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**ROYAL**  
**SOCIETY**  
NEW SOUTH WALES

**The Bulletin 493**  
**May 2025**

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### **A message from the President**

Dear <<First Name>> <<Last Name>>

This is my first column, as President of the Royal Society of New South Wales, for the Bulletin. I am honoured to take on the role. I thank the outgoing President, Dr Susan Pond, and Secretary, Dr Donald Hector, for their contributions to the Society and the entire Council for their time and work. I am delighted that Emeritus Professor Lindsay Botten has agreed to be Vice-President and express my thanks to him for his work previously as Webmaster. I also welcome as new office-bearers, Emeritus Professor Trevor Brown, as the Secretary, and Emeritus Professor Graham Town, as the Webmaster. Two new members have joined the Council, Dr Sarah Jones and Professor Rosalind Croucher as general members. Ms Ann Fieldhouse is representing the Southern Highlands Branch on Council, Professor Vicki Bitsika the New England North West Branch, and Professor Lewis Bizo the Western Branch. Adjunct Professor Robert Whittaker will continue to represent the Hunter Branch.



Over the last year, the Society, and in particular the Executive and Council, have focused on strategic directions for the future. As the long and chequered history of the Society shows, keeping it going has been challenging. We do not have the institutional support given to the Learned Societies. We need to define our niche. Over the last 18 months, we have been engaged in developing a master plan. Five working groups have been set up. Leaders of these groups who are not *ex officio* members will join the Executive Committee.

**Membership Engagement** — We need to expand and diversify our membership and fellowship across all the branches of the Society. The criteria for fellowship have been broadened. I hope we will all seek to recruit fellows and members. Professor Sean Brawley has agreed to lead this working group.

**Activities with Impact** — The Society has a wide range of functions and events, ranging from meetings in Sydney and the branches, the annual dinner, excursions and visits, and a quarterly lunchtime presentation at the Union Club. We are grateful to the Governor of New South Wales for sponsoring Ideas@theHouse and the Annual Forum of RSNSW and the Learned Academies at Government House, Sydney. We must ensure that new Fellows and Members are warmly welcomed to these activities. I will lead this working group, with Debbie Perik as its secretary.

**Effective Communication** — This program seeks to strengthen our ability to share our message through a range of channels, including social media, digital platforms, traditional media, and publications. By improving outreach and engagement, we will amplify the visibility and vibrancy of the Society's work, ensure that our insights and contributions reach a wider audience and increase the attractiveness of membership to a broader cohort. Dr Sarah Jones will lead this working group

**Future Fund** — The Society needs to be financially sustainable. We need sponsorship and longer-term strategic fundraising, donations, and bequests. The Future Fund aims to provide a stable foundation to support our mission in the longer term. Medy Hassan has agreed to chair this Working Group

**Operational Excellence** — This program underpins the full spectrum of the Society's operations by providing the underlying information and enabling IT infrastructure that supports 'back office' and user-facing services that are relied upon by Activities with Impact, Effective Communications, and Membership Engagement. Its current focus is on enhancing the resilience and quality of the Society's operations, refining and developing the back office system to improve outcomes, productivity, and cost efficiency, and ensuring that financial and human resource allocation are planned to meet requirements. Emeritus Professor Lindsay Botten will continue to lead this team.

All these working groups are interrelated, and we may well find that there are synergies, overlapping responsibilities and a need to reshape the groups.

As a volunteer organisation, we can only achieve these goals if our Fellows and Members are active and committed. Your engagement—whether through participation in events, sharing expertise, mentoring, or supporting our initiatives—will be essential to the continued success and impact of the Society. If you believe you could contribute to any of our working groups, I encourage you to get in touch with me or with the group leaders.

There is already a [full program of events](#) which you can view on the website. Professor Sally Cripps will report on the highly engaging and thought-provoking talk by the NSW Chief Scientist and Engineer, Professor Hugh Durrant Whyte, delivered at the Ordinary General Meeting of 2 April on '[Engineering the Future](#)'. On 15 April, Professor Chris Turney addressed a lunchtime meeting at the Union, University and Schools Club on [Antarctica's climate warning for the future](#) and what we can do about it. These are major issues that need the expert views and civilised debate that our Society offers.

I do encourage you to attend face-to-face meetings, both locally and, when possible, at branches. We have a most exciting lineup, both online and face-to-face. The next Ordinary General Meeting (OGM), to be held online on 7 May, will include a presentation by Scientia

Professor Jane McAdam AO, winner of the 2024 RSNSW Award in the Humanities, Philosophy, and the Law, who will speak on '[Rethinking mobility in a changing climate](#).' Our next face-to-face OGM will be held on 4 June at the State Library of NSW when Professors Michael Blumenstein and Nicholas Davis of the University of Technology Sydney will discuss '[AI: the Good, the Bad and the Ugly](#).' The second in this year's series of Ideas@theHouse will take place on the evening of 26 June when the acclaimed bushfire researcher, Professor Jason Sharples of UNSW Canberra, will address issues of '[Extreme wildfires in a warming world](#).'

The Royal Society of NSW stands as a beacon of cross-disciplinary inquiry, where science, evidence, and reason guide our exploration of issues of public importance. The need for civil debate across disagreement has never been greater. We need to engage with issues, recognise well-attested evidence and evaluate impact not just from within one discipline but more broadly. That is not just worthwhile – it is most enjoyable.

Christina Slade FRSN

[President](#)

[Royal Society of NSW](#)

## For your diary

The Society's annual events program is published in the online [Events Calendar](#), which is updated regularly.

