MONASH University

MONASH SCIENCE

Faculty of Science

Awards

2022

Welcome

I am delighted to welcome you to the Faculty of Science Awards 2022 – the first time since 2019 that we are celebrating the event face-to-face and on campus.

The Awards are key annual event on the Faculty calendar and I have been deeply impressed by the innovation and commitment of staff. These Awards are a celebration of your collective achievements, and work and study through these challenging times.

The Faculty of Science is a vibrant and dynamic learning community – made so by the passion and commitment of its staff and students.

There is much to be honoured and celebrated at today's event and I look forward to sharing this important occasion with you.

Thank you for your support.

Professor Jordan Nash
Dean, Faculty of Science

Science Faculty Awards

1. Research Excellence by an Early Career Researcher

This Award recognises research excellence by early career researchers who are within five years of the start of their research careers.

The Winner is: **Dr Scarlett Howard** **Commendation:** **Dr Andy Casey**

The Nominees are:

Dr Scarlett Howard, School of Biological Sciences

Dr Howard completed her PhD at RMIT University in 2019, for which she received awards for outstanding research, media communication and team excellence in research. Three years post completion, Dr Howard started the Ecology and Bio-inspiration Research Group (ICEB) at Monash University and currently works as the Head of Integrative Cognition. Her primary area of focus is the capacity of miniature insect brains to perform complex tasks, learn rules and acquire abstract concepts. Dr Howard recently discovered the ability of honeybees to differentiate between odd and even numbers. She was awarded the L'Oreal-UNESCO for Women in Science Young Talents French Award and volunteers her time to facilitate public talks, interviews and media communication training.

Dr Gregory Walter, School of Biological Sciences

Dr Walter was awarded a PhD in Ecology and Evolution at the University of Queensland in 2016 which investigated how natural selection enables the creation of new species. This research led to second-author publications in PNAS, Evolution, New Phytologist and Molecular Ecology and provided a basis for PhD research by other students. Since completion of his studies, Dr Walter has published first author papers in New Phytologist, American Naturalist, Ecology, Evolution Letters and Evolution, secured ARC funding and conducted large field experiments in Italy while undertaking a research fellowship with the University of Bristol. His primary area of focus uses quantitative genetics in large-scale field, glasshouse and laboratory experiments to understand the mechanisms which help populations persist in novel environments. Dr Walter has a strong ability to conduct experiments in challenging situations while collaborating with peers and supervising postgraduate students.

Dr Cameron L Bentley, School of Chemistry

Dr Bentley obtained his PhD from Monash University in 2015 and subsequently worked as a senior research fellow at the University of Warwick, during which he was supported by Endeavour, Marie Skłodowska-Curie and Ramsay Memorial Fellowships. Currently, Dr Bentley is an ARC DECRA Fellow at Monash University, with his main area of research focusing on combining cutting-edge electrochemical imaging techniques with co-located microscopy/spectroscopy to solve contemporary structure–function problems in electromaterials science. Dr Bentley has published over fifty peer-reviewed articles since 2013. He was awarded the Early Career Analytical Electrochemistry Prize of ISE Division 1 from the International Society of Electrochemistry and is a Member of the Early Career Advisory Board of peer-reviewed journal, ChemElectroChem (Wiley).

Dr Karolina Matuszek, School of Chemistry

Dr Matuszek completed her PhD in the field of Chemical Technology from Silesian University of Technology, with a focus on the design and characterisation of Brønsted and Lewis acidic ionic liquids which serve as highly active catalysts for industrially important chemical reactions. She began her postdoctoral research in 2017 with Professor Doug MacFarlane at Monash University investigating renewable energy storage technologies and phase change materials (PCMs). Currently, Dr Matuszek is lead researcher on the Linkage Project involving Australian energy company Energy Storage P/L, which involves developing a portfolio of intermediate temperature PCMs. She has strong collaborations with researchers globally. Dr Matuszek has published 33 peer-reviewed papers and 6 patents, including a paper in Science and an invited perspective article in Green Chemistry.

