

Message from the Chief Executive—October 2019

October 29, 2019

October has been a month of great celebration for the Academy.

We are thrilled Emeritus Professor Cheryl Praeger received the Prime Minister's Prize for Science for her fundamental contributions to research in pure and applied mathematics. However, over the past 20 years or so Emeritus Professor Praeger has also made substantial contributions to the Academy's governance as a member of Council and multiple committees, to international relations as Foreign Secretary, and as a leading Women in STEM promoter in Australia and internationally. Cheryl has been a trailblazer and role model for girls and women across the globe.

The Prime Minister's science prizes also recognised Associate Professor Laura Mackay and Associate Professor Elizabeth New, whose achievements were acknowledged by the Academy earlier this year through our honorific awards.

And from the Academy, the Academy Medal—which recognises outstanding contributions to science by means other than through scientific research—was awarded jointly to the head of the Australian Space Agency Dr Megan



Prime Minister Scott Morrison, Emeritus Professor Cheryl Praeger and Minister for Industry, Science and Technology, Karen Andrews.

Clark and Australian businessman Peter Yates .

Congratulations to all recipients, and to the many Fellows who are recognised each year by their peers and others for their great achievements.

Another achievement we celebrated was the attainment of 2 million likes (followers) on the Academy's Facebook page, making credible science in video and written form available to millions. Our most popular videos have had more than 5 million views and we continue to raise awareness of important topics such as measles vaccinations.

Well done all and thank you for your support!

Anna-Maria Arabia

Mathematics trailblazer and role model wins Prime Minister's Prize for Science

October 17, 2019

Emeritus Professor Cheryl Praeger is the 2019 recipient of the Prime Minister's Prize for Science. Academy Fellows have featured each year since the prizes' inception in 2000.

Emeritus Professor Praeger, who was elected to the Academy in 1996, received the \$250,000 prize for her fundamental contributions to research in pure and applied mathematics. Her work explains the complex mathematics required for applications such as secure digital communication and encryption for the web.

Australian Academy of Science President, Professor John Shine AC PresAA, congratulated

Emeritus Professor Praeger on her achievement during a Prime Minister's Prizes for Science breakfast hosted at the Shine Dome the morning after the prize night. The breakfast was attended by past prize winners, parliamentarians and the science community.

"Cheryl, you have been, and continue to be a trailblazer and role model for girls and women in mathematics and beyond, across the globe," Professor Shine said.

"As a Fellow of this Academy we are thrilled that you have been awarded the nation's most prestigious prize for your contribution."

Emeritus Professor Praeger spoke with **ABC Radio National's Breakfast program**¹ about her achievement.

"To receive the award, I find it a wonderful statement about the importance of mathematics and such a recognition of the achievements of myself, my colleagues and students in the research on the mathematics of symmetry," Emeritus Professor Praeger said.

Search engines on the world wide web make use of symmetrical networks to store information so that on a request, the nodes where the information is stored can be searched quickly and effectively.

"I believe that we need many more people in the maths and STEM disciplines to solve and face the new changes that will be facing us. We need creative and critical thinkers to

be able to make progress," Emeritus Professor Praeger said.

Emeritus Professor Praeger also has a long history of involvement with international scientific organisations as well as representing Australia through the Australian Academy of Science at international forums, particularly during her term as the Academy's Foreign Secretary from 2014 to 2018. She is a board member of the Association of Academies and Societies of Sciences in Asia (AASSA) and since 2017 has chaired the Women in Science and Engineering Special Committee of AASSA.

She is currently a member of the International Science Council Standing Committee for Freedom and Responsibility in Science which deals with freedom and responsibility of science matters at the global level.

Two recipients of the Academy's 2019 honorific awards were also Prime Minister's Prizes for Science winners.

The \$50,000 Frank Fenner Prize for Life Scientist of the Year went to Associate Professor Laura Mackay

from the University of Melbourne for her breakthrough work in identifying the role of tissue-resident T cells in protecting the body from infection and cancer.

Associate Professor Mackay was awarded the Academy's Gottschalk Medal earlier this year.

The \$50,000 Malcolm McIntosh Prize for Physical Scientist of the Year went to Associate Professor Elizabeth New from the University of Sydney for pioneering the development of new chemical imaging tools to observe healthy and diseased cells.

Associate Professor New was awarded the Academy's Le Fèvre Medal earlier this year.

See the full list of the Prime Minister's Prizes for Science recipients.²



Watch the Prime Minister's Prize for Science 2019 Curious Video: youtu.be/ARMeDewnmpps



Academy President Professor John Shine AC FAA with Academy Fellows and past winners of the PM Science Prize.

¹ <https://radio.abc.net.au/programitem/pgOVn3eX47>

² <https://www.industry.gov.au/data-and-publications/prime-ministers-prizes-for-science-2019>



Watch the Academy Medal 2019 Megan Clark AC FTSE Curious video:
<https://youtu.be/3UV4umnrU2k>



Watch the Academy Medal 2019 Peter Yates AM FTSE Curious video:
<https://youtu.be/i-QiGzoUrog>

Outstanding Australians recognised for contributions to science

October 09, 2019

How do we get science into Australia's culture and more connected with the business community? It's a question that Australian businessman Peter Yates AM continues to pursue since noticing that science was largely missing from mainstream media and parts of the business community 15 years ago.

