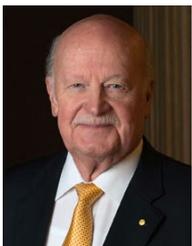




Outstanding contributions to science have been recognised by the Australian Academy of Science with 24 current and future stars of science receiving prestigious 2021 honorific awards.

Message from the President—March 2021

March 31, 2021



The Australian Academy of Science is proud to have played an active role in assessing the science of climate change since the 1970s.

The Academy has just released 'The risks to Australia of a 3°C warmer world', a major report in which we have called on the Australian Government to accelerate Australia's transition to net zero greenhouse gas emissions over the next 10 to 20 years. This is one of 10 recommendations in the report.

Even if the world's governments meet their current Paris pledges on time, Earth is likely to reach average global surface temperatures of 3°C above the pre-industrial period during this

century, with significant consequences. The report focuses on the consequences of 3°C of global warming for four areas of importance to Australia's future: ecosystems; food production; cities and towns; and health and wellbeing. It also focuses on Australia's contribution to what must be done to stay well below 2°C to limit these impacts.

I encourage you to **read the report**¹ and the **Academy's media release**², and share these links with your networks. The media release also has a short video that can be shared.

This month the Academy also released a statement supporting a petition signed by 90 scientists, including 22 Academy Fellows, calling for Kathleen Folbigg's immediate pardon and release from jail. Ms Folbigg was convicted and jailed in 2003 for murdering three of her children and the manslaughter of her fourth, but the Academy argues she should be pardoned based on the significant scientific evidence of natural

1 www.science.org.au/supporting-science/science-policy-and-analysis/reports-and-publications/risks-australia-three-degrees-c-warmer-world

2 www.science.org.au/news-and-events/news-and-media-releases/risks-australia-warmer-world

causes of death for her children. The petition is currently with the Governor of NSW.

The Academy has completed its first assessment of how its activities align with and support the UN Sustainable Development Goals. We found extensive alignment across all we do and will continue to monitor our contributions to achieving the goals.

Finally, I'd like to congratulate the 24 leading scientists who we recently announced as recipients of our 2021 honorific awards. From early-career scientists to those who have undertaken a lifetime of research, the awards promote their achievements and acknowledge the creativity and sheer persistence that research requires.

Have a safe and happy Easter, and I hope you enjoy reading this month's newsletter.

John Shine

The risks to Australia of a 3°C warmer world

March 31, 2021

Scientists release landmark climate change report



Watch 'The risks to Australia of a 3° warmer world' on Vimeo³

The Australian Academy of Science is calling on the Australian Government to accelerate Australia's transition to net zero greenhouse gas (GHG) emissions over the next 10 to 20 years to play our part in avoiding the worst impacts of climate change.

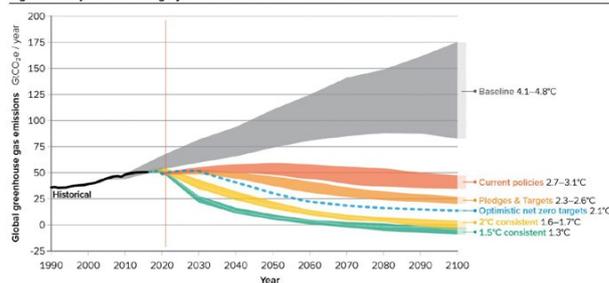
The key recommendation is included in a **landmark Academy report**⁴ published today.

The report, which explores the risks to Australia's future based on the current global trajectory of greenhouse gas emissions, states that the world reaching net zero emissions by 2050 is an absolute minimum, if Australia is to avoid potentially insurmountable challenges to its cities, ecosystems, industries and food and health systems.

The report says Australia is well positioned to play its part in meeting this challenge, with a skilled workforce, strong industrial base and plentiful renewable energy resources facilitating easier emission reductions compared to many other countries.

It highlights that even if the world's governments meet their current Paris pledges on time, Earth is likely to reach average global surface temperatures of 3°C above the pre-industrial period during this century, with catastrophic consequences.

Figure 1. Projected warming by 2100 under various scenarios



Projected warming by 2100 under various scenarios from top to bottom (Climate Action Tracker 2020; Reville and Harris 2017): 'Baseline' models assume no action on reducing GHG emissions while 'current policies' are based on current commitments and policies made by the international community. 'Optimistic policies' include additional pledges that governments have made as of December 2019. 'Pledges and Targets' are conditional and have not yet been implemented. Pathways for '1.5°C' and '2°C' are scenarios based on models run for IPCC Special Report on 1.5°C (IPCC 2018). Temperatures of each scenario are shown as a range arising from different climate models. Figure: Australian Academy of Science.

Further pledges to achieve net zero emissions by 2050 are required for the world to stay well below 2°C of warming, the goal agreed to under the Paris Agreement.

