RESEARCH HIGHLIGHTS

Drone research: The ANU node of the Australian Plant Phenomics Facility is leading research into developing the Australian Scalable Drone Cloud. Tim Brown explains: “Drone technology is being deployed across many settings, including agricultural research and management, environmental monitoring, geosciences and more, but the data generated can be complex and hard to use.”

This research is supported by the Australian Research Data Commons and will focus on best practice for drone data analysis. “The ability to standardise 3D geospatial data-gathering, processing and analysis via technologies built specifically for the cloud will significantly improve the accessibility, reusability, and interoperability of drone data for application across industry, research and public sectors” explains Tim.

Volunteering for COVID-19 diagnosis. A team of scientists including Sarah Rottet (PS), Deep Ganguly (PS), Aude Fahrer (BSB), Suyan Yee (PS), Wil (Wei) Hee (PS) volunteered to contribute their molecular biology expertise and knowledge to fighting the Covid-19 pandemic. Using their free time during the shutdown, they worked together (while still social distancing) to develop several diagnostic tools to easily identify CoViD-19 cases, as well as address several of the supply shortage problems the world was facing, in terms of testing kits and nasal swabs. Further details can be found on page 2 of this newsletter.

PHDS APPROVED

Congratulations to Pawan Parajuli (BSB, Verma Group) who has been awarded a PhD on: Study of bacteriophage-encoded glucosyltransferase (gtr) genes in Shigella flexneri serotype 1c.

“Congratulations to Pawan for producing an excellent thesis which unravelled the mystery of the origin of a newly-emerged serotype of S. flexneri!” Naresh Verma, supervisor.

PHDS SUBMITTED

Congratulations to Jessica Fenker (E&E, Moritz Group) who handed in her PhD on the “Evolution of reptile diversity in tropical savannas — a study across scales and continents”. Jess explains: “The ANU Research School of Biology is really a special place. Being part of a supportive group, a multicultural and collaborative department, and advanced scientific circle are what I most enjoyed during my PhD — together with the opportunity to do fieldwork in amazing places, learning new skills and bring new information about the incredible savannas ecosystems. I learned a lot. And I learned more than just science - I learned about new cultures and new ways to see life. Thanks E&E, Craig and the Moritz Group for the amazing time together!”

GRANTS

Kara Youngentob and Karen Ford (E&E) have received a grant of $275,000 from the Minderoo Foundation for their project “Minimising bushfire effects on wildlife: Managing koalas in post-fire landscapes.”

In addition, the Koala team received $100,000 from Two Thumbs Wildlife Trust to support koala conservation research in the name of the pilots who lost their lives fighting fires over Two Thumb’s Sanctuary: Captain Ian McBeth, Paul Hudson and Rick DeMorgan. Finally, they received about $10,000 from the wider public via a donation scheme set up by ANU to support koala rescue activities.

IN THE MEDIA

Chris Sanderson (E&E) is the project manager for the Butterflies Australia project and tells us how they got their very own stamp. Butterflies...
Australia is a national citizen science project aimed at collecting sightings of butterflies to use for research and conservation.

The project was funded by the citizen science grants from the Department of Industry, Science, Energy and Resources. We can be found at www.butterflies.org.au, and https://www.facebook.com/ausbutterflies/on Facebook. We have a free app on Android and iOS that has a field guide, and people can upload their butterfly sightings also. We’ve had a fantastic first six months of operation, launching coincidentally in one of the best butterfly emergence events in a decade on the east coast of Australia! We’ve reached our first 5,500 verified sightings already, and look forwards to many more in the next few years.

How did the butterfly get on the stamp? We were fortunate to be invited by the Australian Citizen Science Association https://citizenscience.org.au/ to be part of a pitch to Australia Post for a stamp issue raising awareness of citizen science in Australia. Our project was one of the lucky four who were chosen to be featured on a stamp! The stamp design is based off our logo, but features a Spotted Jezabel (Delias aganippe), one of our beautiful endemic butterfly species which can be found in most states and territories, is arid adapted, and also strikingly beautiful. We thought it made a pretty great representative of Australia’s butterflies!

Jessica Fenker a PhD student and herpetologist (E&E, Moritz Group) had an ECR feature in the Journal of Biogeography.

PhD student Lauren Ashman (E&E, Rowell Group) had her research hit the news with Beetle mania! Lauren is studying longhorn beetle taxonomy.

Jennie Mallela (E&E) was interviewed for a podcast on coral bleaching for the ANU Climate Change Institute. You can hear the podcast here.

Alex Maier (BSB) and Anna Sophie Jurgens showcase the comic cultural history of parasites - “Love the parasite you’re with - the entertaining life of unwelcome guests from flea circuses to Aliens”.

Drones in the news: The ANU node of the NCRIS funded Australian Plant Phenomics Facility (APPF) has been making the news with press releases on “Drone cloud: establishing a national ecosystem for drone data management” and “Elevating Australia’s drone enabled geoscience”

Kara Youngentob and Karen Ford (E&E) and their Koala focused research is in the news with a recent article in The Age highlighting the urgent need for a Koala recovery plan across Australia.

RSB ECRs are offering a biological data science course to upgrade staff and students’ quantitative skills. During the first six weeks over 200 participants were trained in R, Python, bash, statistics and bioinformatics. Sessions are video recorded and can be watched later here, while feedback is provided anytime via Slack. The next few courses will cover workspace management, SnakeMake, Conda, maps and multivariate analyses in R. More information and sign-in here. Thank you from Timothee Bonnet on behalf of the organizing committee: Megan McDonald, Tom Davis, Nidhi Menon, Jana Sperschneider, Kevin Murray, Saul Newman, Benjamin Schwessinger, Teresa Neeman, Robert Cope, Marcin Adamski, Eric Stone et al.

CAMPUS NEWS

Ben Corry (BSB), John Debs (RSPhys), and Celine d’Orgeville (RSAA) were recently elected as the CoS representatives on the ANU Academic Board. Please don’t hesitate to contact Ben if you would like to raise any RSB issue related to ensuring the University maintains the highest academic standards.

VOLUNTEERING FOR COVID-19 DIAGNOSIS

One such diagnostic test, which was developed within the two months of lockdown volunteer work, included a rapid SYBR-Green-based one step qPCR assay to detect SARS-CoV-2 from saliva. This method omits the labour-intensive RNA extraction step, and combines the reverse transcription and qPCR steps into a one-step, one-pot reaction, with the aim of making it a high-throughput screening test. The use of a SYBR-Green-based technique instead of a hydrolysis probe-based qPCR also allows for the investigation of primer specificity and amplification efficiency. Through our research, we found a set of primers not currently used in any existing diagnostic kit that would be an excellent candidate for specifically screening against CoVid-19. Collecting and testing saliva also means that the discomfort associated with, and the training required to administer a
nasopharyngeal swab can be avoided. The plan was to develop a CoViD-19 screening test that is cheaper, more accurate, easier to use, scalable and comfortable. Ultimately, our new assay reduces costs down to $4 per sample. However, the caveat is that due to the low number of active cases in Canberra, our diagnostic assay has not been vetted against infected patient saliva samples; only non-infected samples spiked with naked SARS-CoV-2 viral RNA. As such, we ultimately recommend this SYBR-Green qPCR method as a complementary and confirmatory test used alongside existing diagnostic kits for screening for CoViD-19 cases. Our research can be found on bioRxiv.

As we write this, phased reopening for the ANU has started, restrictions on gatherings are slowly being lifted, and life is gradually returning to a new definition of ‘normal’.

PAPERS ACCEPTED