He joins Australian Space Agency Head Dr Megan Clark AC as the joint 2019 recipients of the prestigious Australian Academy of Science Medal. These two trailblazers in Australian science have worked across industries to advance the cause of science and technology through the public domain.

Dr Clark has led innovation in science nationally, as the first female chief executive of CSIRO, and now due to her ambitious leadership of the Australian Space Agency Australia is making exciting waves in space research and future space exploration.

President of the Australian Academy of Science, Professor John Shine, said the medal recognises outstanding contributions to science by means other than research.

"The medal is awarded to a person outside the Fellowship who has, by sustained efforts in the public domain, significantly advanced the cause of science and technology in Australia or who has made a substantial contribution to the Academy," Professor Shine said.

Previous recipients of the medal include Bob Hawke (1990), Dr Norman Swan (2004), Professor Sue Serjeantson (2008) and Professor Ian Chubb FAA (2016).

In 2004 Mr Yates noticed that science was missing from the mainstream media.

"It struck me that given how important science is and the decision making around science for our community, that if the leading television station in the country (Channel Nine at the time) didn't really have any focus on science in any of its program meetings, I felt we had a problem," said Mr Yates.

In 2005 Mr Yates helped found the **Australian Science Media Centre**³ and later the **Royal Institution of Australia**⁴. His objective was to change the way Australia looked at science. Today he hopes that science can be an even broader influence on society.

"The biggest surprise for me has been the disconnect between the business and science communities in Australia and I think that gets to a deeper issue for our community but also a tremendous opportunity," said Mr Yates.

"It's improving a lot and the Academies have done a tremendous job in reaching out to businesspeople, who are starting to learn more about why they need to be involved in that conversation.

"In that regard I am honoured to have received this award and thank all of the scientists and businesspeople as well as the amazing teams at the RiAus and the AusSmc for their tremendous encouragement and support over the past 15 years."

Dr Megan Clark AC is an Australian geologist with an extensive career in both the private and

³ <https://www.smc.org.au/>

⁴ <https://riaus.org.au/>

public sector. Starting as a mine and exploration geologist, she subsequently worked in mineral exploration, mine geology, R&D management, venture capital and technical strategy areas.

In 2009 she was appointed Chief Executive of the CSIRO. Under her leadership CSIRO was credited for several new ventures, including wireless research.

Dr Clark is also currently a director of Rio Tinto, CSL Limited and CARE Australia and recently chaired the Expert Working Group into the Review of Australia's Space Industry Capability.

Dr Clark said it is a surprise and an honour to be awarded the Academy Medal.

"My career has been dedicated to using breakthrough science to create value for our nation and everyday lives: whether it was using geological science to discover mines or understanding how primitive archaea (single-celled microorganisms) could create a new way to make copper at BHP or new animal vaccines or gene technology for cotton at CSIRO," Dr Clark said.

"Now I am lucky enough to be building an amazing team working

to transform and grow Australia's space industry. I can only accept this wonderful award from the respected Australian Academy of Science on behalf of these extraordinary team members."

Heading overseas? Measles is one of your risks. Get vaccinated.

October 04, 2019

Measles outbreaks are happening across the globe and are reaching Australia. In the past month, there have been confirmed cases in Perth, Sydney, the Gold Coast and Cairns. In light of these outbreaks, the Australian Academy of Science is urging Australians heading overseas, for business or pleasure, to make sure their measles vaccinations are up to date.

According to the Australian Department of Health's **National Notifiable Diseases Surveillance System**⁵ there have been 172 notifications of measles in Australia so far in 2019, compared to 103 cases in 2018.

The call comes as the Australian Health Department, in partnership with the Academy, releases educational and promotional materials to inform consumers and health professionals about the

highly contagious and sometimes deadly disease.

Public health expert Professor David Durrheim from the University of Newcastle, who features in the materials, said most measles cases are Australians who are unprotected from the disease, travelling overseas to places where measles is spreading, and bringing it back.

"The Philippines has had a very large outbreak with large numbers of deaths in young children. There have been outbreaks in Thailand, Vietnam, and Indonesia," Professor Durrheim said.

While measles is more common in developing countries where vaccines are less widely available—particularly in parts of Africa and Asia—outbreaks have also occurred in destinations that a lot of Australians might consider 'low-risk' for getting sick including parts of Europe, the United States and New Zealand.

"It's not just the unvaccinated who pose a risk to public health: many people in Australia may be under-vaccinated without realising it," said Professor Frazer, who also features in the materials.

The latest immunisation coverage data for two-year old children in



5 <http://www9.health.gov.au/cda/source/cda-index.cfm>

Australia shows coverage of more than 93% for the measles mumps and rubella (MMR) vaccine.

“Those most at risk of developing complications tend to be the same people who are unable to be vaccinated against the disease so it’s crucial that others in the community are fully immunised to prevent the spread of disease to the most vulnerable in our society,” Professor Frazer said.

“Two doses of the MMR vaccine provide lifelong protection. Check your vaccination records and if in doubt about whether you’ve had two doses speak with your GP. It is safe to have another MMR vaccine if you don’t have evidence of a second dose. This ensures you’ve got the best possible protection.”