³ vimeo.com/515111257

⁴ www.science.org.au/supporting-science/science-policy-and-analysis/reports-and-publications/risks-australia-three-degrees-c-warmer-world

To achieve net zero, the report says Australia will need to rapidly remove greenhouse gas emissions from a range of sectors including electricity generation and distribution; electrify the transport sector, industry and buildings; increase energy efficiency across the board; and reduce non-energy related GHG emissions from all sectors including industrial processes and agriculture.

President of the Australian Academy of Science, Professor John Shine, welcomed the report.

“The Australian Academy of Science is proud to have played an active role in assessing the science of climate change since the 1970s. This new report makes clear that while the planet is well on the path to harmful climate change, as with COVID-19, science has solutions,” Professor Shine said.

“Australia is well positioned to meet the climate change challenge by combining our scientific knowledge with economic opportunities associated with moves to net zero greenhouse gas emissions.”

“We urge the Australian Government to implement the recommendations of this report. The Academy stands ready to assist by providing sound scientific advice on climate change to inform the Government’s multifaceted policy response.”



Academy Fellow Professor Ove Hoegh-Guldberg. Photo: supplied.

Academy Fellow Professor Ove Hoegh-Guldberg is the chair of the expert panel that developed the report.

He said limiting climate change to 1.5°C is now virtually impossible and that a rapid transition to net zero greenhouse gas emissions is required if the international community is to limit warming to well below 2°C.

“Current international commitments to greenhouse gas emission reduction, if unchanged, would result in average global surface temperatures that are 3°C above the pre-industrial period in the lifetimes of our children and grandchildren,” said Professor Hoegh-Guldberg, from the University of Queensland.

“The evidence presented in this risk-assessment report, which is based on peer-

reviewed scientific literature, indicates that this would have serious consequences for Australia and the world.”

“Australia must revisit its emission reduction commitments and work with other countries to provide the leadership and collaboration required to place Australia and the world on a safer climate trajectory.

“Australia has a stable business landscape. We have a great scientific tradition. We have enormous resources for the next wave of innovative technologies. We not only have a responsibility to be an international leader on climate action but need to grasp the enormous economic opportunities presented by the ‘new’ economy,” said Professor Hoegh-Guldberg.

The report says Australia can become a clean energy exporter and potentially a global renewable energy superpower. It highlights Australia’s relative advantage with its abundant natural resources for solar and other renewable energy generation, as well as significant deposits of new economy minerals critical for developing batteries and other low emission technologies.

The report focuses on the consequences of 3°C of global warming for four areas of importance to Australia’s future: ecosystems; food production; cities and towns; and health and wellbeing. It also focuses on Australia’s contribution to what must be done to stay well below 2°C and thus limit these impacts.

The impacts of climatic changes on the lives and wellbeing of Australians are also discussed in detail in the report.



Distinguished Professor Lesley Hughes. Photo: supplied.

The report makes a total of 10 recommendations (see page 13). They include to:

- scale up the development and implementation of next-generation zero greenhouse gas technologies.
- systematically explore how our food production and supply systems should prepare for the challenges of climate change under growing extremes including the implications for carbon sequestration.

- improve our understanding of climate impacts, including tipping points, as well as the compounding effects of multiple stressors at global warming of 2°C or more so that we can develop effective adaptation responses.

Expert panel member Distinguished Professor Lesley Hughes, focusing on ecosystems, said most Australian species cannot evolve quickly enough to cope with the rapid increases in temperatures and associated increases in the frequency and severity of extreme weather events we now observe and feel.

“The unprecedented bushfire season in 2019–20 and the mass dying of corals on the Great Barrier Reef demonstrate how rapidly and fundamentally our global environment is changing with only 1.1°C of global warming,” said Professor Hughes, who is Pro Vice-Chancellor (Research) at Macquarie University.

“It’s not too late to avoid 3°C. We should still be aiming for a stable global temperature below 2°C but to get to that point, we must reduce emissions very rapidly—in particular accelerating the energy transition in the next decade. This must be one of the most urgent national and international priorities.”

Read the report.⁵

Nobel Laureates and leading scientists call for Kathleen Folbigg pardon

March 04, 2021



From left: Academy President Professor John Shine, Professors Carola Vinuesa, Fiona Stanley and Jozef Gecz and Former Chief Scientist Professor Ian Chubb.

Ninety eminent scientists—including two Australian Nobel Laureates, medical practitioners, science leaders and prominent Australians—have signed a petition calling for Kathleen Folbigg’s immediate pardon and release from jail.

Kathleen Folbigg was convicted and jailed in 2003 for murdering her children Patrick, Sarah and Laura and for the manslaughter of Caleb.