Dr Andrew Gunn, School of Earth, Atmosphere and Environment

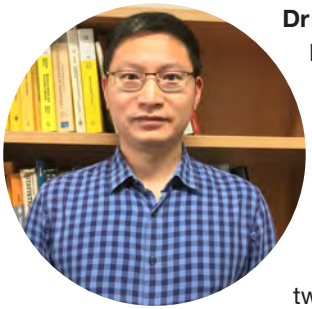
Dr Gunn received his PhD in Geomorphology from the University of Pennsylvania in 2021, after which he undertook a postdoctoral position at Stanford University. Following this, Dr Gunn joined the School of Earth, Atmosphere and Environment at Monash University as a lecturer in 2022. Dr Gunn is a geomorphologist primarily interested in how landscapes form and change due to climate and tectonics with a focus on investigating the climate conditions of inaccessible and unusual environments through their topography both on Earth and other bodies in our Solar System. Dr. Gunn has made major advancements in his field by incorporating new cross-disciplinary methods from mathematics, physics, and computer science into the study of geosciences, which he also encourages his Monash students to incorporate in their projects. This year, Dr. Gunn's research outputs have been featured in Nature Astronomy, Nature Communications and Geology, including novel reconstructions of Mars' climate history, constraining the surface climate of Titan and Venus using satellite imagery of sand dunes, and identifying new land-atmosphere feedbacks that influence desertification on Earth.

Dr Laura Miller, School of Earth, Atmosphere and Environment

Dr Miller graduated from Imperial College London with a first class honours Masters in Science (Geology) in 2015. She then went on to complete her PhD, funded by the Chappell and White Scholarship, at the Research School of Earth Sciences at the Australian National University in 2020. During this time, she was also the elected student representative for all disciplines on the User-Advisory-Committee of the Australian Synchrotron from 2018-2019. Dr Miller is a geochemist whose primary research focus is using chemical signatures to understand evolution of the Earth. She recently identified the process which led to the birth of Hawaiian volcanoes and was published in Nature Communications. Dr Miller currently works as a Research Fellow within the School of Earth, Atmosphere and Environment at Monash University. Her work represents a cross-disciplinary combination of synchrotron science and in-depth geochemical analyses. This practice has enabled her to link atomic scale properties to global scale terrestrial processes.

Dr Ngan Le, School of Mathematics

Despite still being at an early stage of her career, Dr Ngan Le has developed an impressive research record. She has made impactful contributions to mathematics encompassing both the theoretical analysis of challenging models and their numerical approximation. This field of research has required Dr Le to develop skills in several multi-disciplinary topics from probability to analysis and computational mathematics. She has published a number of articles in top-ranking journals and has received external funding from several sources, including as a CI on two ARC Discovery projects.



Dr Zongzheng Zhou, School of Mathematics

Dr Zhou was awarded his PhD in Mathematics in 2016 from Monash University. Upon completion, Dr Zhou worked as a research fellow at the University of Melbourne and is currently undertaking a research fellowship with the School of Mathematical Sciences at Monash University. He has published 15 research papers, with his current work focusing on the phase transitions of classical statistical-mechanical models on high-dimensional finite systems. This investigation has clarified several long-standing debates on the fundamental theory of critical phenomena and led to six publications, including two in Physical Review Letters.

Dr Andy Casey, School of Physics and Astronomy

Dr Casey received his PhD in Astronomy and Astrophysics from the Australian National University, during which he received the Australian Prime Minister's Endeavor Award. After working as a post-doctoral research fellow at the University of Cambridge, Dr Casey began a senior research fellowship at Monash University. His primary area of focus involves investigating the approximately 1% of stars that should not exist based on current scientific understanding. The very existence of these stars represents some of the most significant gaps in current knowledge of stellar astrophysics. Dr Casey's pioneering application of machine learning to investigate this unique problem is recognised as a major advancement in stellar astrophysics. Dr Casey has also applied his expertise in machine learning and computational data analysis across a wide range of disciplines including: engineering (aerospace), biology, statistics, optimisation, Bayesian inference and artificial intelligence.

2. Faculty of Science Award for Research Impact (Economic and Social Impact)

This award recognises excellence by researchers who have achieved, or are currently achieving, outstanding economic and/or societal impacts.

