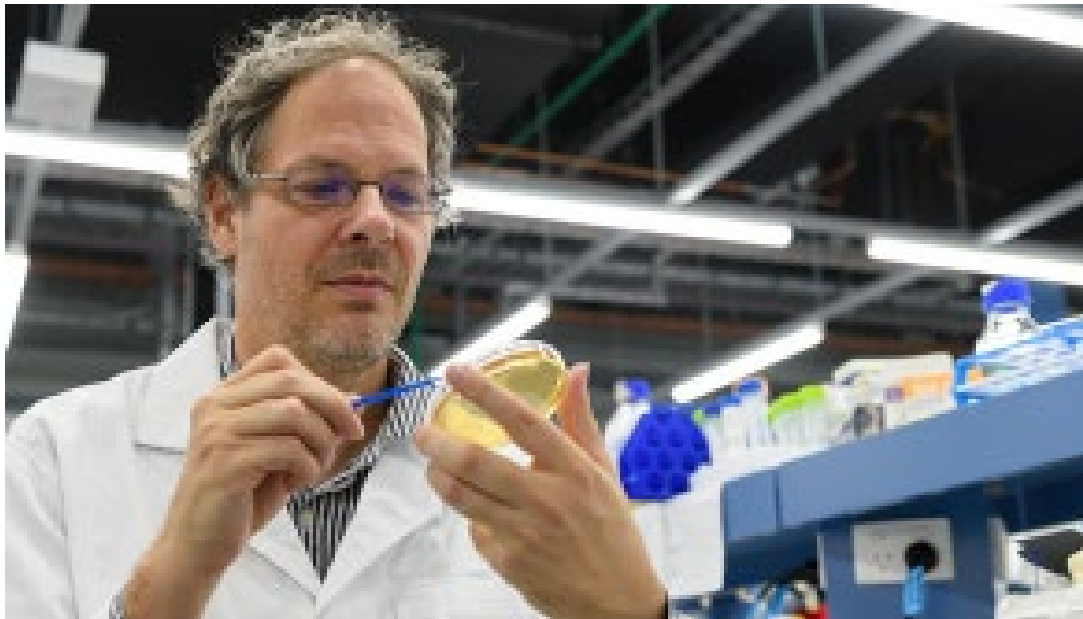


Long thought solitary, white sharks gather in definable and persistent communities, researchers including Macquarie behavioural ecologist Stephan Leu have discovered.

[Read more here.](#)

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## **\$35 million for new Centre of Excellence for synthetic biology**



The Australian Research Council (ARC) has awarded \$35 million for a new Centre of Excellence in Synthetic Biology. The Centre is an international collaboration between seven Australian universities and 25 partners and is one of the largest combined efforts in synthetic biology in the world. It will be led by Macquarie's Distinguished Professor Ian Paulsen.

[Read more here.](#)

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## **New Australian agriculture Centre of Excellence**



Macquarie University is also part of the new ARC Centre of Excellence for Plant Success in Nature and Agriculture, which received \$35 million in funding. Professor Ian Wright is a Chief Investigator, and Professor Michelle Leishman, Brian Atwell, Rachael Gallagher, and Hendrik Poorter are Associate Investigators.

[Read more here.](#)

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## Understanding past extinctions can help us predict future ones



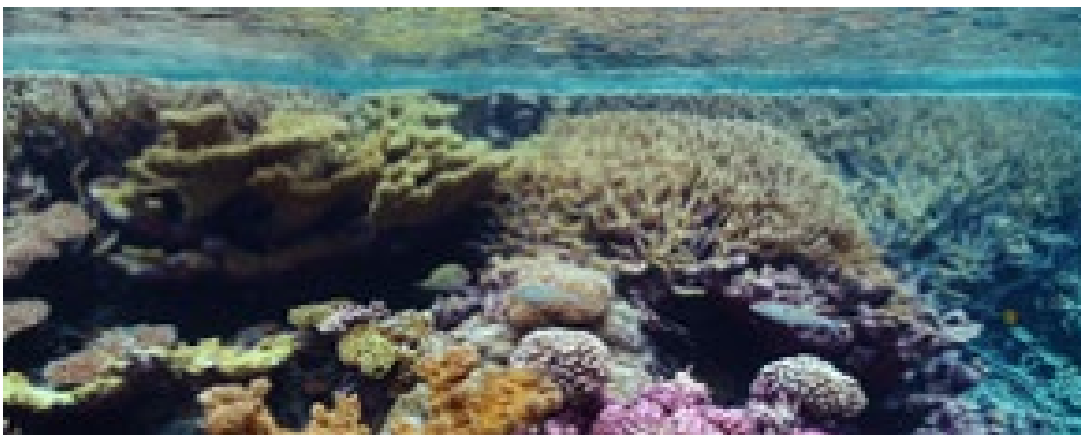
By 11,000 years ago our ancestors had wiped out the giant carnivores and herbivores of North America, fundamentally changing biodiversity and the landscape.

In a paper just published in *Science*, researchers including Macquarie's Dr Anikó Tóth report on how smaller, surviving animals such as deer changed their ecological interactions, causing ecological upheaval across a continent.

[Read more here.](#)

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## Coral Bleaching caused by more than just heat



Scientists including Macquarie's Dr Joseph Maina used the El Nino of 2016 – the warmest year on record – to evaluate the role of excess heat as a driver of coral bleaching. They discovered the picture was more nuanced than existing models showed.

[Read more here.](#)

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## Fast radio burst provides clues to galactic halo



A massive galaxy four billion light-years from Earth is surrounded by a halo of tranquil gas.

The finding, which reveals a galactic halo much less dense and less magnetised than expected, was made by a team of astronomers that included Stuart Ryder and Lachlan Marnoch from Macquarie University.

[More details here.](#)

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## A world first for dolphin snot collection



Australian marine scientists, including Dr Vanessa Pirotta, have achieved what could be a world first, collecting dolphin snot by using a drone.

The drone was originally designed to collect whale spume samples, but the team recently shifted focus to the humpback dolphin – which only became a recognised species five years ago.

The results of a pilot study have just been published in the journal *Ecosphere* and it's hoped the technology will lead to new non-lethal ways to monitor dolphin health and populations.

[Read more here.](#)

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## **Congratulations corner**

### **Vaness Pirotta**

Dr Pirotta has been named in the *Australian Financial Review* 100 Women of Influence Awards for 2019. The finalists are champions of reinvention, and possess broad skill-sets they can adapt to different roles in their quest to influence change in business and society.

### **Lizzy Lowe**

Dr Lowe is one of 25 awardees selected from around the world in this year's Green Talents Competition. Lizzy is a researcher in Urban Ecology, focussed on biodiversity and the impact of insecticides.

### **Fresh Science 2019**

Congratulations to David Arnold, Lindsay Parker and Foad Taghizadeh for being selected as Fresh Science 2019 finalists. Fresh Science is an annual science communication program for early career researchers which teaches participants how to communicate their research well to the media, business and the community.

### **COMMENT**

#### **Mathematics: Is category theory eating itself?**

That's just one of the areas Dominic Verity from Macquarie University and Emily Riehl from Johns Hopkins University have been working on for the past six years.

[Read more here](#)

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## **Faculty news and notices**

### **Come and work with us**

Head of Department Maths and Stats [learn more](#)

Head of Department Earth and Environmental Sciences [learn more](#)

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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)
- Bernard on Twitter: [@mans\\_bernard](https://twitter.com/mans_bernard)

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