The petition argues that Ms Folbigg should be granted a pardon based on the significant scientific evidence of natural causes of death for her children.

The group submitted the petition to the Governor of NSW, the Honorable Margaret Beazley AC, earlier this week.

The petition includes medical and scientific explanations from leading experts in their field that address each of the Folbigg children’s deaths.

The petition concludes:

“The executive prerogative of mercy is designed to deal with failures of the justice system such as this one. It is incumbent on the Governor to exercise her power to stop the ongoing miscarriage of justice suffered by Ms Folbigg. Not to do so is to continue to deny Ms Folbigg basic human rights and to decrease faith in the New South Wales justice system.”

Ms Folbigg’s case also establishes a dangerous precedent as it means that cogent medical and scientific evidence can simply be ignored in preference to subjective interpretations of circumstantial evidence.”

Australian Academy of Science President, Professor John Shine AC PresAA FAHMS(Hon) FRS is among the petition’s signatories.

“Given the scientific and medical evidence that now exists in this case, signing this petition was the right thing to do,” Professor Shine said.

“These matters are incredibly complex. As our scientific knowledge deepens, so does the complexity, which makes the job of the courts a more complex one too.

⁵ www.science.org.au/supporting-science/science-policy-and-analysis/reports-and-publications/risks-australia-three-degrees-c-warmer-world

“We want to work more closely with the legal community to ensure evidence placed before courts is presented in the most accurate way possible, using the most appropriate experts and the most up-to-date science,” Professor Shine said.

ANU Professor of Immunology Carola Vinuesa FAA FAHMS also signed the petition. She gave evidence to an inquiry into Ms Folbigg’s convictions and was asked to analyse the genomes of Kathleen and her four children in early 2019.

“In all four Folbigg children, there is credible medical and pathological evidence, including new peer-reviewed genetic findings, by an international team of 27 scientists published in a top international cardiology journal last year, that points towards natural causes of death,” said Professor Vinuesa.

“It is our responsibility as scientists to assist our legal peers so that they can rely on scientific, peer-reviewed evidence and ensure that domain experts are at their disposal to solve the issues of a difficult legal case.”

Other petition signatories and Fellows of the Australian Academy of Science highlight below why they signed the petition.

“It is deeply concerning that medical and scientific evidence has been ignored in preference of circumstantial evidence. We now have an alternative explanation for the death of the Folbigg children” – **Child and public health researcher Professor Fiona Stanley AC FAA FAHMS(Hon) FASSA.**

“The science in this particular case is compelling and cannot be ignored. Despite the new knowledge gained from sequencing the human genome almost 20 years ago, we still have some way to go when it comes to both understanding the complexities of genetic disorders and educating the community about these issues” – **Human geneticist and researcher Professor Jozef Gecz FAA FAHMS.**

“Expert advice should always be heard, and listened to. It will always trump presumption” –

Former Chief Scientist Professor Ian Chubb AC FAA FTSE.

Read the petition⁶ (PDF 7.4MB)



Watch on Vimeo⁷

The above video features Professor Carola Vinuesa explaining the genetic findings that point towards natural causes of death.

Last year a panel of experts from the Australian Academy of Science and Australian Academy of Law explored the topic of scientific proof and legal proof in a **joint symposium**⁸.

Statement from the Australian Academy of Science – Kathleen Folbigg

March 24, 2021

There are medical and scientific explanations for the death of each of Kathleen Folbigg’s children.

Today the NSW Court of Appeal has dismissed Kathleen Folbigg’s appeal, which requested that the findings of the Commissioner of the 2019 inquiry be overturned.

The appeal reviewed the legal processes undertaken by the Inquiry but did not consider an assessment of the scientific evidence available since the Inquiry.

“The incorrect conclusions about the genetics evidence found by the Commissioner of the 2019 inquiry, were adopted by the NSW Court of Appeal in

⁶ www.science.org.au/files/userfiles/events/news/documents/petition-to-governor-of-nsw-for-pardon-of-kathleen-folbigg-05-03-21.pdf

⁷ vimeo.com/518533234

⁸ vimeo.com/449532659/bfb6fa4f10

their conclusion today. The Europace peer reviewed scientific paper , which validates the findings of the mutation in Sarah and Laura Folbigg, displaces the findings and non-scientific reasoning at the Inquiry.”
— Professor Carola Vinuesa FAA FAHMS

These points were made clear in the petition recently submitted to the NSW Governor and which is currently being considered by the NSW Attorney-General as a separate matter to today’s Inquiry.

The petition argues that Ms Folbigg should be granted a pardon based on the significant scientific evidence of natural causes of death for her children.

This includes new peer-reviewed genetic findings by an international team of 27 scientists published in a top international cardiology journal last year.