The Winner is: Associate Professor Vanessa Wong

The Nominees are:

Associate Professor Vanessa Wong, School of Earth, Atmosphere and Environment

Associate Professor Wong, who also acts as the President of Soil Science Australia (SSA), has made a significant contribution alongside her SSA colleagues to shaping the direction of government strategy and policy in the development and implementation of the National Soil Strategy. SSA plays a key role in developing greater understanding and capacity of soil science through the delivery of professional development activities. These activities ensure land managers have access to the best available soil science training and research and concurrently, best practice on-ground land management activities are communicated to researchers to better inform and contribute to research directions. This process ensures that the latest research and best practice work hand-in-hand for the sustainable management of soils, a non-renewable resource, now and into the future.

Dr Hasan Fallahgoul, School of Mathematics

Dr Fallahgoul is an expert on machine learning, computational economics, financial econometrics, and social finance. His achievements are internationally acclaimed within the financial technology and machine learning sectors. Dr Fallahgoul is on the editorial board of the Journal of Financial Data Science and has presented at major conferences in France, Switzerland, and Singapore. His research papers have been featured in various media outlets including RIAIntel and ausbiz,. He has also published work in journals focused on econo-metrics, quantitative finance, and numerical analysis, including the Journal of Financial Econometrics, Annals of Operations Research, Computational Economics, and Quantitative Finance. Dr Fallahgoul has authored a novel, accepted and published 15 papers and been awarded a European research grant.

3. Faculty of Science Award for Outstanding Contributions by a Graduate Research Student to the Life of the Faculty/School Community

This Award celebrates outstanding contribution/s to the life of the Faculty of Science/School community, by individuals or teams of graduate research students within the Faculty of Science, that are above and beyond their own research and the expectations of a postgraduate student.

The Winners are: **Emily Thompson and Ellena Moskovsky** **Commendation:** **Melinda Krebsz**

The Nominees are:

Emily Thompson and Ellena Moskovsky, School of Mathematics

Emily and Ellena have been nominated for their immense contribution to the cultural and social life of the School of Mathematics HDR community. Through the creation of diverse mentoring programs, workshops, participation on multiple committees and social event organisation, they have contributed to making the School of Mathematics a more inclusive and welcoming place.

Melinda Krebsz, School of Chemistry

Melinda has been nominated not only for her contribution to the School of Chemistry, but also University life. Melinda is currently Vice-President of the Monash Graduate Association (MGA). She is also an advisory board member of the STEMM Women Academic Network and represents students on the Athena SWAN Committee. Her dedication to these roles has benefited the lives and careers of many of her fellow students.

Mrudula Guggilla

Mrudula has been nominated for her involvement as Treasurer and President of the Monash University Postgraduate Association (MUPA) Malaysia, where she was highly influential in improving conditions for a number of students. She was also a representative on the Student Academic Progress Advisory Group, and acted as Head of Activities for the Monash Science Symposium during 2020-2021.

4. Norris Family Award for Outstanding Author Contribution by a Graduate Research Student to a published 'Quality' Scholarly Research Output

This award recognises an outstanding contribution by a graduate research student to the authorship of a quality scholarly research output (ie. Book, Book Chapter, Journal Article, Conference proceeding

The Winner is: **Ettore Camerlenghi** **Commendation:** **Qile Li**

The Nominees are:

Ettore Camerlenghi, School of Biological Sciences

Publication: 'Cooperative Breeding and the Emergence of Multilevel Societies in Birds' in *Ecology Letters*

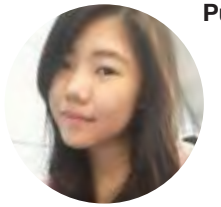
Through a combination of a creative literature review and documented field observations of marked songbirds, Ettore has revealed that Superb Fairy Wrens exhibit a much more complex social system than previously understood. His research has opened the possibility to other cooperative breeding bird species exhibiting similar social structures, which has generated substantial attention from the both the scientific community and media more broadly. These findings can also assist in investigating human social evolution through the ages.

Qile Li, School of Physics and Astronomy

Publication: Large Magnetic Gap in a Designer Ferromagnet-Topological Insulator-Ferromagnet Heterostructure' in *Advanced Materials.*

Information technology currently consumes 8% of global electricity usage, with the energy efficiency of current electronics limited by the dissipation of heat due to electron scattering. In seeking to develop new electronics technology which is able to consumes less energy, Qile has discovered a promising platform for realising ultra-low energy electronics through the process of sandwiching a topological insulator between two magnets. This yields an electrical device where the edges of the material conduct electrical currents perfectly, similar to a superconductor. These findings offer potential solutions to ultra-low energy or even lossless device development.

