Australian National University

Research School of Biology Newsletter

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ANU COLLEGE OF SCIENCE

NEWS

A very special announcement: Professor Loeske Kruuk (E&E) has been elected to the prestigious American Academy of Arts & Science. "*This is a fantastic honour*" explains Michael Jennions (Head of Division, E&E). The details are here. Former RSB (E&E) member Hanna Kokko was also elected to the academy alongside Loeske. Congratulations to Loeske and Hannah.

Photo: Hee-Jin Noh in the field (middle) during her PhD fieldwork with her assistants, Cairns, Queensland.

PHDS AWARDED

Hee-Jin Noh (Langmore Group, E&E) has been awarded a PhD on: 'An imposter in the nest: Coevolution between the little bronze-cuckoo and its host, the large-billed gerygone'.

"*Congratulations to Hee-Jin on being awarded her PhD with flying colours! It was an exceptional achievement to produce such a superb thesis from her challenging project in the mosquito-infested mangrove swamps of Cairns*", says Naomi Langmore her supervisor.

WELCOME

The ANU Toxo lab (BSB, Giel van Dooren) welcomes Victor Makota and Simon Gross into the group.

Victor is working as a research officer on a NHMRC funded project together with the Maier and Saliba groups (BSB), investigating inhibitors of the mitochondrial electron transport chain in apicomplexan parasites.

Simon is working as a research officer on an ARC funding project together with the Kirk group (BSB), investigating how Toxoplasma parasites sense and respond to the nutrients that their encounter in their hosts. Both Victor and Simon are emigres from the John Curtin School.

We welcome Marcin Adamski, who has just joined the RSB academic staff (BT&LC) as a Senior Lecturer and Coordinator of the Shandong partnership for the next two years. Marcin is well-known to most of us as a bioinformatician but he has also been increasingly involved in undergraduate teaching over the last couple of years. Our partnership with Shandong will bring high quality quantitative biology students to ANU, following a shared teaching program. Marcin will use his expertise to coordinate this program and also teach some of it. He also will take over Allen's role as convener of BIOL2202 Experimental Design and Analysis in Biology for our local students.

GOODBYE

We need to say goodbye and good luck to Dr Essie Rodgers, a postdoc in the Noble group (E&E). She is moving on to start up her own lab group at the University of Canterbury in Christchurch, New Zealand. Congratulations Essie! "*All the best in your new position. We will miss you!*" - Dr Daniel Noble.

A message from Essie: "*Although my time in RSB has been brief, I will definitely miss being a part of this department. Thank you to everyone for making me feel welcome from day one. Of all the departments I have been a part of, RSB stands out as being a special place where researchers can thrive. A big thank you to Wes, Jack and Audra for going above and beyond every single day. Lastly, an enormous thank you to Dan who has been an amazing mentor and friend. I will miss you all.*"

GRANTS

Congratulations to Emeritus Professor Mike Crisp who with his colleagues have just won a national taxonomy research grant from the ABRS. 'Building the eFlora: Generic and species-level resolution in Fabaceae tribe Mirbelieae using next-generation sequencing'. Mike explains: "The "egg-and-bacon" peas are a diverse group of shrubs (> 700 species) that can be seen in abundance in Australian heathlands and eucalypt forests. The egg-and-bacon bit refers to the yellow and red flowers. I and my collaborators at ANU, CSIRO, UQ and the Sydney Botanic Gardens have worked for decades on the taxonomy of this group and we have named many new species and genera. There remains a large core of genera and species (the Pultenaea group) that remains to be sorted out satisfactorily. This grant will enable us to use the latest

high-throughput sequencing techniques to generate a huge set to data from which we will hopefully resolve the classification problems in this group."