People under 20 years of age, refugees and other humanitarian entrants of any age, can get measles vaccines for free through the **National Immunisation Program**⁶ if they did not receive the vaccines in childhood.

The Department of Health recommends measles immunisation for **specific groups of people**⁷.

Academy videos and articles

The Academy has produced four short videos and four articles to help people understand the importance of vaccinations to protect against measles.

See all the videos and articles⁸

The new initiative includes:

- consumer videos on the following topics:
 - Measles alert
 - Are you protected?
 - Travelling? Get vaccinated
- a video for health professionals to raise awareness of increased notifications and the importance of talking to patients about their vaccination status and the availability of catch up vaccines (where appropriate).
- feature articles on the following topics:
 - Who is most at risk of measles
 - Measles: what you need to know
 - Measles info for travellers
 - How measles impacts your immune system

The videos and articles have been rigorously fact-checked by Academy Fellows and feature some of Australia’s leading experts in the field including Professor Karin Leder from Monash University and Royal Melbourne Hospital, and Dr Sonya Bennett from Queensland Health.

Academy reaches two million Facebook likes in two years

October 17, 2019

What is genetic modification? What does travelling overseas have to do with the measles? What’s the best exercise for losing weight?

In the fast-paced world of today, the public wants credible and trusted sources of information. The Academy is engaging millions of social media followers through videos and web articles that cover science as it happens.

The Academy’s content is accurate and well-researched—and is fully checked by Fellows and other leading scientists before it is published.

Two million likes on the Academy’s Facebook page to date shows there is a public appetite for the content.

The Academy’s Facebook likes surpass other prominent online science and news sources. BBC Science News has around 800,000 likes, ABC Science nearly one million and news.com.au has just over one million.

Academy President, Professor John Shine, said the online videos and articles allow the public to engage with accurate and engaging science, and in addition are routinely used by mainstream media in their online articles.

Watch the videos and read the articles on our website⁹ and like and follow us on social media for more engaging science stories:

- Facebook¹⁰
- Twitter¹¹
- Instagram¹²
- YouTube¹³

6 <https://beta.health.gov.au/health-topics/immunisation>

7 <https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-measles-outbreaks-2019.htm>

8 <https://www.science.org.au/curious/people-medicine/measles-everything-you-need-know>

9 <https://www.science.org.au/curious/>

10 <https://www.facebook.com/AustralianAcademyofScience/>

11 https://twitter.com/Science_Academy

12 <https://www.instagram.com/ausacademyofscience/>

13 <https://www.youtube.com/user/ScienceAcademyAu>

Environmental historian will use Moran Award to study climate science past in Australia

October 23, 2019



Dr Ruth Morgan from Monash University

Dr Ruth Morgan from Monash University is the recipient of the Academy's 2020 Moran Award for History of Science Research.

She receives the award for her proposal entitled "A History of Australian Climate Science, 1970–2000".

Dr Morgan will examine the role of Australian climatologists and meteorologists in advancing the state of scientific knowledge about the causes and mechanisms of climate change and variability in the Southern Hemisphere over this time period.

Dr Morgan will pursue her pilot study using the holdings of the Australian Academy of Science Basser Library, the National Library of Australia and the National Archives of Australia.

Compared to the Northern Hemisphere, the large ocean mass in the Southern Hemisphere means that few regions south of the equator develop continental climates and instrumental and paleoclimatic data is relatively limited.

Dr Morgan said that Australia's geopolitical position and environmental sensitivity to climatic change encouraged Australian scientists and policymakers to take a leading role in the study of global environmental change.

"I'm delighted to have the opportunity to study Australia's contributions to climate science, which have been vital to understanding climate change in our region and the Southern Hemisphere," Dr Morgan said.

The Moran Award for History of Science Research is aimed at postgraduate students and other researchers with expertise in the history of Australian science. More information **about the Moran award**¹⁴. Applications for the 2021 award will open in early 2020.

Fellows awarded NSW Premier's Prizes

October 30, 2019



Professor Rose Amal is the 2019 NSW Scientist of the Year.

Three Academy Fellows have taken out NSW Premier's Prizes with chemical engineer Professor Rose Amal named the 2019 NSW Scientist of the Year.

Mathematician Professor Nalini Joshi received the Prize for Excellence in Mathematics, Earth Sciences, Chemistry or Physics, while molecular biologist Professor



Congratulations to the NSW Scientist of the year Professor Amal AC, a brilliant engineer whose work in solar and chemical energy conversion is changing lives, by providing clean water & sustainable energy.



239 7:07 PM - Oct 29, 2019

62 people are talking about this

Susan Clark received the Prize for Excellence in Medical Biological Sciences.

Professor Amal is recognised as a pioneer and leading authority in the fields of fine particle technology, photocatalysis—a chemical reaction that involves the absorption of light—and functional nanomaterials, having made significant contributions to these related areas of research over the past 25 years.

Her current research focuses on designing nanomaterials for solar and chemical energy conversion applications, including photocatalysis for water and air purification, and water splitting, and engineering systems for solar-induced processes, using the sun's energy to generate clean fuel.

"When I first came to Australia over 35 years ago, I never dreamt that I would be named the NSW Scientist of the Year. I am extremely honoured to have been considered for this esteemed award, which I receive with great humility," said Professor Amal.