- [1331st Ordinary General Meeting and Open Lecture](#) (Wednesday, 7 May 2025, 6.00–7.30 pm AEST, Zoom webinar) *Rethinking Mobility in a Changing Climate*, Scientia Professor Jane McAdam AO FASSA FAAL, School of Law and Justice, UNSW Sydney
- [Southern Highlands Branch Meeting 2025-4](#) (Thursday, 15 May 2025, 6.30–7.30 pm AEDT, RSL Mittagong, Carrington Room), *Rare or Everywhere – Life in a Hostile Universe*, Professor Geraint Lewis FRSN FLSW, Sydney Institute of Astronomy, School of Physics, University of Sydney
- [Hunter Branch Meeting 2025-2](#) (Thursday, 15 May 2025, 6.00–7.00 pm AEST, NEX, Newcastle Exhibition and Convention Centre, 309 Kind Street, Newcastle West), *From Test Tubes to Megawatts: How Research Sparked a Battery Business*, Professor Thomas Nann, Founder and Chief Executive Officer, Allegro Energy, Newcastle.
- [1332nd Ordinary General Meeting and Open Lecture](#) (Wednesday, 4 June 2025, 6.00–7.30 pm AEST, Michael Crouch Room, Mitchell Building, State Library of NSW, Shakespeare Place, Sydney) *AI: the Good, the Bad, and the Ugly*, Professor Michael Blumenstein FRSN FACS, Pro Vice-Chancellor (Business Creation and major Facilities) and Professor Nicholas Davis, Director (Strategy and Operations), Human Technology Institute, University of Technology Sydney
- [Southern Highlands Branch Meeting 2025-5](#) (Thursday, 19 June 2025, 6.30–7.30 pm AEDT, RSL Mittagong, Carrington Room), *The Way We Are*, Dr Hugh Mackay AO FRSN FAPS, Social Psychologist and Researcher
- [Ideas@theHouse: June 2025](#) (Thursday, 26 June 2025, 6.30–8.00 pm AEST, Government House, Sydney (by invitation) and live streaming) *Extreme wildfires in a warming world: insights and challenges*, Professor Jason Sharples FRSN

FTSE, Professor of Bushfire Dynamics and Foundation Director, UNSW  
Bushfire, UNSW Canberra

- [RSNSW Poggendorff Lecture 2025](#) (Wednesday, 2 July 2025, Time TBA, University of Sydney) *Agriculture over the Horizon*, Professor Alex McBratney AM FAA, Professor of Digital Agriculture and Soil Science, University of Sydney

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## News

### Council Elections 2025: announcement of results

At the Society's 158th Annual General Meeting, held on 2 April 2025 in the Michael Crouch Room of the State Library of NSW, the results of the 2025 Council elections were announced.

The election was conducted by electronic ballot over three weeks from noon on 10 March until noon on 31 March.

Some 206 ballots were submitted by 702 eligible voters, corresponding to a return rate of 29.3%.



**Council Elections 2025**  
**Results: 2 April 2025**

#### Procedural Motions

- Approval of Minutes of the 157th Annual General Meeting (2024) —  
For: 157 votes; Against: 2 votes; Abstentions: 47
- Receipt of the Annual Report and the Financial Report for 2024 —  
For: 186 votes; Against: 2 votes; Abstentions: 18
- Confirmation of Auditors for 2025 —  
For: 195 votes; Against: 2 votes; Abstentions: 9

Accordingly, all three procedural motions were declared as having passed.

#### Election of Office-Bearers

For each of the positions of President, Vice-President, Secretary, Librarian, and Webmaster, there was only a single nomination received. Accordingly, in each case, the nominees listed below were declared as having been elected unopposed at the Annual General Meeting.

<b>Office/Role</b>	<b>Candidate</b>
President	Emeritus Professor Christina Slade FRSN
Vice-President.	Emeritus Professor Lindsay Botten FRSN
Secretary	Emeritus Professor Trevor Brown FRSN
Librarian	Emeritus Professor Stephen Garton AM FRSN
Webmaster	Emeritus Professor Graham Town FRSN

#### Election of two Ordinary Council Members (five candidates)

There were 412 votes tallied from 206 voters.

In alphabetical order, the results were:

- Emeritus Professor Rosalind Croucher AM FRSN — 106 votes
- Dr Davina Jackson FRSN — 111 votes
- Dr Sarah Jones FRSN — 83 votes
- Dr Toner Stevenson MRSN— 61 votes
- Mr Zile Yu MRSN — 51 votes

Accordingly, those elected to fill the five vacancies for Ordinary Members of Council are, in alphabetical order:

- Emeritus Professor Rosalind Croucher AM FRSN
- Dr Davina Jackson FRSN

The newly elected Officer-Bearers and Council Members shall remain in office for two years from the close of the Annual General Meeting on 2 April 2025 until the Annual General Meeting in April 2027.

### **Council 2025–2026**

The incoming Council for 2025–2026 took office immediately following the 2025 Annual General Meeting. Its composition is listed in the table below.

<b>Role</b>	<b>Occupant(s)</b>
Patron	Her Excellency The Honourable Margaret Beazley AC KC, Governor of New South Wales
President	Emeritus Professor Christina Slade FRSN (until April 2027)
Immediate Past President	Dr Susan Pond AM FRSN (until April 2026)
Vice-President	Emeritus Professor Lindsay Botten FRSN (until April 2027)
Secretary	Emeritus Professor Trevor Brown FRSN (until April 2027)
Treasurer	Emeritus Professor Peter Wells FRSN (until April 2026)
Editor (JProc)	Emeritus Professor Robert Marks FRSN (until April 2026)
Librarian	Emeritus Professor Stephen Garton AM FRSN (until April 2027)
Webmaster	Emeritus Professor Graham Town FRSN (until April 2027)
Councillors	Professor Sean Brawley FRSN (until April 2026) Professor Sally Cripps FRSN (until April 2026) Emeritus Professor Rosalind Croucher FRSN (until April 2027) Cdre (Ret'd) Vince Di Pietro AM CSC FRSN (until April 2026) Mr Medy Hassan OAM FRSN (until April 2026) Dr Davina Jackson FRSN (until April 2027) Dr Elizabeth Killen MRSN (until April 2026)
Branch Representatives	
Hunter	Adjunct Professor Robert Whittaker AM FRSN (until April 2026)
New England North West	Professor Vicki Bitsika AM FRSN (until April 2027)
Southern Highlands	Ms Ann Fieldhouse MRSN (until April 2027)
Western NSW	Professor Lewis Bizo FRSN (until April 2027)

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## Society Fellows elected as 2025 AIMBE Fellows

The Royal Society of New South Wales was delighted to learn of the recognition of two of its Fellows in the recently announced list of 2025 Fellows of the American Institute for Medical and Biological Engineering (AIMBE).



They are **Professor Maria Kavallaris AM FRSN FAHMS FAIMBE** of the Children's Cancer Institute and UNSW Sydney, and **Payne-Scott Professor Hala Zreiqat AM FRSN FAA FTSE FAHMA FIOR FAIMBE** of the School of Biomedical Engineering at the University of Sydney.