Congratulations to Mitzy Pepper and Scott Keogh (E&E) who have also won a national taxonomy research grant from the ABRS, 'Uncovering diversity in the 'dead heart' of Australia: systematics and taxonomy of arid zone geckos'. Mitzy explains: " It will cover my part-time postdoc salary for the next 3 years. Much of our previous work has focused on the systematics of Australian reptiles, and we have shown that many wide-ranging 'species' have multiple hidden species within them. Of the arid zone geckos, the legless Pygopodidae and the jewelled Strophurus stand out as having a significant amount of undescribed diversity. In these two groups alone, there is potentially a minimum of 17 new species from a region of Australia still very much under-represented in reptile systematics, and vertebrate taxonomy more generally. Our project will tackle the taxonomy of these last major arid zone gecko groups requiring revision, to round up what has been a taxonomically productive decade.

Congratulations to Honours student Emma Crean (Williams group, PS) who received a $5K honours scholarship from AINSE (The Australian Institute of Nuclear Science and Engineering) to further her studies.

AWARDS

Honorary Associate Professor Paul Cooper (E&E) presented in Fresh Science at the 17th Australian Wine Industry Technical Conference (AWITC). Paul's work on Climate change and its influence on scale insects and sooty mould occurrence, was selected as being the best current research in Australian viticulture and oenology.

Two of our excellent research students have taken out two of the top prizes in the ANU College of Science! Huge congratulations to Honours student Christine Xiangning (Saliba group, BSB), who won the Janet Elspeth Crawford Prize, and to PhD student Christiana McDonald-Spicer (Moritz group, E&E) who won the Janet Elspeth Crawford Postgraduate Leadership Prize. Details of their achievements are below.

The JANET ELSPETH CRAWFORD PRIZE

A Joint ANU College of Science prize to recognise an Honours student who has demonstrated outstanding academic achievement. Winner; Xiangning (Christine) Liu – Saliba group, Nominated by; Susan Howitt.

Christine Liu has an outstanding undergraduate record (GPA 7.0), with half of her HD results coming from scores above 90, especially notable in the BMedSci, which is a very competitive student cohort. During Honours, she completed an exceptional body of work, well above expectations for the Honours year, resulting in two of her three examiners giving the highest thesis mark they had ever awarded, while the third had previously examined other Medal recipients. The examiners also noted that the experimental achievements were equivalent to some PhD theses. The breadth of experimental techniques that Christine mastered is unusual in the short time frame of an Honours year. It is clear from the supervisor and examiner reports that time spent in the laboratory did not come at the expense of mastering the literature and writing the thesis. Christine demonstrated a high level of intellectual ownership of her project, evident both in the thesis and by the fact that she has become a source of technical advice for other researchers. This is an exceptional level of project ownership and expertise for an Honours student.

JANET ELSPETH CRAWFORD POSTGRADUATE LEADERSHIP PRIZE

The ANU College of Science prize recognises a postgraduate student who has demonstrated significant leadership and outstanding academic achievement. Winner; Christiana McDonald-Spicer, Nominated by; Craig Moritz.

The quality of Christiana's work and presentations has been recognised by awards – notably the Best ECR talk at the 2019 annual meeting of the International Biogeography Society, and also a finalist position in the 2017 3MT competition. In addition to demonstrating her own dedication to communicating science in accessible and engaging ways, she was an excellent ambassador for the 3MT program and made great efforts to encourage and support other students in RSB to take on this challenge.

Christiana has made strong contributions to the postgraduate culture in RSB. Within E&E, she has regularly volunteered as an organiser of student-led HDR events. Christiana has distinguished herself in contributing to this culture in many ways including as an organiser and facilitator of the annual E&E and whole of RSB HDR orientation retreats; the monthly ECR 'chit chat' sessions and the annual HDR conference. She served on the Research Training Committee for almost 3 years as a HDR representative for E&E. Christiana is always keen to volunteer her time for the good of everyone and to create solidarity and a supportive environment – this has made her a highly valued community member by her fellow HDR students as well as the HDR conveners.

Christiana has made an exceptional contribution to promoting a culture of equity in RSB and is one of the most active participants in gender equity across the College. She has taken a lead role in organizing activities and promoting equity, which includes being the main author on two significant reports to the RSB Executive. Christiana's actions have led to the profile of equity in RSB being raised considerably, the reports having led to many corridor discussions as well as action through the Executive.