14 <https://www.science.org.au/opportunities/research-funding/moran-award-history-science-research>

“Scientific research contributes significantly to many everyday societal aspects and it has been a joy to be able to help improve people’s quality of life.”

The NSW Chief Scientist and Engineer, Academy Fellow Professor Hugh Durrant-Whyte, said this year’s winners illustrated both the diversity and strength of NSW research.

“This year’s entry contained the highest number of female nominations ever. Gratifyingly, this has translated into an equal number of female and male prize recipients, while also revealing a rich depth of talent, from our two exciting early-career researchers, right through to some of the most respected researchers in the state, including Scientist of the Year Professor Rose Amal,” said Professor Durrant-Whyte.

“I offer my sincere congratulations to all our winners and thank them for the outstanding and continuing contribution they make to science, engineering and education in NSW.”

Read about all the prize winners¹⁵

Organisations across the STEM sector championing the Women in STEM Decadal Plan

October 29, 2019



Organisations are aligning their activities against the six opportunities in the Women in STEM Decadal Plan.

Attracting women and girls to STEM and providing an environment for them to thrive and progress is a shared responsibility of government, academia, the education system, industry, and the community.

The **Women in STEM Decadal Plan**¹⁶ offers a vision and opportunities to guide stakeholders as they identify and implement specific actions they must take to build the strongest STEM workforce possible to support Australia’s prosperity.

Action is being taken by **Women in STEM Decadal Plan Champions**¹⁷—STEM organisations that have agreed to publicly align their gender equity journey with the decadal plan. The Academy welcomes and celebrates the new Women in STEM Decadal Plan Champions:

- Monash University
- St Vincent’s Institute

- Power of Engineering
- Royal Australian Chemical Institute
- University of Newcastle
- QinetiQ
- Bureau of Meteorology
- Gemaker
- Griffith University
- University of Technology Sydney
- Women in Subsea and Engineering
- Women in Technology WA
- South Australian Health and Medical Research Institute
- Raytheon Australia
- University of Sydney
- Science & Technology Australia
- ANSTO

Each organisation is demonstrating its progress towards gender equity by publishing a written response aligning its activities against the six opportunities in the decadal plan.

‘It is incredibly useful to begin understanding the broad range of gender equity activities being undertaken by organisations,’ said the Academy’s Diversity and Inclusion Manager Louise Moes.

‘The Academy will collate these champion responses to provide a source of ideas and inspiration for everyone who would like to support girls and women in STEM and progress the vision of the decadal plan.’

The Academy is currently preparing its own response to the decadal plan with the intention of making it publicly available. It has also joined the Diversity Council of Australia, the independent, not-for-profit

¹⁵ <https://www.chiefscientist.nsw.gov.au/premiersprizes/2019-category-winners>

¹⁶ <https://www.science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan>

¹⁷ <http://www.stemwomen.org.au/champions>

peak body for workplace diversity and inclusion in Australia.

All organisations in the sector are encouraged to become **Women in STEM Decadal Plan Champions**¹⁸.

Fellow to lead new plant centre of excellence

October 29, 2019



Professor Christine Beveridge will lead the new ARC Centre of Excellence for Plant Success in Nature and Agriculture.

Academy Fellow Professor Christine Beveridge will lead the new Australian Research Council (ARC) **Centre of Excellence for Plant Success in Nature and Agriculture**¹⁹, to be based at the University of Queensland.

With a multidisciplinary team, the centre will deliver new strategies to address the problems of food security and climate change, establishing Australia as a global leader in these areas.

Professor Beveridge said the team would identify nature's success stories and translate these into opportunities to enhance yield and resilience in agricultural crops.



Professor Mike Smith, second from right, with the winner and finalists of the 2013 prize at the National Museum of Australia.

"By predicting the plant varieties that are best for particular environments we can help farmers choose which plants to grow in what areas for each season for the best yield," Professor Beveridge said.

"An important component of the centre is the focus on the regulatory requirements which will allow the new technologies to be scaled globally to future-proof agriculture around the world."

The Australian Government has committed \$35 million over seven years to the centre.

Submissions for the Mike Smith Student Prize now open

October 29, 2019

Submissions are now open for the 2020 Mike Smith Student Prize—an award recognising research into Australia's scientific and environmental history.

The Australian Academy of Science, through its National Committee for History and Philosophy of Science, joins with the National Museum

of Australia to host the prize. It is named in recognition of Australian archaeologist and Museum Senior Research Fellow **Dr Mike Smith**²⁰, a well-known leader of his field and mentor of young researchers.

A \$3000 first prize is awarded for the best essay by a postgraduate or undergraduate student that deals with any aspect of the history of Australian science (including medicine and technology) or Australian environmental history. Entries may also be considered for publication in the Academy's journal, **Historical Records of Australian Science**²¹.

The prize is judged by the chair of the National Committee for History and Philosophy of Science, the editors of *Historical Records of Australian Science*, and the National Museum's Head of Research.