The AIMBE is the authoritative voice and advocate for the value of medical and biological engineering to society. AIMBE's mission is to recognise excellence, advance public understanding, and accelerate medical and biological innovation. Election to the AIMBE College of Fellows is among the highest professional distinctions accorded to medical and biological engineers, comprising the top two per cent of engineers in these fields.

Professor Kavallaris was elected to the College of Fellows “for pioneering advances in cancer biology that led to new technologies and strategies for identification and delivery of therapeutic agents”, while the election of Professor Zreiqat was similarly recognised “for a leading contribution in advanced biomaterials for personalised musculoskeletal regeneration and successful technology commercialisation.”

Professors Zreiqat and Kavallaris were among 171 new Fellows inducted into AIMBE in 2025 from 30 countries, but the only Australians in the list.

The Council of the Royal Society of New South Wales extends its warm congratulations to Professor Kavallaris and Professor Zreiqat on this further recognition of the excellence of their research.

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## ABC Science Show features David Sweeney, winner of the 2024 RSNSW Jak Kelly Award

The Society's 2024 Awards for Postgraduate Students and Early Career Researchers were presented at a ceremony held at the University of Technology Sydney on 5 March 2024.

Each of the award winners was interviewed by the renowned ABC science journalist and host of the ABC Science Show, Robyn Williams AO FRSN FAA.



On 5 April 2025, *The Science Show* broadcast the presentation and interview of David Sweeney, a PhD candidate in the School of Physics at the University of Sydney, who was the winner of the RSNSW Jak Kelly Award for 2024.

The program notes to the 8-minute segment titled ‘Tracing the history of invisible dead stars’ observe that ‘[David Sweeney] may be one of the first in history able to trace the fate of so many ‘invisible’ dead stars, tracking their sometimes explosive paths shooting right out of our galaxy, but many others lingering in places he can now trace, promising that in ten years, their ‘graves’ will be known to astronomers – with surprising implications.

The [podcast](#) is available from the [ABC Science Show](#) website.

David Sweeney’s presentation to the Royal Society of NSW, illustrated with images and recorded offline, is also [available on YouTube](#).

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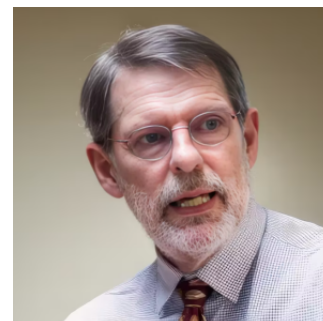
## Society Fellows acknowledged by Academy of Science 2025 Honorific Awards

**Distinguished Professor Noel Cressie FRSN FAA** of the Faculty of Engineering and Information Sciences at the University of Wollongong and **Emeritus Professor George Willis FRSN FAA** of the School of Information and Physical Sciences at the University of Newcastle have been named as winners in the Academy of Science (AAS) Career Honorific Awards for 2025.

[Professor Cressie](#) was awarded the Hannan Medal, which is one of the Academy’s career-level honorific awards, recognises outstanding research in any of the fields of statistical science, pure mathematics, applied mathematics and computational mathematics and is made in one of those three areas in turn at two-yearly intervals. In 2025, the medal was awarded to Professor Cressie for his outstanding contributions to statistical science.

[Professor Willis](#) was awarded the Thomas Ranken Lyle Medal, another of the Academy’s career-level honorific awards, recognises outstanding achievement by a scientist in Australia for research in mathematics or physics.

The Academy citation for **Professor Noel Cressie** notes that he is a world leader in statistical science for the analysis of spatial and space-time data, especially in environmental science. He has made pioneering, fundamental, ground-breaking, paradigm-shifting and highly influential contributions to theory, methodology and applications. Professor Cressie is a leading exponent of statistical methods in environmental science, especially for large-scale phenomena such as oceanic and atmospheric circulation and climate. By combining physical principles with stochastic models to capture uncertainties, he has developed a powerful methodology to investigate causal links in these complex global processes. He has overcome daunting challenges to make the methodology computationally feasible for large and complex datasets. Professor Cressie has played a key role in applications to global CO<sub>2</sub> flux, regional climate, sea surface temperature, air pollution, disease mapping, biogeochemical



cycles, soil carbon dynamics, movement of glaciers and river pollution. His recent work on climate model uncertainty may ultimately have a substantial impact on science and policy.

The Academy citation for **Professor George Willis** states that, beyond solving problems, Professor George Willis is a true creator of new mathematics. Through his invention of 'the scale' and its function, Professor Willis gave an entirely new insight into the unexpected structure and classification of totally disconnected locally compact groups, a previously intractable area. This novel approach, now known as 'Willis Theory', has broad implications for diverse fields of



mathematics. Professor Willis's research extends beyond theoretical elegance, leading to unexpected and pivotal real-world applications related to symmetric infinite networks. By describing how finite patterns might continue indefinitely, his work informs the growth and optimisation of real-world networks like computer systems and global social networks. In a lifetime of achievement, Professor Willis has ensured Australia is at the frontier of knowledge in pure mathematics. His ongoing contributions add to his already remarkable legacy of innovative academic research and dedicated education leadership in pure mathematics at the regional University of Newcastle in Australia.

The links above access the AAS citations for these two outstanding researchers together with a short video on their work and contributions to science.

The Council of the Royal Society of NSW warmly congratulates Fellows Noel Cressie and George Willis on this latest recognition of the career impact of their research.

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## Events

### 1331st OGM and Open Lecture

#### Rethinking Mobility in a Changing Climate

**Scientia Professor Jane McAdam AO FASSA FAAL**

School of Law and Justice

UNSW Sydney

**Date:** Wednesday, 7 May 2025, 6.00–7.30 pm AEST

**Venue:** [Zoom webinar](#)

**Enquiries:** by [email to RSNSW Events](#)

**Entry:** No charge

**All are welcome**



**LIVE STREAM**

**Join the live stream via Zoom  
at 6.00 pm AEST on 7 May**

**ENQUIRIES**

**by email to  
RSNSW Events**

**Business of the Ordinary General Meeting**



The Agenda for the Ordinary General Meeting will be available on the [Meetings](#) page of the website.