NOTABLE PAPERS

The 200th Anniversary Article Collection from Biological Reviews have selected 15 notable papers published in the last 200 years that represent highlights in the long and successful publishing history of Biological Reviews. Congratulations to Michael Jennions (E&E) for his 1997 paper on variation in mate choice making the list. Jennions, M.D. and M. Petrie. 1997. Variation in mate choice and mating preferences: a review of causes and consequences. Biological Reviews 72: 283-327.

PAPERS ACCEPTED

Aich, U., M.D. Jennions and R.J. Fox. 2020. An experimental test of the role of male mating history on paternal effects in the livebearer fish Gambusia holbrooki. Biology Letters 16: 20190945.

Au, J., K.N. Youngentob, W.J. Foley, B.D. Moore and T. Fearn. 2020. Sample selection, calibration and validation of models developed from a large dataset

of near infrared spectra of tree leaves. Journal of Near Infrared Spectroscopy: 0967033520902536.

Bromham, L., X. Hua, C. Algy and F. Meakins. 2020. Language endangerment: a multidimensional analysis of risk factors. Journal of Language Evolution 5: 75-91.

Brouwer, L. and A. Cockburn. 2020. Experimental vacancies do not induce settlement despite habitat saturation in a cooperative breeder. Biology Letters 16: 20190757.

Clark, I.A. 2020. Randomized controlled trial validating the use of perispinal etanercept to reduce post-stroke disability has wide-ranging implications. Expert Review of Neurotherapeutics 20: 203-205.

Chen, Y.-Y., P. Cooper and C.J. Fulton. 2020. Sargassum epifaunal communities vary with canopy size, predator biomass and seascape setting within a fringing coral reef ecosystem. Marine Ecology Progress Series 640: 17-30.

Cockburn, A. 2020. Chapter 6: Can't see the "hood" for the trees: Can avian cooperative breeding currently be understood using the phylogenetic comparative method? In: M. Naguib, L. Barrett, S. D. Healy, J. Podos, L. W. Simmons and M. Zuk, editors, Advances in the Study of Behavior.

De Rosa, A., A. Watson-Lazowski, J.R. Evans and M. Groszmann. Genome-wide identification and characterisation of Aquaporins in Nicotiana tabacum and their relationships with other Solanaceae species. BMC Plant Biology accepted.

Eichten, S.R., A. Srivastava, A.J. Reddiex, D.R. Ganguly, A. Heussler, J.C. Streich, et al. 2020. Extending the genotype in Brachypodium by including DNA methylation reveals a joint contribution with genetics on adaptive traits. G3: Genes, Genomes, Genetics, accepted.

Ermakova, M., F.R. Danila, R.T. Furbank and S. Von Caemmerer. 2020. On the road to C4 rice: advances and perspectives. The Plant Journal 101: 940-950.

Esquerré, D., S. Donnellan, I.G. Brennan, A.R. Lemmon, E.M. Lemmon, H. Zaher, et al. 2019. Phylogenomics, biogeography and morphometrics reveal rapid phenotypic evolution in pythons after crossing Wallace's line. Systematic Biology, accepted.

Flohr, B.M., J.R. Hunt, J.A. Kirkegaard, B. Rheinheimer, T. Swan, L. Goward, et al. 2020. Deep soil water-use determines the yield benefit of long-cycle wheat. Frontiers in Plant Science accepted.

Groszmann, M., P.M. Chandler, J.J. Ross and S.M. Swain. 2020. Manipulating gibberellin control over growth and fertility as a possible target for managing wild radish weed populations in cropping systems. Frontiers in plant science 11: 190.

Hajduk, G., C. Walling, A. Cockburn and L. Kruuk. 2020. The 'algebra of evolution': the Robertson–Price identity and viability selection for body mass in a wild bird population. Philosophical Transactions of the Royal Society B 375: 20190359.