Australian Academy of Science President, Professor John Shine AC PresAA FAHMS(Hon) FRS was among 22 Fellows of the Academy and 90 scientists to sign the petition.

“It is deeply concerning that there is not a mechanism to appropriately weigh up all medical and scientific evidence in a case of this nature. There is now an alternative explanation for the death of the Folbigg children that does not rely on circumstantial evidence” – Professor John Shine.

“The science in this particular case is compelling and cannot be ignored. Despite the new knowledge gained from sequencing the human genome almost 20 years ago, we still have some way to go when it comes to both understanding the complexities of genetic disorders and educating the community about these issues” – Human geneticist and researcher Professor Jozef Gecz FAA FAHMS.

“Expert advice should always be heard and listened to. It will always trump presumption” – Former Chief Scientist Professor Ian Chubb AC FAA FTSE.

Read the petition.⁹

Academy responds to Cabinet reshuffle

March 29, 2021



The Australian Academy of Science thanks outgoing Minister for Industry, Science and Technology Karen Andrews for her long-term and authentic commitment to science and technology.

The Academy congratulates Minister Andrews on her outstanding achievements including her leadership with the Rapid Research Information Forum, a critical independent scientific advisory function that has assisted the Prime Minister navigate the pandemic and that continues to be a valuable tool to assist evidence-informed decision making across portfolios; growth of the space sector; setting in train growth of onshore manufacturing capability much of which is driven by science and technology; and boosting the cooperative research centre programs that enhance collaboration between academia and industry.

In particular, we acknowledge Minister Andrews’ commitment to women in STEM and for advancing the recommendations of Australia’s 10-year plan for Women in STEM. The plan is aimed at achieving sustained increases in girls’ and women’s STEM participation. The plan was jointly developed by the Australian Academy of Science and the Australian Academy of Technology and Engineering.

Minister Andrews brought a wealth of knowledge and experience to the portfolio. An engineer before entering the parliament, she previously held the position of Assistant Minister and Parliamentary Secretary for Science and co-convoked the Parliamentary Friends of Science group since its inception.

The Academy looks forward to continuing to advance science in Australia with the new Minister for Industry, Science and Technology, Christian Porter.

9 www.science.org.au/files/userfiles/events/news/documents/petition-to-governor-of-nsw-for-pardon-of-kathleen-folbigg-05-03-21.pdf

Australian scientists changing the world recognised with Academy awards

March 11, 2021



Outstanding contributions to science have been recognised by the Australian Academy of Science today with 24 current and future **stars of science**¹⁰ receiving prestigious 2021 honorific awards.

The scientists' discoveries are changing the world, including revealing the **physics of sea-level change**¹¹, leading the **discovery of gravitational waves**¹², harnessing the **immune system to fight cancer**¹³, answering **unsolved mathematical problems**¹⁴ and creating **cheap, flexible, stable and non-toxic solar cells**¹⁵.

Emeritus Professor Cheryl Praeger receives the **inaugural Ruby Payne-Scott Medal and Lecture**¹⁶. It is one of the Academy's most prestigious awards and honours Ruby Payne-Scott's pioneering contribution to radiophysics and radio astronomy.

Professor Praeger's work on problems of symmetry has led a revolution in mathematics, and the algorithms she developed are used in technology around the world.

She has a long track record of mentoring and inspiring others, supporting women, advocating for mathematics in schools and promoting mathematics in emerging economies.

"I feel very humbled to receive the inaugural Ruby Payne-Scott Medal and I feel it a great honour: Ruby Payne-Scott was a trail-blazer for women in science," said Professor Praeger.

"Along with all women who have had the opportunity of a life-long career in STEM, I feel enormous gratitude to Ruby for her courage in fighting against the restrictions which prevented this for married women in the 1950s.

"Although I never had the opportunity of meeting Ruby, I am grateful to have known and worked with her son, mathematician Peter Hall."

Professor Andrew Holmes is the recipient of the Academy's other Premier award, the **2021 Matthew Flinders Medal and Lecture**¹⁷.

Professor Holmes is recognised for his world-leading contributions to materials science and biology, including plastics that emit light when sandwiched between electrodes connected to a power source—technology that forms the basis of flexible OLED televisions and plastic solar cells.

"Printed plastic solar technology is certainly going to be a technology in the [energy] marketplace," said Professor Holmes, in a video published today to highlight his award.

"It has the advantage that it's lightweight, it's flexible and, in principle, it's significantly cheaper than the silicon solar cell technology."

In the career awards, Professor John Endler and Professor Susanne von Caemmerer are each awarded the **inaugural Suzanne Cory Medal**¹⁸, which honours the former Academy president and molecular biologist.

Professor John Endler, a world-leading evolutionary biologist, has pioneered the field of sensory ecology, which explores how an animal's environment helps determine how their specific senses and signals evolve.