**Summary:** Every second, someone is displaced by a disaster. Each year, many more people are displaced internally by disasters than by conflict – the vast majority in the Asia-Pacific region. Climate change will amplify the problem as worsening cyclones, floods, bushfires, droughts and food insecurity force millions from their homes, potentially rendering some areas permanently unsafe. Most people will move within their own countries, including through evacuations, but some may be displaced across borders. Some may not be able to move at all; yet others may be displaced multiple times. When it comes to legal and policy responses to climate mobility, there is no one-size-fits-all approach. While the challenges of addressing climate change and disasters are immense, much can be done to alleviate displacement and its human costs – if we act now. This address will examine how law and policy is responding to the challenge of climate mobility at a time when every region of the world is being impacted by more frequent and intense disasters. What do affected communities want? How could greater preparedness lead to greater protection? How can migration itself be a form of adaptation to climate change?

**Jane McAdam AO** is Scientia Professor of Law, Australian Research Council Laureate Fellow and the Founding Director of the Kaldor Centre for International Refugee Law at UNSW Sydney, where she leads the Evacuations Research Hub. She is a Fellow of the Academy of the Social Sciences in Australia and the Australian Academy of Law, and an Honorary Associate of Oxford's Refugee Studies Centre. Professor McAdam publishes widely on international refugee law and forced migration, with a particular focus on evacuations and mobility in the context of climate change and disasters. Her legal analysis has been adopted by courts, governments and UN bodies, and her work has been highly influential in the development of international, regional and national policy frameworks. Professor McAdam serves on multiple international committees and was joint Editor-in-Chief of the *International Journal of Refugee Law* (2014–24). In 2021, she was appointed an Officer of the Order of Australia (AO) 'for distinguished service to international refugee law, particularly to climate change and the displacement of people'. She won the Australian Human Rights Commission's Law Award in 2022 and was the inaugural winner of the Royal Society of NSW Award for the Humanities, Philosophy, and the Law in 2024.

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## Southern Highlands Branch Meeting 2025-4

### Rare or Everywhere – Life in a Hostile Universe

**Professor Geraint Lewis FRSN FLSW**

Sydney Institute of Astronomy  
School of Physics  
University of Sydney



**Date:** Thursday, 15 May 2025, 6.30–7.30 pm AEDT

**Venue:** RSL Mittagong, Carrington Room

**Entry:** Members, \$5; Non-members, \$10 (please note: cashless payments only)

**All are welcome**

**Summary:** Is there alien life on alien worlds? As we look out into the universe, we find more and more planets, but our search for extraterrestrial life has so far yielded nothing. In this talk, Geraint Lewis will explore our scientific understanding of life in the universe, our continuing search for the signatures of alien civilisations, and address the question of “where is everybody?”. We will find that, whilst life may be common, intelligent life and star-crossing civilisations appear vanishingly rare, and we might be alone in the universe.

Born and raised in Old South Wales and passionate about astrophysics, **Geraint Lewis** spends his time unravelling the dark side of the universe, the dark matter and energy that dominate the cosmos. As a Professor of Astrophysics at the Sydney Institute of Astronomy, his research focuses on cosmology, gravitational lensing and galactic cannibalism, as well as exploring why our universe appears to be just right for complexity and life, publishing more than four hundred research articles. He also undertakes a broad array of award-winning science outreach, bringing the wonders of the cosmos to broad audiences through public speaking and writing, including publishing several world-renowned books on the mysteries of the cosmos.

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## Hunter Branch Meeting 2025-2

### From Test Tubes to Megawatts: How Research Sparked a Battery Business

#### Professor Thomas Nann

Founder and Chief Executive Officer  
Allegro Energy  
Newcastle



**Date:** Thursday, 15 May 2025, 5.30 pm for 6.00–7.00 pm AEST

**Venue:** NEX, Newcastle Exhibition and Convention Centre, 309 King Street, Newcastle West

**Registration:** [Registration is required](#) by 2.00 pm AEST on Wednesday, 14 May

**Entry:** Members, \$15; Non-members, \$25; Students, \$5

**All are welcome**

**REGISTER NOW**

**for this event  
by 2.00 pm AEST on 14 May**

**ENQUIRIES**

**by email to the  
Hunter Branch Secretary**

**Summary:** Translating research outcomes into real-world impact is (almost) every academic’s dream. However, the journey from academia to business is steep and fraught with challenges. These include navigating negotiations with technology transfer offices, bridging the ‘valley of death’ to develop the first minimum viable product, and mastering the complexities of running a business—a skillset far removed from the academic environment.

In this presentation, Thomas will share insights into this transition, touching on the science behind his work but also focusing on his journey from academia to leading a rapidly

growing business.

**Thomas Nann** is the CEO and co-founder of Allegro Energy, an Australian company based in Newcastle. Allegro Energy provides sustainable, high-performance energy storage solutions, mainly focussing on long-duration energy storage using Allegro's proprietary microemulsion flow battery technology. Thomas is an experienced speaker, leader, innovator and entrepreneur. He has many years of experience in leading academic research and research organisations, manufacturing facilities and commercialising research outcomes. Climate change mitigation and renewable energy have always been his passion. After completing his PhD in electrochemistry and his Habilitation in nanomaterials, he led numerous academic and industrial projects in the field of renewable energy generation and storage.

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## 1332nd OGM and Open Lecture

### AI: the Good, the Bad, and the Ugly

**Professor Michael Blumenstein FRSN FACS (1) and  
Professor Nicholas Davis (2)**

(1) Pro Vice-Chancellor (Business Creation and Major Facilities)  
(2) Director, Strategy and Operations, Human Technology Institute  
University of Technology Sydney



**Date:** Wednesday, 4 June 2025

**Time:** OGM: 6.00 – 7.30 pm; Optional Supper: 8.00–9.30 pm AEST

**Venue:** OGM: Michael Crouch Room, Mitchell Building, State Library of NSW,  
Shakespeare Place, Sydney

**Enquiries:** by [email to RSNSW Events](#)

**Pre-meeting drinks:** A cash bar will operate from 5.30 pm

**Post-meeting supper:** An optional supper will be available at the Mordeo Bistro and Grill on Deutsche Bank Place (cnr Hunter and Phillip streets), Sydney, following the OGM