Ho, Y.-H., Y. Hsiao, M. Terayama and M.-L. Chan. 2020. Ultramorphological characteristics of Falsogastrallus sauteri Pic (Coleoptera: Ptinidae) and a new species of Cephalonomia Westwood (Hymenoptera: Bethylidae): A book-boring beetle and Its natural enemy in Taiwan. Insects 11: 223.

Hoai, P.T., S.D. Tyerman, N. Schnell, M. Tucker, S.A. McGaughey, J. Qiu, et al. 2020. Deciphering aquaporin regulation and roles in seed biology. Journal of Experimental Botany 71: 1763-1773.

Irinyi, L., Y. Hu, M.T.V. Hoang, L. Pasic, C. Halliday, M. Jayawardena, et al. 2019. Long-read sequencing based clinical metagenomics for the detection and confirmation of Pneumocystis jirovecii directly from clinical specimens: A paradigm shift in mycological diagnostics. Medical mycology, accepted.

Jürgens, A.-S. 2020. Science on show: Exploring science, performance and spectacle. Journal of Science & Popular Culture 3: 3-6.
Jürgens, A.-S. and A.G. Maier. 2020. From circus acts to violent clowns: The parasite as performer. Journal of Science & Popular Culture 3: 39-56.

Kidsley, A.K., M. O'Dea, E. Ebrahimie, M. Mohammadi-Dehcheshmeh, S. Saputra, D. Jordan, et al. 2020. Genomic analysis of Fluoroquinolone-susceptible phylogenetic group B2 extraintestinal pathogenic Escherichia coli causing infections in cats. Veterinary Microbiology: 108685.

Laikre, L., S. Hoban, M.W. Bruford, G. Segelbacher, F.W. Allendorf, G. Gajardo, et al. 2020. Post-2020 goals overlook genetic diversity. Science 367: 1083-1085.

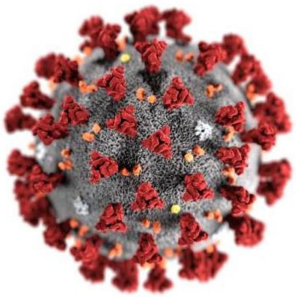
Liu, F., W. Zhang, B. Schwessinger, T. Wei, D. Ruan and P. Ronald. 2020. The rice Xa3 gene confers resistance to Xanthomonas oryzae pv. oryzae in the model rice Kitaake genetic background. Frontiers in Plant Science 11: 49.

Onley, I.R., J.L. Gardner and M.R. Symonds. 2020. Spatial and temporal variation in morphology in Australian whistlers and shrike-thrushes: is climate change causing larger appendages? Biological Journal of the Linnean Society.

Purushotham, N., A. Jones, B. Poudel, J. Nasim, D. Adorada, A. Sparks, et al. 2020. Draft genome resource for Macrophomina phaseolina associated with charcoal rot in Sorghum. Molecular Plant-Microbe Interactions: MPMI-12-19-0356-A.

Rahimi, F. and A.T.B. Abadi. 2020. Case-finding: Fast, available, and efficient font-line diagnostics for SARS-CoV-2. Archives of Medical Research, accepted.

Rahimi, F. and A.T.B. Abadi. 2020. Challenges of managing the asymptomatic carriers of SARS-CoV-2. Travel Medicine and Infectious Disease: 101677.



Rahimi, F. and A.T.B. Abadi. 2020. Ethical and sensible dissemination of information during the COVID-19 pandemic. American Journal of Bioethics, accepted.

Rahimi, F. and A.T.B. Abadi. 2020. Transparency and information sharing could help abate the COVID-19 pandemic. Infection Control & Hospital Epidemiology: 1-6.

Rahimi, F. and A.T.B. Abadi. 2020. Practical Strategies Against the Novel Coronavirus and COVID-19—the Imminent Global Threat. Archives of Medical Research.

Rentsch, P., S. Stayte, T. Egan, I. Clark and B. Vissel. 2020. Targeting the cannabinoid receptor CB2 in a mouse model of l-dopa induced dyskinesia. Neurobiology of Disease 134: 104646.