Professor von Caemmerer, an expert in the processes underpinning how plant leaves use

10 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees

11 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#jaeger

12 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#lyle

13 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#miller

14 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#heyde

15 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#pawsey

16 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#scott

17 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#flinders

18 www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#cory

CO₂, has changed the way we think about photosynthesis. Her research, aimed at improving photosynthesis in crops to increase their yields and adapt to climate change, is now applied worldwide.

One of the early-career researchers also honoured this year is Dr Sarah Perkins-Kirkpatrick, a world expert on heatwaves—their causes, impacts and how they are changing as the earth warms.

She led a global study that found heatwaves have been increasing in frequency since 1950, and receives the **2021 Dorothy Hill Medal**¹⁹, which honours Australia's first woman professor.

President of the Australian Academy of Science, Professor John Shine, said the research of this year's awardees is at the forefront of science, not only in Australia but around the world.

“While many of these researchers are having direct impacts on our technology and everyday lives, others are pushing the boundaries of basic research—both of which are vital to the advancement of science.

“The Academy is proud to honour such a diverse range of researchers this year, reflecting the people driving Australian science.”

Award recipients

The Academy's 2021 honorific awards go to:

Premier honorifics

- Matthew Flinders Medal and Lecture—Professor Andrew Holmes AC FAA FRS FTSE
- Inaugural Ruby Payne-Scott Medal and Lecture—Emeritus Professor Cheryl Praeger AC FAA

Career honorifics

- David Craig Medal and Lecture—Professor Thomas Maschmeyer FAA FTSE
- Hannan Medal—Professor Mathai Varghese FAA
- Jaeger Medal—Professor John Church FAA FTSE
- Inaugural Suzanne Cory Medal—Professor John Endler FAA FRS

- Inaugural Suzanne Cory Medal—Professor Susanne von Caemmerer FAA FRS
- Thomas Ranken Lyle Medal—Professor David McClelland FAA

Mid-career honorifics

- Jacques Miller Medal—Professor Mark Dawson
- Jacques Miller Medal—Associate Professor Michele Teng
- Nancy Millis Medal for Women in Science—Professor Angela Moles
- Nancy Millis Medal for Women in Science—Associate Professor Cathryn Trott

Early-career honorifics

- Anton Hales Medal—Dr Nicolas Flament
- Christopher Heyde Medal—Dr Kevin Coulembier
- Christopher Heyde Medal—Dr Vera Roshchina
- Dorothy Hill Medal—Dr Sarah Perkins-Kirkpatrick
- Fenner Medal—Associate Professor Eve McDonald-Madden
- Gottschalk Medal—Associate Professor Francine Marques
- John Booker Medal—Dr Bishakhdat Gayen
- Le Fèvre Medal—Associate Professor Debbie Silvester-Dean
- Moran Medal—Professor Christopher Drovandi
- Moran Medal—Dr Janice Scealy
- Pawsey Medal—Associate Professor Xiaojing Hao
- Ruth Stephens Gani Medal—Professor Joseph Powell

The awards will be presented in online ceremonies over the course of the year.

Read more about the 2021 awardees²⁰

¹⁹ www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees#hill

²⁰ www.science.org.au/supporting-science/awards-and-opportunities/honorific-awardees/2021-awardees

Disruption of 2020 provides opportunities to accelerate progress on Sustainable Development Goals

March 18, 2021



Each of the Sustainable Development Goals has a series of targets.

2030 is the deadline to make the **17 United Nations Sustainable Development Goals (SDGs)**²¹ a reality.

The UN goals were set in 2015 and the SDGs form the basis of the **2030 Agenda for Sustainable Development**²², which seeks a global shift to a sustainable and resilient path that promotes prosperity and is free of poverty.

The global community is now in the **Decade of Action**²³ to make the SDGs a reality. In its latest **Science Policy and Diplomacy Newsletter**²⁴, the Academy outlines its events, programs and initiatives that align with and support the SDGs.

Academy initiatives include **STEM Women**²⁵, the **Rapid Research Information Forum**²⁶, the **Early- and Mid-Career Researcher Forum**²⁷, **Taxonomy Australia**²⁸ and **Future Earth Australia**²⁹.

In the foreword to the newsletter, Academy Chief Executive Anna-Maria Arabia writes that the Academy holds these goals in high regard,

and much of its work contributes to creating a sustainable and equitable world.

“Whilst 2020 was a year of disrupted progress towards achieving the SDGs, it was also a year that called attention to the importance of addressing inequalities. The science community and the world more broadly can use the opportunity that disruption to business-as-usual provides to accelerate progress towards an inclusive, sustainable and resilient 2030.”

By championing the SDGs, the Academy is representing the role of science in supporting the 2030 Agenda and for positioning Australian science, technology, engineering and mathematics as leaders in sustainable development.