**Registration:** OGM: [Please register](#) by 2.00 pm AEST on Tuesday, 3 June

Supper: [Please register](#) by 5.00 pm AEST on Friday, 30 May

**Entry:** AGM/OGM: Members, \$20; Non-members, \$30; Students, \$0

Supper: \$88 per person (non-refundable) for a fixed menu meal

**All are welcome**

**REGISTER NOW**

**for the OGM and Open Lecture  
before 2.00 pm on Tuesday, 3 June**

**REGISTER NOW**

**for the optional supper  
before 5.00 pm on Friday, 30 May**

**OGM Agenda:** The Agenda for this meeting will be available from the [Meetings page](#) of the website.

**Summary:** Artificial Intelligence is transforming the world, promising revolutionary breakthroughs, while also raising profound ethical and social questions. In this talk, Professors Michael Blumenstein and Nicholas Davis will take a candid tour through the

current landscape of AI: *the good*—from life-saving medical applications to creative tools that amplify human potential; *the bad*— including biased algorithms, misinformation, and technological enhanced inequality; and *the ugly*—the darker risks of surveillance, deepfakes, and the unintended consequences of unchecked AI development.

Rather than techno-utopian hype or dystopian doom, this presentation aims for nuance: exploring how we can harness the power of AI responsibly, critically, and creatively. Whether you are an enthusiast, sceptic, or somewhere in between, this talk invites you to engage with the urgent and complex realities shaping our AI-powered future.

**Michael Blumenstein** is currently a Professor and the Pro Vice-Chancellor (Business Creation and Major Facilities) at the University of Technology Sydney. Previously, Michael served as the Deputy Dean (Research and Innovation) in the Faculty of Engineering and IT. Over two decades, Michael has successfully led the growth of cutting-edge research at Universities, particularly in collaboration with industry and focusing on translational outcomes.



Michael is a nationally and internationally recognised expert in the areas of automated Pattern Recognition and Artificial Intelligence (AI). He is passionate about developing technology that has a positive effect on society, focusing on AI for good. Michael has published his work widely, particularly AI applications with multi-disciplinary teams for solving global problems. His research spans various projects applying AI to the fields of Engineering, Environmental Science, Neurobiology and Coastal Management. Components of his research into the predictive assessment of beach conditions have been commercialised for use by local government agencies, coastal management authorities and in commercial applications. Among the many projects he has led in collaboration with industry, Michael's team developed the award-winning SharkSpotter – a world-first AI-based technology for detecting Sharks in the ocean from Uncrewed Aerial Vehicles (UAVs) to enhance beach safety and for saving lives.

Michael is a Fellow of the Australian Computer Society and a Fellow of the Royal Society of NSW

**Nicholas Davis** is an Industry Professor and Co-director of the Human Technology Institute (HTI) at the University of Technology, Sydney. HTI is an action-oriented research institute focused on developing tools, policies and strategic skills that help put humans at the centre of emerging technologies. Since 2022, HTI has provided breakthrough techniques and independent expert advice around the safe, responsible, and effective use of artificial intelligence to governments, companies and civil society organisations, both in Australia and internationally.



Nick's previous roles included being Head of Society and Innovation and Member of the Executive Committee at the World Economic Forum, and Managing Partner of SWIFT Partners, a Geneva-based consultancy helping organisations to harness emerging technologies for sustainable value.

With Klaus Schwab, the Founder and Executive Chairman of the World Economic Forum, he is the co-author of *Shaping the Future of the Fourth Industrial Revolution*. In addition to

being a Certified Professional Facilitator and a Fellow of the Royal Society of the Arts (FRSA) in the UK, Nick is an Associate Fellow at the University of Oxford's Saïd Business School, Associate Fellow at the Geneva Centre for Security Policy, a Visiting Fellow at the Australian National University and a board member of the IMPROVE European Innovation Management Academy.

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## Southern Highlands Branch Meeting 2025-5

### The Way We Are

**Dr Hugh Mackay AO FRSN FRSN FAPS**

Social Psychologist and Researcher



**Date:** Thursday, 19 June 2025, 6.30–7.30 pm AEST

**Venue:** RSL Mittagong, Carrington Room

**Entry:** Members, \$5; Non-members, \$10 (please note: cashless payments only)

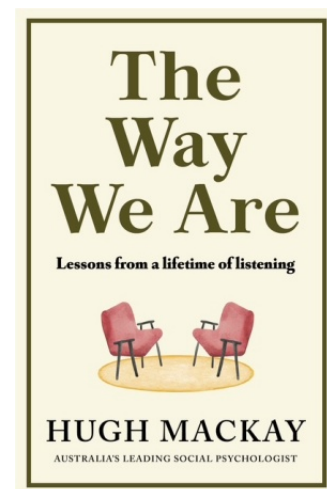
**All are welcome**

**Summary:** Drawing on the themes from his latest book, Hugh will examine the reasons for the increasing fragmentation of contemporary Australian society, and the mental-health (and other) consequences of social isolation (now our #1 public health issue). Given that we are members of an inherently social species, how did this happen, and what are we going to do about it?

**Hugh Mackay** is a social psychologist and researcher, and the bestselling author of 24 books, including nine novels. His non-fiction writing covers social and cultural analysis, psychology, communication and ethics. His latest non-fiction book, *The Way We Are*, was published in May 2024.

Hugh has had a 60-year career in social research, and was also a weekly newspaper columnist for over 25 years. He established and ran The Centre for Communication Studies in Bathurst from 1975-1990, and was one of the founders of The St James Ethics Centre (now known as The Ethics Centre). He is currently an honorary professor in the School of Medicine and Psychology at ANU. Among other appointments, he has been deputy chairman of the Australia Council for the Arts, chairman of the board of trustees of Sydney Grammar School and an honorary professor at Macquarie, Charles Sturt and Wollongong universities.

He is a Fellow of the Australian Psychological Society and the Royal Society of NSW. In recognition of his pioneering work in social research, he has been awarded honorary doctorates by five Australian universities. He was appointed an Officer of the Order of Australia in 2015.



