Programme

Thursday 25th November 2021
For the second year in a row, twelve of our best early career researchers will present their ground-breaking, world-changing research to the wider university community. Each researcher will have five minutes to impress an esteemed judging panel and the audience to compete for four prizes and prove that their research represents the future of research at Macquarie.

Developed by and for Macquarie’s early career researchers (ECRs), the ECR Showcase offers an opportunity for the wider community to engage with the work of MQ’s emerging field-leaders from a diverse mix of Departments and Schools across Macquarie University. A dedicated team of ECRs representing all four faculties, supported by the ECR Network Team, have worked tirelessly throughout 2021 to organise and host this event.

A panel of academic and non-academic experts will award the Best Overall and Runner Up presentation based on innovation, quality and research engagement. The ECR Showcase presenters will also be competing for the Impact Award for highest potential impact in media which will be awarded by The Lighthouse editor, Angie Kelly, and People’s Choice Award as voted by you! All winners will receive a valuable research cash prize generously supported by the PVC (Research Integrity and Development) and our event sponsors.
The Programme

9:00 am ECR Showcase opens
9:05 am Welcome
9:10 am A word from guest speaker Prof. Sakkie Pretorius (DVC, Research)
9:20 am Presentations from our 12 ECR Showcase Finalists
  • Dr Thomas Baudinette: Asian Popular Culture Fandom In Australia And Its Emancipatory Impacts For LGBTQ+ Youth
  • Dr Haoran Ren: Metafibre Optics
  • Dr Kelly Miles: Predicting Communication Breakdown During Social Interactions
  • Dr Madelyne Bisby: The Promise Of Online Single-Session Treatments For Anxiety And Depression
  • Dr John Burn: The A.R.I.D. Hypothesis
  • Dr Margo Lecompte-Van Poucke: Damaging Lockdowns: Australian Doom Discourse On Reddit
  • Dr Ilya Fomin: Using MCMC To Reveal The Deep Earth Structures
  • Dr Rebecca Kuhnert: Youth Mental Health Screening In Schools
  • Dr Matteo Malavasi: Better Understanding And Managing Cyber Risks
  • Dr Poon Leung: Assessing The Impact Of Lecture Recordings
  • Dr Sheemal Kumar: Engineering Insects As Value-Added Livestock Feed With Environmental Benefits
  • Dr Fabiola Barba Ponce: Refugee Background Female Leadership, Regenerative Farming And Social Business Creation
11:00 am Short Break + People’s choice voting opens
11:10 am A word from guest speaker Prof. Lesley Hughes (PVC, Research Integrity and Development)
11:15 am Panel chat with our ECR presenters
11:30 am Announcement of winners
12:00pm Close Event
Dr Thomas Baudinette is Senior Lecturer in International Studies in the Department of Media, Communication, Creative Arts, Language and Literature. A cultural anthropologist, his research focusses on Japanese media and its impacts on understandings of gender around the world. His first book is Regimes of Desire: Young Gay Men, Media, and Masculinity in Tokyo (2021, University of Michigan Press). His current research investigates the transnational spread of “Boys Love” media fandom and celebrity, focussing on South Korea, Thailand, and the Philippines. Thomas has also been investigating the impacts of Korean media fandom on sexual minority communities in Australia and Japan.

**Presentation abstract: Asian Popular Culture Fandom in Australia and its Emancipatory Impacts for LGBTQ+ Youth**

Despite significant legal gains surrounding the recognition of same-sex marriage, LGBTQ+ communities continue to face widespread discrimination in Australia. Further, young people from sexual minority communities are more likely than average to experience mental health issues, including higher suicide rates. My research reveals that one surprising space where LGBTQ+ youth have found support and resources to combat their marginalization is within fandoms for Japanese and Korean media. My ongoing ethnographic research into Asian media fandom in Australia uncovers how these media produce new sexual imaginaries and gendered knowledge with emancipatory affects among a broad spectrum of LGBTQ+ youth.