Publishing the Academy’s contributions and achievements that align with the SDGs acknowledges the impact that various initiatives can have on the goals.

It is critical that organisations acknowledge their contributions to the 17 SDGs and continue to support the 2030 Agenda.

The Science Policy and Diplomacy Newsletter shares resources, updates and events that relate to science policy discussion in Australia and around the globe. It reports on the involvement of science in national and international policy and diplomacy and the Academy’s contributions to these discussions.

Read and subscribe to the newsletter.³⁰

21 sdgs.un.org/goals

22 sdgs.un.org/2030agenda

23 www.un.org/sustainabledevelopment/decade-of-action/

24 www.science.org.au/news-and-events/newsletters/science-policy-and-diplomacy-newsletter

25 www.stemwomen.org.au/

26 www.science.org.au/covid19/rapid-research-information-forum

27 www.science.org.au/supporting-science/early-and-mid-career-researchers-0

28 www.taxonomyaustralia.org.au/

29 www.futureearth.org.au/

30 www.science.org.au/news-and-events/newsletters/science-policy-and-diplomacy-newsletter

2021 J G Russell awardees receive funding to further support their research

March 10, 2021



From left: Dr Xiaoxiao Zang, Dr Zhiliang Wang, Dr Yaoxin Hu, and Dr Amandeep Kaur. Image Credit: Australian Academy of Science

Four early-career researchers have been awarded a prestigious top-up grant that recognises and supports excellence in science research.

The **J G Russell Award**³¹ provides an additional \$7000 to projects funded through the Australian Research Council's Discovery Early Career Research Award. It is aimed at helping talented younger researchers as a token of the community's regard for them. It recognises the costs involved in experimental research, and can be used towards the costs of equipment, maintenance and travel.

The award is made possible by the generosity of the late Miss J Russell.

2021 recipients

Dr Yaoxin Hu

Dr Hu is a chemical engineer who is improving the energy efficiency of heating large structures through the development of new construction materials. She will use the award to purchase an additional air-based cooling apparatus to investigate cooling performance of the materials.

Dr Amandeep Kaur

Dr Kaur develops new chemical tools to provide super-resolution imaging for the study of biological nanostructures and biochemical mechanisms relevant to food security, antibiotic resistance and viruses. She will use the award to establish new capabilities for her research group's current super-resolution imaging microscope.

Dr Zhiliang Wang

Dr Wang researches ways to improve the generation of energy. He develops materials to convert sunlight into hydrogen-based energy sources, helping to address clean energy challenges. He will use the award to visit a top research group in the United States to discuss ways to incorporate artificial intelligence tools into his research.

Dr Xiaoxiao Zhang

Dr Zhang investigates disease resistance in cereal crops. Her aim is to reduce waste in global food production and address the environmental impact of toxic pesticide use. She will use the award to fund attendance at a conference of synthetic biologists, and to provide additional lab materials for gene editing and protein structure determination.

Applications are not sought for the J G Russell Award. Awardees are chosen from recipients of Australian Research Council Discovery Early Career Researcher Awards.

STEM Women reaches 3000 member milestone

March 31, 2021

Discover
3000+ experts
on stemwomen.org.au

Australian Academy of Science
STEM Women

The Academy encourages all women working in STEM fields to create a profile at stemwomen.org.au.

31 www.science.org.au/supporting-science/awards-and-opportunities/j-g-russell-award

Online network reaches milestone of 3000 members

Fiza Mughal was the 3000th member of STEM Women.



Since the Academy launched the online directory STEM Women in 2019, the network has seen more than 3000 members from around Australia sign up, representing a vast array of expertise across more than 4500 disciplines and areas of work.

To mark this major milestone, the Academy interviewed STEM Women's 3000th member, Fiza Mughal from the University of Technology Sydney. Fiza talked about her work on detecting depression in older people with smart wearables using machine learning and human physiology, and what inspires her about a career in STEM.

The Academy encourages all women working in STEM fields to join Fiza and more than 3000 others around the country by creating a profile at stemwomen.org.au to share expertise, connect with like-minded professionals and explore new opportunities.

Learn more about STEM Women.³²

Café conversation series encourages connection and information sharing

The new STEM Women Café conversation series encourages connection and information sharing within the network.

The first events in the series featured two hosted information sessions with Julia Lansdown from the Department of Industry, Science, Energy and Resources to discuss the Prime Minister's Prizes for Science. **Watch the recording**³³ of one of the sessions in preparation for the 2022 prizes (nominations for 2021 have now closed).

The March meetups focused on the **broad theme of collaboration**³⁴, with a group STEM Women colleagues from around the country

discussing the characteristics required for good collaboration, including how gender equity can be improved in collaborative activities.

