



Message from the Chief Executive—May 2020

June 02, 2020



Anna-Maria Arabia

The Academy's Fellowship is the heart of our organisation, and we've recently announced the **new Academy Fellows for 2020**¹. Tackling the under-representation

of women in the STEM is an important national priority, so we are pleased to announce that this year, 42% of our 24 new Fellows are women. We warmly congratulate all the new Fellows and we look forward to formally welcoming them later in the year.

In addition, the Academy Council has taken the **Panel Pledge**² to actively encourage women's voices and visibility and achieve change towards gender equity. Change is a collaborative effort and we encourage all those in STEM to consider how taking the Panel Pledge may have a positive influence on diversity and inclusion across your own networks.

Many of our Fellows are working hard to support Australia's response to the COVID-19 pandemic, as are the Academy's staff and the broader science community. I acknowledge and thank our partners on the Rapid Research Information Forum in particular who are working to provide timely and accurate scientific advice to inform government decision making on a range of COVID-19 related matters. In this month's newsletter you can read about the recently published advice to government on the impact of COVID-19 on the research workforce and

1 www.science.org.au/news-and-events/news-and-media-releases/australias-top-scientists-elected-fellows-of-academy

2 www.science.org.au/supporting-science/diversity-and-inclusion/panel-pledge

the most promising COVID-19 vaccines and treatments in development.

Sadly, we have bid farewell to Bob May, more formally known as Professor Lord Robert (Bob) McCredie May of Oxford OM AC FAA FRS FTSE FRSN. Australian-born Lord May drove great change in whatever he did and was aptly described by ABC Broadcaster and Academy Fellow Robyn Williams FAA as the Professor of everything and a scientist with a flexible mind and at times bluntly persuasive style who guided Prime Ministers and the public alike. You can read about his extraordinary lifetime contributions in this month's newsletter. Vale Bob May.

Enjoy the May newsletter,

Anna-Maria

Australia's top scientists elected as Fellows of the Academy

May 25, 2020



An Australian scientist who identified the cause of mass frog extinctions across the globe is among a group of scientists being acknowledged today for their outstanding contributions to science.

Associate Professor Lee Berger's research into the frog chytrid fungus, described as the worst disease ever to impact global biodiversity, has changed wildlife conservation practices around the world.

Associate Professor Berger is one of 24 scientists elected a Fellow of the Australian Academy of Science.

The new Fellows also include Professor Lidia Morawska, whose work on airborne particulate matter has aided air quality research around the world, and Professor Justin Marshall, whose

pioneering research into the colour vision of animals has improved the performance of digital cameras.

Other new Fellows' contributions include being the first to commercialise quantum communication, describing how climate change impacts the frequency of El Niño events and developing new treatments for antibiotic-resistant 'superbugs'.

Australian Academy of Science President, Professor John Shine AC, congratulated the new Fellows for making significant and lasting impacts in their scientific disciplines.

"These scientists were elected by their Academy peers following a rigorous evaluation process," said Professor Shine.

Women make up 42% of this year's new Fellows.

"The number of women in this year's elected Fellows reflects the Academy's work to apply best practice in our nomination and election processes.

"We encourage the STEM sector to continue to nurture diversity in all its forms, so that the STEM workforce reflects the composition of our society," Professor Shine said.

Over the past five years, 34% of the Fellows elected have been women. Following this year's election, the Fellowship stands at 559 Fellows, 90 of whom are women.

The new Fellows for 2020 are:

ACT

- **Professor Ping Koy Lam FAA** – Quantum physicist, Australian National University

WA

- **Professor Ryan Lister FAA** – Epigeneticist, University of Western Australia
- **Professor Harvey Millar FAA** – Plant biochemist, University of Western Australia
- **Professor Robyn Anne Owens FAA FTSE** – Mathematician (computer vision), University of Western Australia

QLD

- **Professor Adèle Green AC FAA FAHMS** – Epidemiologist, QIMR Berghofer Medical Research Institute
- **Professor Justin Marshall FAA** – Marine biologist, University of Queensland
- **Professor Lidia Morawska FAA** – Aerosol physicist, Queensland University of Technology
- **Professor Alan Rowan FAA** – Physical organic chemist, University of Queensland