Winning articles the focus of 'virtual issue'

To help promote the prize and encourage entries, the Academy has worked with journal publisher CSIRO Publishing to make a **virtual issue of *Historical Records of***

18 <http://www.stemwomen.org.au/champions>

19 <https://www.arc.gov.au/2020-arc-centre-excellence-plant-success-nature-and-agriculture>

20 <https://researchers.anu.edu.au/researchers/smith-m>

21 <https://www.publish.csiro.au/hr>

Australian Science²² available free online. The virtual issue showcases six articles by previous Mike Smith Prize winners and highly commended contributors. Participation in the contest has resulted in positive outcomes for entrants, participating institutions, and the disciplines of the history of Australian science and Australian environmental history.

Entries for the Mike Smith Student Prize for History of Australian Science or Australian Environmental History close on 20 January 2020.

More information about the prize and how to apply²³

Physicists focus on gender equity at Indian conference

October 29, 2019



(From left) Parul Gupta of the British Council, Delhi, Dr Rosalind Dubs representing SAGE, and Dr Pratibha Jolly from the University of Delhi.

Gender equity was the main theme of **Pressing for Progress 2019**²⁴, the Indian Physics Association's national conference held at the University of Hyderabad in September.

Dr Rosalind Dubs represented the **Science in Australia Gender Equity (SAGE) initiative**²⁵ of the Australian Academy of Science and the Australian Academy of Technology and Engineering, the latter of which she is a Fellow. Dr Dubs delivered a keynote presentation entitled 'Transforming gender equity in Australia's higher education and research: why national leadership is key'.

There were more than 200 attendees at the conference from universities and research institutes across India. There were physics presentations, as well as workshops on the theme 'The gender gap in physics: whose problem is it?' that discussed the topics of gender equity: barriers, bridges and stepping stones; understanding sexual harassment dynamics; and exploring personal agency and power: challenging gender stereotypes in daily living.

Dr Dubs' participation in the conference, supported by the Australia–India Science and Research Fund, raised Australia's profile and leadership in successful gender equity and diversity programs, which helps to position Australia to continue supporting partner economies.

Education Investment Fund closure a loss for Australia

October 18, 2019

The Australian Academy of Science is disappointed with the Australian Parliament's decision to abolish the \$4 billion Education Investment Fund.

Funding for emergency response and natural disaster recovery is clearly very important but it should not come at the expense of crucial long-term science & research infrastructure funding.

The abolition of the fund means a key long term and ongoing mechanism to support research infrastructure in Australia is now lost.

The Education Investment Fund has supported many transformative projects important to Australia's national interest. Among them are the Square Kilometre Array Telescope, the Australian Synchrotron, a climate high performance computer capability at the National Computational Infrastructure and nuclear science facilities at ANSTO.

The abolition of the fund not only reduces Australia's capacity to be scientifically competitive in future, but also limits our ability to participate in future international big science projects.

22 <https://www.publish.csiro.au/hr/virtualissue/2682>

23 <https://www.science.org.au/opportunities/research-funding/mike-smith-student-prize-history-science-environmental-history>

24 <https://progress2019.tifrh.res.in/>

25 <https://www.sciencegenderequity.org.au/>



Dr Jason Whitfield, member of the EMCR program organising committee, welcomes attendees to the EMCR networking session



Members of the Kick-starting the Australian bioeconomy panel were (from left) Dr Kirill Alexandrov, Dr Kym Baker, Dr Nandhitha Subramanian, Dr James Brown, Mr Matt Gardner and Mr Tony Hunter (facilitator)

Academy supports EMCRs at Synthetic Biology Australasia conference

October 29, 2019

The Academy supported a range of activities for early- and mid-career researchers (EMCRs) at the **Synthetic Biology Australasia (SBA) 2019 conference**²⁶ in Brisbane recently. More than 200 researchers and industry representatives shared their synthetic biology research and discussed the future directions of one of the fastest growing areas of modern science.

Through the **Theo Murphy Initiative (Australia)**²⁷, the Academy delivered a program specifically designed to support the career development of EMCRCs working in diverse aspects of synthetic biology and increase the opportunities to engage meaningfully with peers and industry representatives at the SBA 2019 conference.

The EMCR program featured an open circle discussion session on building successful careers and building transferable skills, a researcher-industry networking function, a poster session, an expert

panel on kick-starting the Australian bioeconomy with synthetic biology, and a training session on commercialisation delivered by CSIRO's national science and technology accelerator, ON.

The Academy also supported diversity and inclusion at the conference through the Theo Murphy Initiative mobility grants. The mobility grants were designed to offset the expenses associated with attending SBA 2019 for those EMCRCs who may not be able to attend without support, who have caring responsibilities and/or people from traditionally underrepresented demographics. A total of 10 mobility grants were awarded to EMCRCs from a diverse range of fields after a competitive selection process.

The program was made possible thanks to the support and with the collaboration of the University of Queensland, CSIRO, and Synthetic Biology Australasia.

Sustainability Research and Innovation Congress: call for sessions

October 29, 2019

The inaugural international **Sustainability Research and Innovation 2020 Congress**²⁸ will be hosted by an Australian consortium led by Future Earth Australia and the Queensland Chief Scientist on 14–17 June 2020 in Brisbane.

SRI2020 will be a unique gathering to connect those at the forefront of sustainability science, innovation, funding communication and implementation across sectors, countries and disciplines. The event offers an opportunity to expand networks and grow the impact of the work of practitioners and researchers, build partnerships across the sustainability community of practice, undertake capacity building and training, and take advantage of knowledge exchange on best practice of tomorrow.