The Café conversation series will continue in April, with a planned exploration of mentorship.

Opportunities for scientists—March 2021

March 31, 2021

Academy opportunities

Academy awards and funding opportunities

Nominations are open for the Academy's 2022 honorific awards, and applications are open for support for research conferences, research awards and travelling fellowships.

All honorific award nominations close 1 May 2021.

All research conferences, research awards and travelling fellowships applications close 1 June 2021.

More information on nominations for awards and applications for funding opportunities³⁵

2021 APEC Science Prize for Innovation, Research and Education (ASPIRE Prize)

The Academy invites applications from researchers to be selected as the Australian nominee for the 2021 ASPIRE Prize.

Applications close 27 April 2021.

More information on the 2021 ASPIRE Prize³⁶

External opportunities

Australian Science Policy Fellowship Program

The Australian Science Policy Fellowship Program is an initiative of the Office of the Chief Scientist that aims to grow the diversity of expertise in

³² www.stemwomen.org.au/

³³ www.stemwomen.org.au/blog/stem-women-cafe-pms-prizes-science

³⁴ www.stemwomen.org.au/blog/stem-women-cafe-conversations-collaboration

³⁵ www.science.org.au/news-and-events/news-and-media-releases/nominate-now-academys-2022-awards

³⁶ www.science.org.au/supporting-science/awards-and-opportunities/apec-science-prize-innovation-research-and-education-aspire-prize

the Australian Public Service (APS) workforce. It provides a pathway for early- to mid-career scientists to become skilled policy practitioners so they can contribute science to the policy process. Fellows are employed as policy officers by participating Australian Government host departments for 12 months.

Applications open 7 April and close 26 April 2021

More information on the Australian Science Policy Fellowship Program³⁷

Tall Poppy Science Awards

The Tall Poppy Science Awards were created to recognise and celebrate Australian intellectual and scientific excellence and to encourage younger Australians to follow in the footsteps of our outstanding achievers. Nominees must have graduated with their PhD between three and ten years of the nomination closing date.

Applications close 6 April 2021

More information on the Tall Poppy Science Awards³⁸

International Prize for Biology

The International Prize for Biology is awarded to an individual who has made outstanding contribution to the advancement of research in fundamental biology—10 million Yen.

Applications close 9 April 2021

More information on the International Prize for Biology³⁹

Jian Zhou Medal

The Australian Academy of Health and Medical Sciences' Jian Zhou Medal is awarded annually to a rising star of Australian health and medical science who is making a significant impact in translational medical science, primarily working in Australia.

Applications close 30 April 2020

More information on the Jian Zhou Medal⁴⁰

Order of Australia Honours

Nominations received from the public to recognise people who have contributed above and beyond to the Australian community or humanity at large. To encourage diverse representation of the community, nominations of women are being sought.

Rolling deadline—appointments in the Order of Australia are announced on Australia Day in January and on the Queen's Birthday public holiday in June.

More information on the Order of Australia Honours⁴¹

See more external awards and prizes⁴²

Fellows update— March 2021

March 31, 2021

Honours and awards to Fellows

Professor Chennupati Jagadish AC FAA FTSE—elected a Foreign Fellow of the National Academy of Sciences of India

Emeritus Professor Stephen Powles FAA FTSE—Seed of Gold Award, Grains Research and Development Corporation

Professor Halina Rubinsztein-Dunlop AO FAA—2020 Harrie Massey Medal, Australian Institute of Physics

Obituary

Dr Roy Woodall AO FAA FTSE

3 November 1930 to 14 February 2021



Dr Roy Woodall was elected to the Academy in 1988 for his contribution to the development of the geological sciences as applied to mineral exploration, and for his contribution to the

37 www.chiefscientist.gov.au/australian-science-policy-fellowship-program

38 aips.net.au/tall-poppy-campaign/

39 www.jsps.go.jp/english/e-biol/index.html

40 aahms.org/programs/jian-zhou-medal/

41 www.gg.gov.au/australian-honours-and-awards/order-australia

42 www.science.org.au/supporting-science/recognition/external-sources-recognition

discovery of some of Australia's major mineral resources.

After completing a master degree at the University of California at Berkeley, Dr Woodall returned to Western Australia as a geologist where he discovered bauxite deposits in an area that became a vast source of the lowest cost alumina in the world. At Western Mining, Dr Woodall was appointed Chief Geologist in 1967, Exploration Manager in 1968 and Director of Exploration from 1978 to 1995. Dr Woodall's scientific approach to exploration, and his use of the latest geological techniques, contributed greatly to the discovery of the Kambalda Nickel Field (1964), uranium at Yeelirrie (1971), the Olympic Dam copper-gold-uranium deposit (1975) and the East Spar oil-condensate field (1993).