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## Ideas@theHouse: June 2025

Ideas@theHouse

presented by

Her Excellency the Honourable  
Margaret Beazley AC KC, Governor of NSW



**Extreme wildfires in a warming world:  
insights and challenges**

**Professor Jason Sharples**

**Professor of Bushfire Dynamics and  
Foundation Director, UNSW Bushfire  
UNSW Canberra**



**Date:** Thursday, 26 June 2025, 6.30–8.00 pm AEST

**Venue:** Face-to-face (by invitation for Society members) and live streaming from Government House, Sydney

**Registration:** Society members will receive an invitation to register for a place on or around 5 May 2025. Information about the live stream will follow

**Entry:** No charge

**All are welcome to the live stream**

**LIVE STREAM**

**Please click here to join the live stream  
at 6.30 pm AEST, Thursday 26 June**

**Summary:** Anthropogenic climate change is shifting wildfire regimes more towards the extreme end of the fire behaviour spectrum. This can be seen in recent patterns of wildfire occurrence, with fires exhibiting more intense and erratic behaviours, burning outside of traditional seasonal windows, and manifesting more often as violent pyroconvective events with global reach and impact. This can also be seen in recent patterns of wildfire impact, with wildfires frequently wreaking devastation upon human and environmental assets at unprecedented levels. Examples include the destruction of entire townships in the western US – most recently in Los Angeles, mass fatalities and destruction of coastal townships in Greece, unprecedented number of deaths due to wildfire in Portugal in association with their first recorded instance of pyrocumulonimbus, record fire seasons in Canada including wildfires burning above the Arctic Circle, and of course the Australian Black Summer.

In this talk, Jason Sharples will discuss the scope of the extreme wildfire issue and highlight some of the insights that have been gained through the last two decades of research. These include a better understanding of the fundamental dynamics of wildfire under extreme conditions and the unique hazards that arise as a consequence. Professor Sharples will also discuss the global impacts of extreme wildfires and emphasise the need for improved fire management, highlighting some of the complexities that need to be

addressed. Indeed, finding an effective management solution, which balances the many and varied aspects of wildfire risk, presents itself as a significant national and international challenge

**Jason Sharples** is a mathematical scientist at the University of New South Wales (UNSW), Professor of Bushfire Dynamics and founding Director of UNSW Bushfire. As an internationally recognised expert in dynamic wildfire behaviour and extreme wildfire development, his research has extensively influenced research, policy, and practice in Australia and internationally. He uses advanced mathematical and computational models to understand the dynamics of wildfire propagation and to pinpoint geographic features and weather conditions more likely to generate extreme wildfires. He is a Chief Investigator of the ARC Centre of Excellence for Indigenous and Environmental Histories and Futures, Associate Investigator of the ARC Centre of Excellence for 21st Century Weather, Operations Node Leader of the NSW Bushfire and Natural Hazards Research Centre and is further involved in various national and international research projects.

He is a regular contributor to international wildfire science and professional dialogue. Jason has been elected a Fellow of the Australian Academy of Technological Sciences and Engineering, the Royal Society of New South Wales and the Modelling and Simulation Society of Australia and New Zealand. He also has a background working as a firefighter with the ACT Rural Fire Service and providing operational support and expert advice to the NSW Rural Fire Service, the NSW Coroners Court, the Royal Commission into Natural Disasters in Australia, and Parliamentary Inquiries into bushfires. Jason is a Bundjalung man and is passionate about enhancing Indigenous STEM engagement and using fire knowledge as a platform for reconciliation. In 2024, he was awarded the Royal Society of NSW Aboriginal or Torres Strait Islander Scholars Medal.

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## RSNSW Poggendorff Lecture 2025

### Agriculture over the Horizon

#### **Professor Alex McBratney**

Professor of Digital Agriculture and Soil Science  
and ARC Laureate Fellow  
University of Sydney

**Date:** Wednesday, 2 July 2025

**Time:** To be advised

**Venue:** University of Sydney (to be advised)

**Enquiries:** by [email to RSNSW Events](#)

**Registration:** To be advised

**Entry:** No charge

**All are welcome**



**Summary:** Agriculture stands at a transformative crossroads—criticised for its environmental footprint, yet a powerful engine of scientific application and innovation. Nowhere is this duality clearer than in Australia, where farmers are among the most technologically advanced in the world, harnessing cutting-edge research to navigate an increasingly complex landscape.

This talk explores the evolving modes of agriculture—Industrial, Conservation, Precision & Digital, Regenerative, Decommoditised, and the emerging “3N” model: net-zero, nature-positive, and nutrition-rich. As we confront the mounting challenges of climate volatility, biodiversity loss, and shifting global food demands, the need for a new synthesis has never been clearer.

Professor McBratney’s focus is on the intersection of Digital, Regenerative, and Decommoditised agriculture, and how their integration offers a compelling pathway forward. Through digital tools, we can optimise production and resource use. Regenerative practices rebuild soil condition and security and ecosystems. Decommoditised models reconnect farmers with consumers, adding value and resilience. Together, these approaches help craft a vision of agriculture that is not only sustainable but revitalising.

What combination will carry us into the future? Join us as we look over the horizon to define a model of agriculture that meets the needs of people, planet, and profit—reimagined for the mid-21st century.

**Alex McBratney** is a globally renowned leader in soil science and digital agriculture, currently serving as Professor of Digital Agriculture and Soil Science and ARC Laureate Fellow at the University of Sydney. With an academic foundation that spans a BSc, PhD, and DSc from the University of Aberdeen, along with a DScAgr from the University of Sydney for his pioneering work in precision agriculture, Alex has made transformative contributions to soil and agricultural science. He is celebrated as a founder of key disciplines, including Pedometrics, Digital Soil Mapping, Precision Agriculture, and Soil Security.

Alex’s influence is recognised worldwide—he is a Fellow of the Australian Academy of Science and a Thomson Reuters Highly Cited Researcher (2016–2024). His international standing was further acknowledged with the prestigious VV Dokuchaev Medal from the International Union of Soil Sciences, where he held numerous leadership roles. For 25 years, he served as Editor-in-Chief of *Geoderma*, and now leads *Soil Security* as Editor-in-Chief. Alex McBratney is also the 2024 recipient of the Royal Society of NSW Poggendorff Award in Agricultural and Environmental Sciences.

Following his PhD work at Rothamsted Experimental Station in the UK, Alex spent seven impactful years with CSIRO in Brisbane before joining the University of Sydney in 1989. He served as Dean of the Faculty of Agriculture and Environment (2015–2017) and directed the Sydney Institute of Agriculture. A passionate advocate for innovation, Alex is actively shaping the future of Soil Security and Digital Agriculture through global collaborations like Aroua, the Soil and Soil Security think tank. His work is inspiring the next generation of AgTech in Australia and beyond.