Sessions proposals will be accepted on four themes: sustainable solutions from the global south, integrated action for the SDGs, knowledge-to-action, and

26 <https://synbioaustralasia.org/2019-sba-conference/>

27 <https://www.science.org.au/opportunities/conference-and-lecture-funding/theo-murphy-initiative-australia>

28 <https://sri2020.org/>

sustainability for who? **How to develop and submit a proposal**²⁹

The call for session proposals closes 15 November 2019.

Opportunities for scientists

October 31, 2019

Academy opportunities

Japan Society for the Promotion of Science Postdoctoral Fellowships

Applications are open for the **Japan Society for the Promotion of Science Postdoctoral Fellowships**³⁰.

The JSPS Postdoctoral Fellowship Program provides fellowships for Australian postdoctoral researchers to conduct, under the guidance of their Japanese hosts, cooperative research with leading research groups in universities and other Japanese institutions for 12-24 months. The program aims to help such researchers advance their own research while contributing to the advancement of research in Japan and the counterpart countries.

Applications close 25 November 2019

External awards

The Dan David Prize

The Dan David Prize recognises and encourages innovative and interdisciplinary research that cuts across traditional boundaries and paradigms. It aims to foster universal values of excellence, creativity, justice, democracy, and progress and to promote

the scientific, technological and humanistic achievements that advance and improve our world.

Nominations close 30 November 2019

More information on the Dan David Prize³¹

The 'Albert Einstein' World Award of Science

The 'Albert Einstein' World Award of Science was created as a means of recognition and encouragement for scientific and technological research and development. It takes into special consideration research which has brought true benefit and wellbeing to mankind.

Nominations close 12 December 2019

More information on the 'Albert Einstein' World Award of Science³²

More external awards and prizes³³

Fellows update—

October 2019

October 30, 2019

Honours and awards to Fellows

Professor Michael Archer AM

FAA—2019 Romer-Simpson Medal, Society of Vertebrate Paleontology

Professor C. Jagadish AC FAA

FTSE—2019 IEEE Electronic Devices Society Education Award

Professor David Celermajer AO

FAA—2019 Ruthven Blackburn Medal for Distinguished Contribution to Clinical Research,

awarded jointly with Professor Tania Sorrell

2019 NSW Premier's Prizes

Professor Rose Amal AC FAA FTSE—2019 NSW Scientist of the Year

Professor Nalini Joshi AO FAA—

Excellence in Mathematics, Earth Sciences, Chemistry or Physics

Professor Susan Clark FAA—

Excellence in Medical Biological Sciences (Cell and molecular, medical, veterinary and genetics)

More about the NSW Premier's Prizes³⁴

Coming Events

The Beginning of Weather Forecasting: Matthew Maury, Robert FitzRoy FRS, and L. F. Richardson FRS

Joint RSNW OGM and Open Lecture & Australian Academy of Science's Selby Public Lecture 2019

About the talk

We, with our ancestors, have often lived with unpredicted changes in the weather, even quite dramatic changes. For social and financial reasons it would be extremely beneficial to have accurate weather forecasts — over both land and sea. Quantitative forecasts, not just that it will be relatively hot in summer and cold in winter, were not introduced until the mid 1800's. How this came about, the individuals whose imagination and hard work made it possible and a short description of the (difficult)

29 <https://sri.secure-platform.com/a>

30 <https://www.science.org.au/opportunities/travel/grants-and-exchange/japan-society-promotion-science-fellowships>

31 <https://www.dandavidprize.org/about/about-the-prize>

32 <https://www.consejoculturalmundial.org/news/2020-nominations/>

33 <https://www.science.org.au/opportunities/recognition/external-sources-recognition>

34 <https://www.science.org.au/news-and-events/news-and-media-releases/fellows-awarded-nsw-premiers-prizes>

physical principles governing the often turbulent motions on many different spatial scales of the atmosphere will be summarized.

Location: Gallery room, State Library of NSW, corner of Macquarie Street and Shakespeare Place, New South Wales

Time: 6:00 PM November 06–10:30 PM November 06, 2019

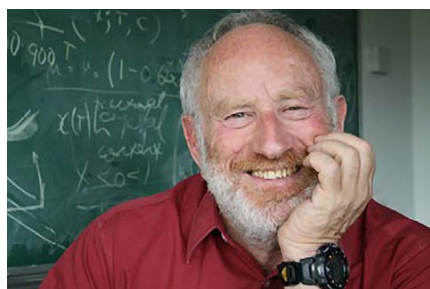
Entry (including a welcome drink): \$25 for non-members, \$15 for Fellows, Members and Associate Members of the Society, \$5 for students.

Dress code: Smart casual.

Dinner (including drinks): \$95 for non-members, \$85 for Fellows, Members and Associate Members, \$75 for students. Reservations must be made at least 2 days before.

About the speaker

Emeritus Professor Herbert Huppert, Emeritus Professor of Theoretical Geophysics, University of Cambridge.