Taleski, M., K. Chapman, N. Imin, M.A. Djordjevic and M. Groszmann. 2020. The peptide hormone receptor CEPR1 functions in the reproductive tissue to control seed size and yield. Plant Physiology accepted.

Sen, T. and N.K. Verma. 2020. Functional Annotation and Curation of Hypothetical Proteins Present in A Newly Emerged Serotype 1c of Shigella flexneri: Emphasis on Selecting Targets for Virulence and Vaccine Design Studies. Genes 11: 340.

Su, X., G. Jing, Z. Sun, L. Liu, Z. Xu, D. McDonald, et al. 2020. Multiple-Ddsease detection and classification across cohorts via microbiome search. Msystems 5.

Suryawanshi, A., K. Schaefer, O. Holz, D. Apel, E. Lange, D.C. Hayward, et al. 2020. What lies beneath: Hydra provides cnidarian perspectives into the evolution of FGFR docking proteins. Development Genes and Evolution: 1-12.

Tegtman, N. and R. Magrath. 2020. Discriminating between similar alarm calls of contrasting function. Philosophical Transactions of the Royal Society, B, accepted.

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Vincent, A., M.L. Head and M. Iglesias-Carrasco. 2020. Sexual conflict and the environment: teasing apart effects arising via males and females. Animal Behaviour 162: 57-66.

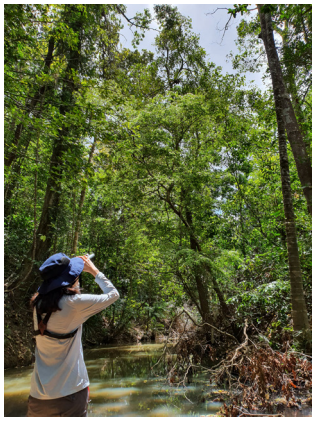

Image: Hee-Jin Noh

Wong, T.K., S. Kalyaanamoorthy, K. Meusemann, D.K. Yeates, B. Misof and L.S. Jermiin. 2020. A minimum reporting standard for multiple sequence alignments. NAR Genomics and Bioinformatics accepted.

Zhu, X.-G., D.R. Ort, M.A. Parry and S. von Caemmerer. 2020. A wish list for synthetic biology in photosynthesis research. Journal of Experimental Botany 71: 2219-2225.

Zhu, Y., C.S. Ong and G.A. Huttley. 2020. Machine learning techniques for classifying the mutagenic origins of point mutations. Genetics, accepted.

COMPETITIONS

Time for another @EcoEvo_ANU lockdown competition. All @BiologyANU entries welcome. Screengrab of you on Zoom with a creative backdrop. 2x $50 prizes. Go for it! Use #ANUZoomPrize so I find all entries. Open until May 16.

IN THE MEDIA

How coronavirus restrictions closed Canberra universities. An ABC update from Richard Poire-Lassus and Dr Tory Clarke

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ONLINE

Looking after yourself while working from home, to share information on how to keep spirits and energy up: ANU resources.

Best practice guide for remote meetings.

The ANU resilient researcher webinars. The Resilient Researcher program is designed to support HDR candidates and ECR's throughout their research by building and maintaining psychological wellbeing, enhancing communication and relationship skills and developing career confidence.

PARENTS CORNER

At home with kids ANU's resources for parents. This site gives you ideas on keeping kids occupied at home. Login via wattle.

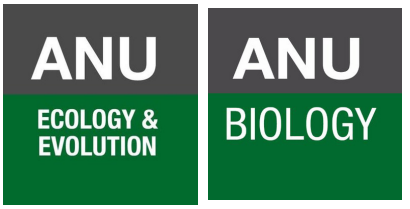
SOCIAL MEDIA

Photo: A bronze-cuckoo chick. Image: Hee-Jin Noh.

BSB and PS have new divisional twitter accounts. Follow them on:
@ANU_RSB_BSB
@PlantSci_ANU

You can follow E&E on:
@EcoEvo_ANU.

The RSB twitter account is:
@BiologyANU.



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