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## **Branch and Program Reports**

### **Report from the Activities with Impact Program**

The Society provides an active program of events through its Hunter, New England North West, Southern Highlands, and Western NSW branches, and in Sydney. With events



planned and held recently by the branches reported separately in this Bulletin, this section focuses on the Master Plan's *Activities with Impact* program and events held in Sydney.

## Presentation Report: 2 April 2025

### Engineering the Future: A Vision of the Next Technological Revolution

Professor Hugh Durrant-Whyte, NSW's Chief Scientist and Engineer, delivered a tour de force presentation of a [\*future that is engineered\*](#). It was an optimistically bold yet unsettling vision of what lies ahead. Durrant-Whyte is a seasoned tech veteran; for over four decades, he has witnessed and shaped profound transformations largely driven by the explosion of information and communication technologies. But according to him, the next forty years promise change on an even more profound scale, as four technological forces converge: Digital, Biology, Materials, and Energy.



He argued that while we may feel deep into the digital era, in truth, it has only just begun. Artificial intelligence and robotics are poised to unlock unprecedented productivity, smarter decision-making, and entirely new capabilities. Australia, he said, is uniquely positioned to ride this wave—whether in revitalising local manufacturing, enhancing defence systems, or safeguarding its fragile ecosystems. With breakthroughs in quantum computing, photonics, and organic electronics on the horizon, the coming decades could see a hardware renaissance in sensing, computing, and communication technologies.

In biology, the transformation has been nothing short of revolutionary. *Biology*, Prof. Durrant-Whyte argued, *is now an engineering discipline*—adopting that field's mindset: design, computation, and manufacturing. Already, engineering is powering emerging bio-industries—from RNA-based therapies to lab-grown meat. New reinforcement learning AI techniques, such as AlphaFold, pioneered by DeepMind, are cracking the code of protein folding and winning a Nobel Prize in Chemistry. Prof. Durrant-Whyte predicted that as biology fully merges with engineering, its societal impact may eclipse even that of the digital age, with the first truly general artificial intelligence being an engineered, biologically grown brain rather than a computer system.

Materials science was the third technological area he addressed. The focus is no longer on metalworking but on nanostructures, metamaterials, and advanced manufacturing. The shift has been driven by atomic-level insights and new chemistries, with applications from aerospace to energy storage and advanced electronics. Materials, he contends, are now the linchpin of modern engineering.

But perhaps no domain is more urgent—or more promising—than energy. Climate change has accelerated the push for cleaner, smarter energy solutions. From solar and wind innovation to hydrogen fuel and battery technologies, the sector is experiencing rapid advances. This energy transition is triggering a cascade of breakthroughs in electrical

engineering, chemistry, and computing. With global investment surging, Durrant-Whyte sees a critical opportunity for Australia to build a thriving national energy industry in the decades ahead.

This bold vision was tempered by a sobering conclusion—a quote from Yuval Noah Harari’s *Homo Deus: A History of Tomorrow*:

*“In the early twenty-first century the train of progress is again pulling out of the station—and this will probably be the last train ever to leave the station called Homo sapiens. Those who miss this train will never get a second chance. In order to get a seat on it you need to understand twenty-first-century technology, and in particular the powers of biotechnology and computer algorithms. These powers are far more potent than steam and the telegraph, and they will not be used merely for the production of food, textiles, vehicles, and weapons. The main products of the twenty-first century will be bodies, brains and minds, and the gap between those who know how to engineer bodies and brains and those who do not will be far bigger than the gap between Dickens’s Britain and the Mahdi’s Sudan. Indeed, it will be bigger than the gap between Sapiens and Neanderthals. **In the twenty-first century, those who ride the train of progress will acquire divine abilities of creation and destruction, while those left behind will face extinction.**”*

This stark warning poses deep questions for humanity, not the least of which is how to avoid this fate and ensure that the real benefits of technology are equally shared by all.

Should you have missed the original presentation at the OGM, [a recording is available](#) on our YouTube channel.

Sally Cripps FRSN  
Councillor, RSNSW

## **Presentation Report: 15 April 2025**

### **Extreme Earth: Antarctica’s climate warning for the future and what we can all do about it**

Professor Chris Turney, Pro Vice-Chancellor (Research) at the University of Technology Sydney and a renowned climate scientist, delivered a challenging and thought-provoking talk on the [impact of global warming on Antarctica](#), and in particular on its vast ice sheets. His talk emphasised the fragility of the West Antarctic ice sheet from recent research that has revealed the worrying acceleration in ice mass loss, rising sea level and temperatures, and the implications for communities across Australia and worldwide should a 'tipping point' be reached. Despite these concerns, his talk argued that there is hope that this vast region might help avert the worst impacts of a changing climate, and what we collectively can do to take the necessary action. A recording of this [not-to-be-missed presentation](#) is available on our YouTube channel.



Lindsay Botten FRSN  
Vice-President, RSNSW

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## Southern Highlands Branch Report

Presentation Report— 17 April 2025

### Using precision medicine to eradicate childhood cancer

Associate Professor Mark Cowley

Deputy Director, Enabling Platforms and Collaboration  
Children's Cancer Institute and  
UNSW Sydney



In his enlightening lecture, Associate Professor Mark Cowley delved into the transformative power of precision medicine. He underscored the importance of individualised treatment plans based on genetic, environmental, and lifestyle factors, promising significant advancements in the fight against childhood cancer. He made clear that the huge advances he and his team are presenting to the world have been largely made possible today through the extraordinary inroads the scientific world has recently seen in the handling and manipulation of massive, sensitive datasets. Artificial intelligence and new hybrid cloud computing technology have changed the entire landscape.



Cancer is the leading cause of disease-related death for young people (0-18) in the developed world, with 1000 newly diagnosed cases every year in Australia. (400,000 worldwide). It is a significant health concern. Every child's cancer is unique, making it very challenging to construct the optimal treatment plan for each child, using existing clinical tests. Now, however, world-changing developments are occurring in the hands of Mark Cowley and his team. They have shown that by deciphering the patient's cancer genome in real time, that is, identifying all the genetic alterations that drive that patient's tumour, and matching each patient to a specific targeted therapy, survival time by this precision approach can more than double in Australian children with the worst-prognosis cancers. Hence, his leading involvement in the ZERO Childhood Cancer thrust.