Emeritus Professor Herbert Huppert from the University of Cambridge

Professor Herbert Huppert FRS is Emeritus Professor of Theoretical Geophysics in the Department of Applied Mathematics and Theoretical Physics, University of Cambridge. His theoretical

and laboratory based work has improved our understanding of the behaviour of fluids in and on the Earth's surface, and his work on convective systems has been crucial for an improved comprehension of our planet's response to a changing climate. Often in demand as a scientific authority, Herbert served as Chair of a Royal Society working group on bioterrorism, which prepared a report for the British Government, a European Academies working group on Carbon Capture and Storage, which prepared a report for the European Parliament and has acted as an adviser to numerous other government bodies. He has received many awards for his work, including the Bakerian Lectureship of the Royal Society, a Leverhulme Emeritus Fellowship and The Australian Academy's Selby Public Lectureship 2019.

About the Selby Travelling Lectures

This lecture forms part of a series of Selby Travelling Fellowship Lectures by the 2019 recipient Emeritus Professor Herbert Huppert which will also be detailed on the events pages of this website as dates and times are confirmed.

Fellowships are awarded to distinguished overseas scientists to visit Australia for public lecture/ seminar tours and to visit scientific centres in Australia.

The Fellowship is financed through the generosity of the trustees of the **Selby Scientific Foundation**³⁵.

Book here³⁶

Quantum Chemistry: The Good, the Bad and the Ugly

About the talk

Quantum Chemistry occupies the Fertile Crescent where Mathematics, Physics, Chemistry and Computer Science meet. Several Nobel Prize in Chemistry (1954, 1966, 1981, 1998, 2013) have been awarded for major advances in the field but a number of formidable theoretical and computational challenges remain unsolved.

After presenting a bird's-eye view of the subject and its achievements during the past 50 years, Prof Gill will discuss some of those challenges and argue that research in the field is trifurcating into three philosophically distinct branches. All three aim to exploit the staggering potential of next-generation computers, but each is guided by a different set of scientific priorities.

About the speaker

Professor Peter Gill FAA—Schofield Professor of Theoretical Chemistry, University of Sydney



Professor Peter Gill from the University of Sydney

Professor Peter Gill received his PhD, on hemi-bonded systems and their dicationic analogues, from the

35 <http://www.selbyscientificfoundation.org.au/>

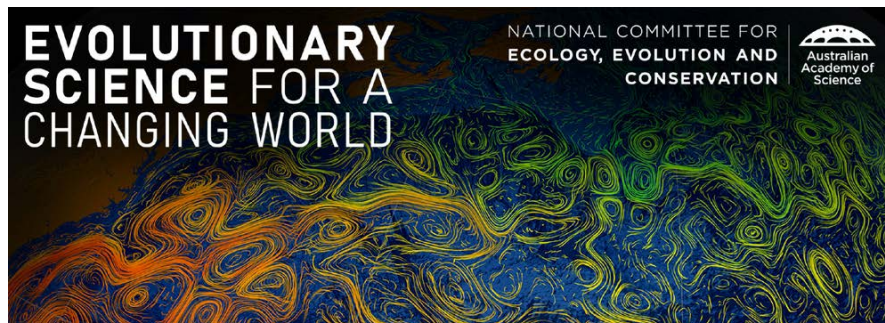
36 <https://nsw-royalsoc.currinda.com/register/event/63>

Research School of Chemistry at the Australian National University in 1988. He then moved to Carnegie-Mellon University where he was one of the early developers of density functional theory (DFT) in the chemical community. He held positions at Massey University, the University of Cambridge, and the University of Nottingham before returning to ANU in 2004. He has been awarded the Dirac and Schrödinger Medals of the World Association of Theoretical and Computational Chemists (WATOC) and the Pople and Fukui Medals of the Asia-Pacific Association of Theoretical and Computational Chemists (APATCC). He has published almost 200 papers attracting more than 13,000 citations (Web of Science) and 135,000 citations (Google Scholar). He is the president of WATOC and the founder and president of the quantum chemistry software company Q-Chem Inc.

Location: University of Tasmania, Lecture Theatre Room 329, Level 3, chemistry building, Dobson Road, Tasmania

Time: 12:00 PM November 20–1:00 PM November 20, 2019

More details³⁷



Evolutionary science for a changing world

Evolutionary science has helped us to understand the world in many ways. Exploring how aspects of dynamic biological and socio-economic systems have evolved allows us to predict and manage change, especially in more simple systems. Evolutionary science has contributed to rescuing endangered species, improving crops and livestock, informing strategies to increase resilience to climate change, and slowing the evolution of resistance to control measures in pathogens and pests. The evolvability—or capacity for a system to adapt—has been manipulated in all of the above examples.

Understanding evolvability in multilayered, interacting systems remains a challenge, but it is key to understanding innovation and to managing responses to accelerating environmental change. Potential solutions to this challenge—evolutionary science theory and tools—have emerged in different sciences but have

been largely disconnected. This event brings together experts from multiple disciplines to discuss how evolutionary science can benefit our changing world.

Refreshments served from 5.30 pm, with the talk 6.00 pm to 7.30 pm.