Dr Haoran Ren is an ARC DECRA Fellow at Macquarie University. His nanophotonic research aims to develop advanced optical materials and nanotechnology for both fundamental light-matter interactions and broad photonic applications. Dr Ren received a PhD from Swinburne University of Technology in 2017. He was a postdoc at RMIT University from 2017 to 2018. In 2018, Dr Ren won a Victoria Fellowship to visit the CNRS in France. In 2019, Dr Ren was awarded a Humboldt Postdoctoral Research Fellowship and moved his research to LMU Munich in Germany. In December 2020, he started a MQRF at Macquarie University.

**Presentation abstract: Metafibre optics**

My nanophotonics research, based on fundamental physics, aims to develop new technologies to address global challenges. I will present our breakthrough in the use of ultrathin flat optics to control the output of optical fibres. I will introduce an entirely new metafibre concept based on the frontier laser fabrication technology, through which we have functionalised commercial optical fibres with ultrathin and multi-functional metasurfaces. It opens an exciting new way to significantly shrink the bulky size of conventional free-space optics for all-on-fibre light manipulation, having great potential to make world-changing impact on endoscopy imaging, fibre-optic communications, fibre lasers and sensors.
Dr Kelly Miles is a research fellow in the multidisciplinary ECHO Lab in MU Hearing. Her research program explores the detection and prediction of communication breakdowns with a focus on social interactions and how people with hearing loss navigate communication challenges. Her approach to research is highly disciplinary, linking hearing science and acoustics with human movement and cognitive science. She received her Honours degree (First Class) and PhD at Macquarie University. Kelly has worked with the National Acoustic Laboratories and various laboratories within Macquarie University to enrich our understanding of human interactions and advance innovation and intervention surrounding communication breakdowns.

**Presentation abstract: Predicting communication breakdown during social interactions**

Fundamental to conversation is navigating when communication is compromised and breaks down. Critically, repeated communication breakdowns can lead to poor quality of life, and in extreme instances can even be fatal. My research program focuses on predicting communication breakdowns and detecting and modelling when mutual understanding may be at risk. I use state-of-the-art technologies including eye and motion tracking to see how people “sync up” while talking in simulated 3D acoustic environments. My research program aims to fuel interventions and innovation to prevent communication breakdowns which will positively impact the community on a global scale.

Dr Madelyne Bisby is a Postdoctoral Research Fellow and Clinical Psychologist in the School of Psychological Sciences. By integrating her background in developmental neuroscience with clinical trial research, Madelyne’s research explores how and why psychological treatments are effective. Her current research focuses on developing and evaluating brief online treatments for anxiety and depression. Madelyne co-hosts the podcast “Science of Therapy” and can be found on Twitter (@MadelyneBisby).

**Presentation abstract: The promise of online single-session treatments for anxiety and depression**

Anxiety and depression are common and costly, yet many individuals cannot access evidence-based treatments, or dropout from treatment. One factor which contributes to dropout is the burden of treatment itself: existing treatments require people to put aside several hours a week for several months. However, many people report only wanting one session of treatment with a psychologist, and single-session therapy results in symptom improvements in face-to-face settings. My research builds on this existing literature by developing effective, online single-session treatments for anxiety and depression that are more accessible and cost-effective than existing treatments.
Dr John Burn completed a Science degree many years ago and has been teaching science for more than 35 years. He began Egyptology as a hobby but got hooked. After a few seasons in Egypt, a doctorate was inevitable. Combining his degree in environmental science with his masters in Egyptian Art, his PhD attempted to link changing climatic events with changes to the tomb decoration repertoire of Old Kingdom tombs. The thesis presents a developing environmental narrative portrayed on the tomb walls.

**Presentation abstract: The A.R.I.D. Hypothesis**

While land may experience a drought; can we say the same about a river? Applying ecological analyses to riverine studies, a new interpretation of Old Kingdom climate change was proposed advocating a new environmental “norm” at this time. The themes of tomb decorations produced at this time were investigated statistically to see if an environmental narrative was unfolding as the artists were affected by this change. Archaeological evidence was then utilised to study the culture in order to corroborate this proposed narrative so as to identify the resilience of the Egyptian population at this time.