It comes as no surprise that Mark is known internationally for his expertise in genomics and precision medicine. Before joining the Children's Cancer Institute in 2018, he spent 11 years at the Garvan Institute, where he developed bioinformatics methods for genomic medicine, particularly for rare genetic diseases and rare adult cancers.

As the audience moved off to dinner with the speaker after this amazing lecture, it was obvious the question on everyone's lips was, "What world-changing precision medicine developments will the next year bring?"

Anne Wood FRSN  
Chair, RSNSW Southern Highlands Branch

## Western NSW Branch Report

In conjunction with the Western NSW Branch of the Royal Society of New South Wales, Charles Sturt University is conducting its Provocations Public Lecture series that showcases and celebrates research at the University.



## Presentation Report – 16 April 2025

The first in the 2025 series of 'Provocations' was the online presentation on 16 April delivered by Distinguished Professor Chris Blanchard, Professor of Food Science in the Gulbali Institute of CSU, who spoke on the topic [\*Is your food killing you?\*](#)



With food-related diseases continuing to be the leading cause of death worldwide, his presentation focused on the underlying causes. According to social media platforms like Facebook, wheat breeders are blamed for the rise in celiac disease due to the development of toxic varieties. Additionally, food processors are accused of stripping nutrients from our food, the livestock industry is said to be responsible for elevated cholesterol levels, and multinational companies are allegedly poisoning us with glyphosate through genetically modified crops.

Chris Blanchard's presentation explored the impact of diet on health and examined how research undertaken by his team in the Functional Grains Centre (FGC) is challenging various food-related myths circulating on social media. His talk focused particularly on improvements to food end-product quality through the key chemical attributes and markers, the discovery of novel bioactive compounds that can be used to generate new functional products, and the building of long-term collaborative food innovation systems.

He concluded his fascinating presentation by drawing the attention of viewers to '[The FGC Cookbook](#)', available for downloading from the CSU website. The [recording of this presentation](#) is available from the RSNSW YouTube channel.

Lindsay Botten  
Vice-President, RSNSW

## The Society and Social Media

The Society's presence on our social media channels—[Facebook](#), [LinkedIn](#), [X/Twitter](#) and [YouTube](#)—is engaging an increasing following, and we continue to build our repository of events on YouTube.

The YouTube channel now has more than 1,430 subscribers, while the 192 full-length videos and 'shorts' that are online have received over 169,000 views.

The social media icons at the end of this newsletter will take the reader to our pages on these platforms, from where you can follow, subscribe, and be notified of new content.

*As a Society member, please consider subscribing to our social media channels to support the Society's outreach and encourage your friends, colleagues and members of your networks to do so.*

## **YouTube recordings of recent events**

All online presentations and all face-to-face presentations held in Sydney and by the Hunter, New England North West, and Western NSW Branches are recorded and uploaded to the Society's YouTube channel. These can be accessed directly from our [YouTube](#) channel or the [Presentations](#) page of the RSNSW website.

For convenience, the video links below provide access to recordings from recent months. We hope that these will be of interest to members.



YouTube recording of the presentation from the Western NSW Branch Meeting 2025-1 (16 April 2025) on 'Is my food killing me?' delivered by Distinguished Professor Chris Blanchard, Professor of Food Science in the Gulbali Institute at Charles Sturt University. A summary of the lecture and a brief biography of the presenter can be found in the [online event notice](#).



YouTube recording of the presentation from the second meeting of the Society's Provocations and Inspirations lunchtime series held at the Union, University, and Schools Club in Sydney (15 October 2025) at which Professor Chris Turney FRSN FRSA FRMetS, Pro Vice-Chancellor (Research) at the University of Technology Sydney and a former ARC Laureate Fellow, spoke on *Extreme earth: Antarctica's climate warning for the future and what we can all do about it*. A summary of the presentation and a brief biography of the presenter are available from the [online event notice](#).



YouTube recording of the presentation from the Hunter Branch Meeting 2025-1 (20 March 2025) on *Our Magnetic Sun*, delivered by Dr Hannah Schunker, ARC Future Fellow in the School of Information and Physical Sciences at the University of Newcastle. A summary of the lecture, and a brief biography of the presenter, are available from the [online event notice](#).



A compilation of offline recordings made by the winners of the RSNSW 2024 Awards for Postgraduate Students and Early Career Researchers speaking on their research. The presentation ceremony, at which each of the award winners spoke and were interviewed by Robyn Williams AO FRSN FAA, host of the ABC Science Show, was kindly hosted by the University of Technology on the evening of Wednesday, 5 March 2025. Those appearing in the video include Mr David Sweeney from the University of Sydney, winner of the RSNSW Jak Kelly Award; Bicentennial Scholarship Winners: Mr Muyang Li of the University of Sydney, Mr Joel Sved of the University of Sydney, and Ms Linqing Tian from UNSW Sydney; and Bicentennial Early Career Research and Service Citation winners: Dr Fei Deng of UNSW Sydney, Dr Jennifer Matthews of the University of Technology Sydney, and Dr Cynthia Turnbull of the Australian National University. The [online event notice](#) provides a summary of each of the presentations and of the presenters' biographies.



YouTube recording of the presentation from the October Ideas@theHouse (20 February 2025) titled *Where Worlds Collide: Exploring the wild/domestic animal-human interface in One Health* and delivered by PrDr Sarah Britton, Director, One

Health Unit of the Interim Australian Centre for Disease Control. The [online event notice](#) provides a summary of the lecture and the presenter's biography.



YouTube recording of the presentation from the 1329th Ordinary General Meeting (5 February 2025) on *Inspired by Nature, Designed by Science*, delivered by Distinguished Professor Ian Paulsen FRSN FAA, Director of the ARC Centre of Excellence in Synthetic Biology at Macquarie University. A summary of the lecture, and a brief biography of the presenter, are available from the [online event notice](#).



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Edited by: [Lindsay Botten](#) FRSN, Webmaster, Royal Society of New South Wales

Disclaimer: Positions expressed in this publication by authors of articles and event presenters do not necessarily reflect those of the Society.

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