Chair: Professor Craig Moritz³⁸, Australian National University

Speakers:

Professor Lindell Bromham³⁹, Australian National University

Professor Paul Griffiths⁴⁰, University of Sydney

Professor Adrienne Nicotra⁴¹, Australian National University

Professor Nina Wedell⁴², University of Exeter

Professor Bob Williamson⁴³, Australian National University and CSIRO DATA61

Date: Monday 2 December

Time: 5.30pm–7.30pm

Venue: The Shine Dome

Book online⁴⁴

37 <https://www.science.org.au/news-and-events/events/quantum-chemistry-good-bad-and-ugly>

38 <https://biology.anu.edu.au/people/craig-moritz>

39 <https://biology.anu.edu.au/people/lindell-bromham>

40 <https://sydney.edu.au/arts/philosophy/staff/profiles/paul.griffiths.php>

41 <https://biology.anu.edu.au/people/staff-profiles/adrienne-nicotra>

42 https://biosciences.exeter.ac.uk/staff/profile/index.php?web_id=nina_wedell

43 <https://people.csiro.au/W/B/Bob-Williamson>

44 <https://www.eventbrite.com.au/e/evolutionary-science-for-a-changing-world-tickets-70090228761>



Re:produce workshop

Lack of reproducibility of scientific claims has been a recurrent topic in many branches of science and the source of public debate in recent years. Many solutions have been proposed to address specific problems but navigating them and finding effective tools and methods to implement can be a daunting task for researchers and their institutions.

The Re:produce workshop aims to address the challenges of making reproducible science by offering researchers tools that can help make their research more open and verifiable.

Re:produce will be held on 10-11 December 2019 at Customs House, Brisbane. The workshop offers two days of hands-on training in key areas of the reproducibility of science. This is an opportunity for EMCRs to openly discuss the challenges related to the reproducibility of their research and find ways to navigate the tools available to make their research more open and verifiable.

Who is this for?

Early-and mid-career researchers (EMCRs) and PhD students from a

range of disciplines interested in making their research more open, transparent and verifiable.

As a delegate at the Re:produce workshop, you will have the chance to refresh the concepts and tools of the reproducibility of science, engage in meaningful discussions, apply practical solutions to enhance the quality and credibility of your research, and establish valuable connections with researchers from different disciplines.

Limited spaces available. Early bird registrations are currently open and will close on Thursday 31 October 2019.

Mobility grants

Through the Theo Murphy Initiative (Australia), the Australian Academy of Science, and the ARC Centre of Excellence for Mathematical and Statistical Frontiers are offering a number of mobility grants to support a diversity of EMCRs and PhD students to attend the Re:produce workshop.

The mobility grants are designed to offset the expenses associated with attending for those participants who may not be able to attend without support and/or people

from traditionally underrepresented demographics.

The mobility grants can be used to cover costs associated with attendance to the event, such as caring responsibilities, travel, accommodation and other support required to facilitate your attendance.

To apply to be considered for a mobility grant complete the application form.

Applications for mobility grants are open and will close on Thursday 31 October 2019.

Event partners

The Re:produce workshop is made possible thanks to the support of the Theo Murphy Initiative (Australia), the University of Queensland, the University of Southern Queensland and the ARC Centre of Excellence for Mathematical and Statistical Frontiers.

The Theo Murphy Initiative (Australia)

The Theo Murphy Initiative (Australia)⁴⁵ supports activities which provide tangible benefits to Australia's early- and mid-career researcher (EMCR) community, with the overall goal of furthering scientific discovery. Activities are managed by the Australian Academy of Science and funds are made available by the generous support of the Royal Society through the Theo Murphy (Australia) Fund.

Book online⁴⁶

45 <https://www.science.org.au/opportunities/conference-and-lecture-funding/theo-murphy-initiative-australia>

46 <https://aas.eventsair.com/reproduce-workshop/>



**Changing lives with science—
Innovating the everyday: our
built environment and transport**

Dr Danielle Moreau⁴⁷ (UNSW Sydney), and a representative of **Seeing Machines**⁴⁸

Features of our everyday lives such as driving, flying and noise, are constantly being researched and reconfigured. Join us to hear from two speakers designing, innovating and changing our everyday.

Dr Danielle Moreau is a member of UNSW's Flow Noise Group. She investigates how the flow of fluids creates sound, and how this noise can be controlled. Danielle's research aims to quieten modern technologies such as submarines, wind turbines and aircraft.

Danielle will be joined by John Noble from Seeing Machines, a Canberra-based company leading the world in driver-machine interaction. They harness ergonomics to create artificial intelligence technology that observes drivers' attention and intervenes seamlessly when necessary.

Refreshments served from 5.30pm, with the talk 6.00pm-7.00pm.

With thanks to our Exclusive Presenting Partner, University of Canberra.

This is the final event in a six-part series. Throughout this series we will hear remarkable untold science stories. Join us for tales of innovation, research, breakthroughs, and how science is solving the big challenges of our time. **Visit the academy's event page**⁴⁹ for more information and tickets to other talks.

Date: Tuesday 10 December 2019

Time: 5.30pm–7.00pm

Location: The Shine Dome

Price: \$15 per person

Book online⁵⁰

47 <https://www.engineering.unsw.edu.au/mechanical-engineering/staff/dr-danielle-joy-moreau>

48 <https://www.seeingmachines.com/about/>

49 <https://www.science.org.au/news-and-events/events>

50 <https://www.eventbrite.com.au/e/changing-lives-with-science-december-tickets-53416383842>