Dr Margo Lecompte-Van Poucke obtained a PhD from Macquarie University in 2019 through the Macquarie Research Excellence Scholarship (MQRES) scheme. Her thesis was titled: ‘Power and ideology in the New Caledonian independence debate: A pragma-functional approach to Critical Discourse Analysis’. Margo is a Linguist, with a background in field linguistics, and a Sessional Teaching Academic at Macquarie University. Her research is highly interdisciplinary and focuses on (critical) discourse analysis, systemic functional linguistics, argumentation theory, semantics, and social media communication. She is particularly interested in investigating the impact of power and ideology on meaning-making practices within different cultural and other contexts.

**Presentation title: Damaging Lockdowns: Australian Doom Discourse on Reddit**

Due to the COVID-19 pandemic, individual consumption of online news increased, leading to doom-scrolling. This behaviour may have a negative impact on well-being and increase exposure to misinformation. My research explores how Redditors construct their own COVID-19 reality within the comment threads of the public subreddits r/LockdownSkepticismAU and r/LockdownSkepticismUS through a critical discourse analysis. Doomers tend to compensate a perceived loss of agency by overanalysing events and decisions related to COVID-19, and their arguments are often based on cognitive bias. It is hoped that further research on doom discourse and its effects may help improve social interactions between SNS users.
Dr Ilya Fomin has been working in Macquarie University since 2018. He develops codes to solve big data problems in geophysics in collaboration with Geoscience Australia, De Beers and research institutions. His background includes a PhD in computational fluid dynamics (ETH Zürich) after he graduated in petrology from Lomonosov MSU. Ilya’s scope of professional interests includes deep optimisation and tuning of the existing algorithms and creation of a state-of-the-art multi-technique MCMC driver to process the data. He is keen to apply his skills and experience to problems outside geophysics. His hobbies include hiking, caving and playing the guitar.

**Presentation abstract: Using MCMC to reveal the deep Earth structures**

Our software extracts geological information (thicknesses and properties of the crustal layers and mantle) in 3D from the available geophysical observations. We applied it in Australia, Africa, Canada and we are going to use it for Antarctica.

The main advantage compared to the “usual” approaches is the ability to combine various data sources (gravity fields, seismics etc) to derive a self-consistent model fitting signals with sensitivities to different features. We achieve it using Markov chains Monte-Carlo, a framework to explore the parameters satisfying complicated mathematical dependencies. Very different scientific and industrial problems can be tackled with our computational framework.

Dr Rebecca Kuhnert completed her PhD in developmental psychology at the University of Sydney in 2016. She worked in the NGO sector focusing on youth mental health and suicide prevention before joining Macquarie University in 2020 as a Postdoctoral Researcher. Her research is focused on developing a school-based mental health screening survey for primary and secondary students, and identifying different pathways to care for students identified through screening as needing additional support for their mental health.

**Presentation abstract: Youth mental health screening in schools**

Emotional disorders affect up to 15% of Australian youth and produce some of the strongest life impairment, yet only a small proportion of those affected reach any health service. Universal mental health screening is a method by which young people can be quickly assessed and linked to appropriate health services as needed. Schools provide an ideal environment through which to do this - however, universal mental health screening has received little scientific evaluation and even less application in Australian schools. My research aims to develop a brief online evidence-based, freely available screening tool that could be delivered to Australian students.
**Presenter Bios and Abstracts**

**Dr Matteo Malavasi** is a Postdoctoral Research Fellow in the Centre for Risk Analytics at Macquarie Business School. Matteo holds a PhD in Analytic for Business from the University of Bergamo (XXXI Cycle) in cotutelle with Macquarie University, Australia. His research focuses on financial mathematics, applied probability and computational methods for economics and finance, including risk management, cyber risk, applications of stochastic orderings to portfolio selection problems, and environmental economics. Matteo is a research fellow on the projects “Developing a Decision Tool for Customers Factoring in Optimal Leasing Solutions and Carbon Emissions” in partnership with Toyota Fleet Management, and “Quantification of Cyber Risk and Its Driving Risk Factors”, in partnership with Optus Macquarie University Cyber Security Hub.