Kar-Yan Su, School of Science Malaysia



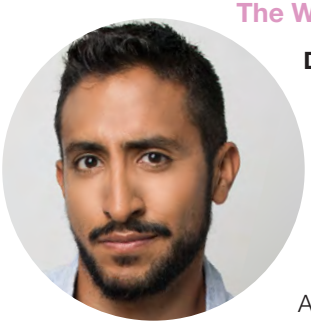
Publication: 'Fourier Transform Infrared Spectroscopy as a Cancer Screening and Diagnostic Tool: A Review and Prospects' in *Cancers*.

Kar-Yan reviewed studies investigating the application of Fourier Transform Infrared Spectroscopy (FTIR) in the screening and diagnostic applications for various diseases, in order to investigate the potential clinical applications of FTIR using various types of biological materials for cancer. FTIR was revealed to be more simple, rapid, accurate, inexpensive, non-destructive and suitable for automation compared to existing invasive biopsy methods and thus could potentially improve clinical decision-making and patient outcomes by detecting biochemical changes in patients at the molecular level.

5. Mollie Holman Doctoral Medal for Science

The Mollie Holman Medal was established in 1998 and is named after the late pioneering physiologist, Emeritus Professor Mollie Holman AO, in honour of her significant contributions to science and education. Each year, a maximum of 10 medals are awarded to doctoral students, who have fulfilled their degree requirements and presented their faculty's best thesis of the year.

The Winner is:



Dr Fernando Gordillo Altamirano, School of Biological Sciences

Thesis title: 'Bacteriophage Therapy Against Multidrug-Resistant *Acinetobacter baumannii* Infections.'

Examiner comment: "I congratulate the candidate on writing an outstanding thesis, among the finest I have read..."

Examiner comment: "(The thesis) was a joy to read, with clear and logical explanations for the extensive series of experiments characterising phage and antibiotic activity against Acinetobacter baumannii both in vitro and in vivo."

6. Vice-Chancellor's Commendation for Thesis Excellence

The Vice-Chancellor's Commendation for Thesis Excellence was established to recognise and reward outstanding doctoral and research master's thesis excellence. Each year, a maximum of five commendations are awarded to doctoral and/or research masters students, who have fulfilled their degree requirements and have presented as outstanding contributors to research by their faculty.

The Winner is:

Dr Nikhil Sarin, School of Physics and Astronomy

Thesis title: 'The Observational Signatures of Nascent Neutron Stars.'

Examiner comment: "The thesis research is very original, extremely timely and very relevant for the field of Gravitational-Wave astrophysics…My overall assessment of Nikhil's thesis is 'exceptional'."

Examiner comment: "Of all the graduate theses I have read over the years, this one stands out as one of the absolute best...I have no doubt Mr Sarin is destined for great things in this field."

7. Dean's Honours List

This award celebrates the achievements of our top students.

The Awardees are:

- **Alexander Paul Collins**
- **Pu Ti Dai**
- **Eva Doukas**
- **Lachlan Harry Durra**
- **Madeline Gabrielle Flinn**
- **Madison Geeson**
- **Lucas Rik Gruwez**
- **Mason Chuen-Lai Lam**
- **Vladimir Mikho**
- **Jamie Andrew Noseda**
- **Joshua Nung**
- **Keith Jin Kang Pang**
- **Preet Jignesh Patel**
- **Aram Joseph Perez**
- **Blake Carl Russell Preusker**
- **James Joshua Pringle**
- **Julia Tan**
- **Matthew David Van Wijk**
- **Nicholas Wu**
- **Jonathan Zuk**

8. Dean's Excellence in Teaching Award

This Award recognises and celebrates outstanding contributions to the Faculty of Science teaching programs made by individuals or teams. Awardees have demonstrated outstanding approaches to teaching and/or the support of learning that influences, motivates and inspires students, excellent development of curricula, resources or services reflecting a command of the field, high-quality evaluation of practises that lead to improvements in teaching and learning, and influential innovation, leadership or scholarship that shifts the dial on teaching, learning or the student experience.