Dr Woodall was a Foundation Member of the Geological Society of Australia and was made a Fellow of the Australian Academy of Technology and Engineering (ATSE) in 1977. He received the Geological Society of London's William Smith Medal in 1983, ATSE's Clunies Ross Award in 1993 and ATSE's Lifetime Contribution Award in 2011. The University of Western Australia awarded Dr Woodall an Honorary Doctorate of Science in 1985. He received the Academy's Mawson Medal and Lecture in 1984, the Haddon Forrester King Medal in 1993, and the Ian Wark Medal and Lecture in 1996. Dr Woodall was appointed an Officer of the Order of Australia in 1981 and received the Centenary Medal in 2001.

Dr Woodall served on numerous Academy committees, and was **interviewed by Professor Richard Stanton FAA**⁴³ for the Academy in 2008.

More news

Impact of COVID-19 on women in the STEM workforce, Asia-Pacific

If you know someone living in the Asia-Pacific region, or you have an interest in sharing your

perspectives, the Academy is **seeking insights and experiences**⁴⁴ about the challenges faced by you or your organisation due to the pandemic.

Primary Connections empowers teachers and supports STEM learning

The Academy has collaborated with the Invergowrie Foundation to develop a **professional learning program for teachers**⁴⁵.

Make history with the Academy

The **Basser Library and Fenner Archives**⁴⁶ at the Academy have a rich, varied and historic collection of published and primary source materials used to analyse the history of Australian science and establish continuity with science today.

2021 APEC ASPIRE Prize

The Academy **invites applications from researchers**⁴⁷ to be selected as the Australian nominee for the 2021 APEC Science Prize for Innovation, Research and Education (ASPIRE Prize). The theme this year is 'Diverse Knowledge for a Sustainable Future'.

In brief

Find out about the stories of two members of an 1872 exploration expedition to Cape York—told by their descendants. The authors of a **recent article**⁴⁸ published in the Academy's journal, *Historical Records of Australian Science*, were interviewed by Phillip Adams on ABC Radio's Late Night Live show. **Listen to the interview**⁴⁹.

Holding our events online has resulted in a large increase in the number of people able to watch and participate. See recordings of recent Academy events:

- **Supercomputing to fight COVID-19**⁵⁰
- **Testing and tracing for COVID-19**⁵¹

43 www.science.org.au/learning/general-audience/history/interviews-australian-scientists/dr-roy-woodall-earth-scientist

44 www.science.org.au/node/17278

45 www.science.org.au/node/17274

46 www.science.org.au/node/17275

47 www.science.org.au/node/17279

48 www.publish.csiro.au/hr/Fulltext/HR20014

49 www.abc.net.au/radionational/programs/latenightlive/cape-york-expedition/13263272

50 www.science.org.au/news-and-events/events/supercomputing-fight-covid-19

51 www.science.org.au/news-and-events/events/testing-and-tracing-covid-19

- **Genome sequencing COVID-19**⁵²
- **The Sustainable Shine Dome: Envisioning Sustainable Futures for Heritage**⁵³
- **The Sustainable Shine Dome: Planning Sustainable Futures for Heritage**⁵⁴
- **Understanding the key changes to the Investigator Grants 2021**⁵⁵

The Academy's Chief Executive, Ms Anna-Maria Arabia, participated in a recent Cosmos Briefing on how science and the law regard each other. Watch the briefing to find out how we could better incorporate science into the legal system.

Coming events

Food for thought

The Academy has some tasty science this year with the Food for Thought speaker series. During this International Year of Fruit and Vegetables, these events will explore the hidden world of your gut's microbiome, discover the truth and promise of genetic modification, explore the future of food and nutrition, and more!

Series dates

- Tuesday 13 April – **GM Foods**⁵⁶
- Tuesday 8 June – **Gut Health**⁵⁷
- Tuesday 10 August – **Alternative Food Sources**⁵⁸
- Tuesday 12 October – **Food Security**⁵⁹
- Tuesday 14 December – **The Future of Food and Nutrition**⁶⁰

52 www.science.org.au/news-and-events/events/genome-sequencing-covid-19

53 www.science.org.au/news-and-events/events/sustainable-shine-dome-envisioning-sustainable-futures-heritage

54 www.science.org.au/news-and-events/events/sustainable-shine-dome-planning-sustainable-futures-heritage

55 www.science.org.au/news-and-events/events/understanding-key-changes-investigator-grants-2021

56 www.science.org.au/news-and-events/events/food-thought-gm-foods

57 www.science.org.au/news-and-events/events/food-thought-gut-health

58 www.science.org.au/news-and-events/events/food-thought-alternative-food-sources

59 www.science.org.au/news-and-events/events/food-thought-food-security

60 www.science.org.au/news-and-events/events/food-thought-future-food-and-nutrition