**Presentation abstract: Better Understanding and Managing Cyber Risks**

In recent years, more and more companies have been hacked, exposed to system failures, ransomware attacks or other severe cyber-related threats. My research is about quantifying cyber risk, in particular modelling the occurrence and magnitude of losses from cyber events. I use advanced techniques from statistics and data science to investigate the driving factors of cyber risks, and how statistical features of cyber losses affect insurance and risk management. My findings are extremely important for companies, policy makers, and regulators, and provide important insights for informed decision-making on mitigation strategies and risk management processes to reduce the risk of cyberattacks.

**Dr Poon Leung** is a Lecturer in the Department of Actuarial Studies and Business Analytics at Macquarie University (MQU), and has held this position for two years. He is the current unit convenor of ACST1001 – Finance 1A, a large-cohort, first-year unit, and has developed a variety of digital educational content. He is also currently working on a self-studied mathematics course targeted at MQU undergraduate students. His research interests are around technology use in higher education, and technology integration for online education.

**Presentation abstract: Assessing the Impact of Lecture Recordings**

Lecture recordings are a very useful tool for pedagogical practice in tertiary education. The purpose of this study is to use a quantitative approach to measure the impact of using lecture recordings for student learning. Our findings indicate that the usage of recordings is positively related to the academic performance. Our results also demonstrate that the lowest performing decile of students have less motivation to use the recorded videos and additional resources might need to be provided to improve their learning experience.
**Presenter Bios and Abstracts**

**Dr Sheemal Kumar** is a Postdoctoral Research Fellow in Dr. Maciej Maselko’s lab in Applied BioSciences. She works on genetic biocontrol of Aedes aegypti mosquitoes, and she is also involved in genetically engineering insects to value added waste management for a circular economy.

*Presentation abstract: Engineering insects as value-added livestock feed with environmental benefits*

Insects, such as the black soldier fly (Hermetia illucens), are emerging platforms gaining worldwide traction for commercial-scale management of organic waste streams. Waste-fed larvae are processed into nutrient-rich livestock feed. We aim to determine the potential of enhancing the properties of insects as feed components by engineering them to produce enzymes to enhance nutrient absorption, treat pathogens without antibiotics, and reduce methane emissions from cattle. We expect to identify several classes of proteins that can be functionally expressed by insects at high levels.

**Dr Fabiola Barba Ponce** is a Research Fellow at the Centre for Risk Analytics and a lecturer at the Global Leadership Program. Her research focuses on behavioural transformation, psychological adjustment to change and skill utilisation. Her current industry-funded research project develops African migrant leadership, social and economic integration through developing regenerative farming and food-related business in regional Victoria and NSW. Fabiola is the founder of Relationswitch, a research-based consultancy specialising in productivity and the psychological changes overlapping work and life. Her research has positioned her as a TEDx speaker, on SBS and valedictorian graduation ceremonies, and on advisory boards.

*Presentation abstract: Refugee background female leadership, regenerative farming and social business creation*

The Food Moves Skills into Migrant Women is an applied research project funded by Ecstra Foundation. In collaboration with Food Next Door Coop, Macquarie Business School and the Co-op Federation this project takes three African women on their journey of developing a regenerative farm- and food-related business. With leadership, financial and business literacy mentorship, the project aims to develop linguistically inclusive learning resources and a culturally sensitive intervention to improve and sustain financial, mental health, social integration of African farmers with refugee backgrounds, while simultaneously addressing the issue of climate change and misused land in regional Victoria and NSW.
Dr Sophia Aharonovich received her BSc in Biochemical Engineering in 2010 from Technion, Israel Institute of Technology. She then completed her MA at the University of Haifa, Israel, using pollen grains and phytoliths as proxy data for environmental reconstructions in the Middle Palaeolithic period. During her candidature, Sophia was involved in over 25 excavations in Israel, dealing with environmental and anthropogenic aspects of archaeological material from the Middle Palaeolithic to the time of the Crusaders. Sophia then came to Macquarie University to undertake her PhD on global palaeoenvironmental reconstructions based on geological biomarkers during the Miocene Period (23–5 million years ago), which she completed in 2019.