The Winners are:

Individual category: Associate Professor Daniel Mathews (School of Mathematics)

Dan's teaching of Mathematics has been of a consistently excellent standard, has fostered student development by stimulating curiosity and independence, and has been recognised by excellent SETU results over a sustained period. He has used a wide range of teaching materials and developed his own textbook for students to use. Online polling, interactive teaching and varied learning opportunities for students have all contributed to Dan's excellent teaching in the Faculty of Science.

Team category: Dr Sara Kyne (School of Chemistry), Dr Toby Bell, Dr Victoria Blair, Dr Joel Hooper and Dr Shah (Jamileh) Taghavi

The team led by Dr Sara Kyne has made an outstanding contribution to improvement of the first-year chemistry student experience. They have used an evidence-based systematic approach, to improve the content delivery and supporting laboratory program to a diverse cohort of about 1400 students each semester. Their commitment to supporting learning, the development of new resources, evaluating learning outcomes and innovation within the first-year program was exemplified during COVID times and includes online simulations and personalised feedback to assist student online learning.

9. Dean's Award for Innovation in Learning and Teaching

This Award recognises outstanding innovation driven by technologies or curriculum which improves student engagement, teaching, learning or assessment. Nomination is open to all academic staff, professional staff and teaching associates of the Faculty of Science. Awardees have demonstrated outstanding approaches to teaching and learning through curriculum or technological innovation, development of curricular, resources or services, evaluation practises that bring positive change, innovation, leadership, or scholarship.

The Winners are:

Individual category: Associate Professor David Turner (School of Chemistry)

Associate Professor David Turner is one of the School of Chemistry's most outstanding educators. He has a real passion for teaching excellence and students enjoy his engaging manner and innovative delivery. David has driven innovations in online teaching and his pedagogical approaches have allowed for superior and more effective delivery of content.

Team category: Professor Philip J Marriott (School of Chemistry), Dr Yada Nolvachai, Dr Shezmin Ismail and Riley Herron

During COVID-19 when face-to-face laboratory sessions were not possible, the team led by Professor Philip Marriott developed an innovative cutting-edge method for delivering hands-on practical skills for use within a third-year analytical chemistry unit and a Masters unit. The team's innovation in this area has considerably enhanced the teaching and learning outcomes of the student cohort and resulted in them acquiring hands-on skills on the instrument that they can take directly into the workforce.

10. Dean's Citation for Outstanding Contribution to Student Learning

This Award recognises and celebrates outstanding contributions to the Faculty of Science teaching programs made by early career academics or professional staff, as individuals or teams

The Winner is:

Individual category: Dr Chris Lee (School of Biological Sciences)

Chris has made an outstanding contribution to the School of Biological Sciences teaching program over the last three years, particularly in two field-camp units. In 2021 he converted field-based projects to an innovative and highly successful 'virtual field camp' experience, and in 2022 successfully re-established and led field-based teaching of Australian vegetation ecology, enabling high student academic performance and receiving excellent SETU evaluation scores in both cases. His nomination displayed his expertise and dedication to developing curricula, resources and services that reflect his command of the field of teaching botany.

11. Faculty of Science Student Impact Awards

These awards recognise students for efforts beyond academic achievement by contributing to supporting their fellow students.

- **The Academic Culture Award** recognises a student's special efforts to create programs to support fellow students academically or collaborated with staff to improve/design curriculum assessment.
  Winner: Michael Gitonbel
  Michael has been a leader in the Peer-Assisted Study Sessions in first-year chemistry and has also made significant contributions to learning by his peers in genetics and physiology
- **The Young Science Leader Award** recognises students who have actively participated or promoted social inclusion initiatives including social justice, enterprise and efforts towards charitable or not-for-profit groups.
  Winner: Emily Thompson
  Emily has been the driving force behind the successful Gender Equity in Mathematics program and has made a major contribution to social inclusion and social justice in mathematics in the Faculty of Science.

- **The Master Impact Awards in Society** recognises outstanding graduate students who have demonstrated impact in their disciplinary field of environment and sustainability, mathematics, financial mathematics, earth science, physics, astrophysics, or atmospheric science. The student's impact may be in research or for impact on society, through positive outcomes led by the student to advance an issue relating to the community, a social good program, a NPO/NGO, industry or government.
  Winner: Tommaso Pretto
  Tommaso formed the environmental NGO '2hands Ancona' to fight marine debris and pollution while a student within the Master of Environment and Sustainability and has demonstrated the principles of sustainability his course promotes.

- **The Community Spirit Award** recognises students for outstanding contributions to the students and staff community in the Faculty of Science. This may be for extracurricular or program-based work that creates a positive shift and sense of collegiality for peers and or educators.
  Winners:
  The Chemistry Honours and Miscellaneous Postgraduate Society (CHAMPS).
  Team includes: Nicholas Kyratzis, Kaycee Low, Adam Kennedy, Yue Gao, Chris Hill, Benjamin Husselbee, Nathan Sos, Ryan Huo, Elizabeth Phua, Ayden Zorkau, Dilini Bopitiya and Daniel Van Zeil
  The CHAMPS team has sustained and thoroughly engaged the honours and postgraduate community in the School of Chemistry over the last two years and has organised numerous activities to help students connect and be supported during the period impacted by Covid.

12. Award for Excellence in Postgraduate Research Supervision

This Award recognises research supervisors who have undertaken exceptional and unique supervision practices to benefit and enrich the experiences of their research students.

The Winner is:

Associate Professor Alistair Evans

The Nominees are:

Associate Professor Alistair Evans

Associate Professor Alistair Evans is a zoologist and palaeontologist, with expertise in the evolution, biomechanics and development of mammals. He takes an active role in the supervision of students and has supervised 16 PhD and Masters projects in total, while currently supervising nine postgraduate students. Associate Professor Evans runs an extremely broad research program, which enables students to work across disciplines from palaeontology to embryology and inspire dynamic and innovative research. He has been a tireless advocate of funding and industry experience for HDR students, playing an instrumental role in the success of a partnership forged between Monash University and Museums Victoria. His rigorous and supportive approach to research and supervision gives students life skills in critical thinking, teamwork and outreach, which is evidenced by his students successfully securing permanent, fellowship and postdoctoral positions in science.

Associate Professor Paul Lasky

Associate Professor Paul Lasky is an exceptional postgraduate supervisor whose energetic, engaging and nurturing mentorship guided four PhD students through the pandemic years, enabling them to not only graduate but secure postdoctoral positions both domestically and internationally. His approach as mentor, supervisor, collaborator and role model facilitates the scientific and academic growth of students, enabling them to eventually become confident, independent researchers. The effectiveness of Associate Professor Lasky's approach is evident through the quality of the scientific output of his students, many of whom have won prizes, awards and secured highly competitive postdoctoral fellowships. He is also active in outreach and encourages HDR students to become involved in such activities, with two students under his supervision publishing children's science books during the pandemic.

13. Dean's Award for Excellence in Honours Supervision

This Award recognises supervisors who have undertaken exceptional and unique supervision practices to benefit and enrich the experiences of their honours students.

The Winner is:

Dr Patrick Tan Hock Siew (School of Science, Malaysia)

Patrick has been supervising one of the largest cohort of Honours students at the School of Science, Malaysia since he joined Monash University in 2019. The students under his supervision have shown outstanding achievements and have benefitted from his approach to develop and support them as independent thinkers, innovators and researchers.

14. Science Dean's Award for Exceptional Performance by Professional Staff

The Faculty of Science Dean's Award for Exceptional Performance by Professional Staff recognises and rewards individuals and teams who have made an outstanding contribution to Monash.

The Winner is:

The Faculty of Science Graduate Research team

The Nominees are:

The Faculty of Science Graduate Research team:
Dr Anh Chau, Johanna Laurent and Steven Guo
Nominated by: Professor Peter Betts, Associate Dean Graduate Research

John Chan, Senior Research & Graduate Research Coordinator, School of Mathematics
Nominated by: Professor Warwick Tucker, Head of School, Mathematics

Kim Aitken, Manager Student Recruitment (Domestic), Faculty of Science
Nominated by: Michaela Gabbe, Senior Student Recruitment Officer, Faculty of Science

Michelle Meilak, School of Biological Sciences
Nominated by: Professor Craig White, Head of School, Biological Sciences

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