Since 2019, Sophia has worked as a scientific archaeologist for the Khirbet el-Rai excavation project run by Macquarie University’s Ancient Israel Program in partnership with The Hebrew University of Jerusalem and the Israel Antiquities Authority. With the financial support of the Wakil family, Sophia developed a unique onsite laboratory for Macquarie University students to work on the analysis of organic residue, pollen, and phytoliths from the Iron Age site.

In 2020, Sophia took up a three-year Postdoctoral Research Fellowship in the Archaeology of Ancient Israel in the Department of History and Archaeology and the Centre of Ancient Cultural Heritage and Environment at Macquarie University, financially supported by the Education Heritage Foundation and by Sir Asher Joel Foundation from 2021.

Dr Kate Churruca is a Research Fellow at the Australian Institute of Health Innovation in the Faculty of Medicine, Health and Human Sciences. She completed her PhD in 2016 at Western Sydney University; her thesis drew upon feminist and poststructural theories to explore women’s experiences of bulimia. Since starting at Macquarie University, Kate has become an experienced health services researcher. Her research projects span hospital, general practice and residential aged care and utilise complexity science to understand and improve healthcare delivery.

Kate is the recipient of a National Health and Medical Research Council Investigator Grant (2022-2026) on understanding and improving safety culture in residential aged care facilities. She has published 66 peer-reviewed journal articles and supervised six HDR students to completion.

The 2021 ECR Showcase Committee is supported by the ECR Network Team, including Dr Megan Brewer, ECR Network Coordinator and Emily Brennan, Project Manager, Researcher Development and Research Performance.
Dr Cynthia Isley works with Macquarie University’s DustSafe program, helping people across Australia understand the contaminants in their home and how to make their home environment a healthier place to live. Cynthia’s work has also included environmental studies across the Pacific Islands, researching air quality, health impacts, dust, soil and bees.

Dr Mahdi Vesal is an associate lecturer in Marketing at Macquarie University. Mahdi’s research interests include B2B marketing strategy, supply chains, and environmental sustainability. His research attempts to provide new insights into how manufacturers can leverage their supply chain partners’ resources to achieve greater innovation and operate in a more environmentally sustainable manner.

Dr Matt Withers is a research fellow within the Discipline of Sociology at Macquarie University. His research addresses the developmental implications of temporary labour migration and remittances throughout the Indo-Pacific region, with an emphasis on South Asia and Pacific Island Countries. His current project examines how temporary labour migration interfaces with the work and care arrangements of transnational migrant households, using the concepts of ‘decent wages’ and ‘decent care’ to frame the need for improved labour governance and gender-equitable policymaking in support of sustainable development outcomes. He is the author of Sri Lanka’s Remittance Economy: A Multiscalar Analysis of Migration-Underdevelopment.

Dr Colin (Jinhui) Zhang is a Lecturer in Department of Actuarial studies and Business Analytics. He has years of experience in delivering lectures for a broad range of Actuarial and Applied Finance units. Dr. Zhang holds a Bachelor of Commerce (Actuarial Studies), a Bachelor of Commerce (First class Honours in Actuarial studies) as well as a Degree of Doctor of Philosophy (Applied Finance and Actuarial Studies) from Macquarie University. His research area includes, life cycle model, optimal control, financial strategy and derivative pricing.
Sponsors

The ECR Showcase Committee thanks our sponsors for supporting ECRs at Macquarie by generously contributing to the 2021 ECR Showcase prize funds.

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The Centre of Applied History (CAH)

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Judging Panel

Professor Michael Gillings – Department of Biological Sciences
Angie Kelly – Editor, The Lighthouse
Dr Ross McLennan – Director, Research Services
Professor Ronika Power – Director, Centre for Ancient Cultural Heritage and Environment

Events and Protocol Team

Dannielle Hennah – Events Content & Protocol Manager
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Kylie Perry – Events Content Specialist
Leanne Hunter – Director, Events and Domestic Protocol

Guest Speakers

Professor Sakkie Pretorius – DVC, Research
Professor Lesley Hughes – PVC, Research Integrity and Development

Additional thanks go to the ECR Showcase Presenters for sharing their fascinating research and the audience members for celebrating ECR success at Macquarie University.