VIC

- **Associate Professor Lee Berger FAA** – Biologist, University of Melbourne
- **Professor Linda Blackall FAA** – Microbiologist, University of Melbourne
- **Dr Wenju Cai FAA** – Climatologist, CSIRO Oceans and Atmosphere
- **Professor Peter Currie FAA** – Stem cell biologist, Monash University
- **Professor Andrew Cuthbertson AO FAA FTSE FAHMS** – Chief Scientific Officer and Director, CSL Limited (Special Election)
- **Professor Aurore Delaigle FAA** – Statistician, University of Melbourne
- **Professor Andrew Roberts FAA FAHMS** – Clinical haematologist, Walter and Eliza Hall Institute of Medical Research

NSW

- **Professor Tim Bedding FAA** – Astrophysicist, University of Sydney
- **Dr Annabelle Bennett AC FAA** – Chancellor, Bond University (Special Election)
- **Dr Cathy Foley FAA FTSE** – Chief Scientist, CSIRO (Special Election)
- **Professor Gary Froyland FAA** – Mathematician (dynamical systems and optimization), UNSW Sydney

- **Professor Kevin Galvin FAA FTSE** – Chemical engineer, University of Newcastle
- **Professor Kate Jolliffe FAA** – Organic chemist, University of Sydney
- **Professor Ian Paulsen FAA** – Microbiologist, Macquarie University
- **Dr Simon Poole AO FAA FTSE** – Director of Business Development, Cylite Pty Ltd (Special Election)
- **Dr Jenny Stauber FAA FTSE** – Ecotoxicologist, CSIRO Land and Water

Find out more about our 2020 Fellows³

More information

Fellows of the Australian Academy of Science⁴ are among the nation's most distinguished scientists, elected by their peers for ground-breaking research and contributions that have had clear impact.

The Australian Academy of Science⁵ was founded on 16 February 1954 by Australian Fellows of the Royal Society of London, with the distinguished physicist **Sir Mark Oliphant**⁶ as founding President. The first woman elected to the Academy was **Dorothy Hill in 1956**⁷.

Information about criteria for ordinary and special election to the Academy can be found at science.org.au/fellowship/election-academy.

Two new Corresponding Members admitted to the Academy

May 14, 2020

Professor Jane Langdale, of the Plant Sciences Department at the University of Oxford, and Professor Erwin Neher, of the Max Planck Institute for Biophysical Chemistry in Germany, have been admitted as Corresponding Members of the Australian Academy of Science for their outstanding contributions to science.

³ www.science.org.au/fellowship

⁴ www.science.org.au/fellowship

⁵ www.science.org.au/about-us/academy

⁶ www.science.org.au/fellowship/fellows/biographical-memoirs/marcus-laurence-elwin-oliphant-1901-2000

⁷ www.science.org.au/fellowship/fellows/biographical-memoirs/dorothy-hill-1907-1997

Corresponding Members of the Academy are eminent scientists not resident in Australia. They are elected based on scientific excellence, with consideration given to their connection to Australian science. The Academy will announce the election of 24 distinguished Australian scientists as New Fellows later this month.

Professor Jane Langdale FAA



Professor Jane Langdale FAA
Photo: supplied

Professor Jane Langdale's research has transformed our understanding of how plants initiate leaves, how leaves

adapted to major evolutionary transitions and how those changes affect photosynthesis in land plants.

She has explained various plant mechanisms, including organ inception and specification at the tip of shoots, patterning of distinct cell-types and the development of chloroplasts.

Importantly, Professor Langdale has carried out research in a comparative framework, advancing our understanding of leaf development not just in model flowering plant species but in species from all of the major land plant lineages.

What are you most proud of in your research?

"The people I have worked with over the years. Any recognition of my research is recognition of the wonderful people who have contributed to the discoveries that we have made—from the technicians who wash the lab glassware to the postdocs who challenge my ideas and prove me wrong."

What does your election to the Academy mean to you?

"I have family, friends and many colleagues in Australia, and to be recognised by the national Academy is an incredible honour. I hope that I am able to contribute to the Academy's mission in a meaningful way.

"Science should never be a single nation endeavour. Interactions and collaboration between people from different cultures, with a broad range of views and experiences, are

essential for the synergy that fuels truly original and creative scientific advances."

Professor Erwin Neher FAA



Professor Erwin Neher FAA
Photo: supplied

Professor Erwin Neher is a world-renowned biophysicist specialising in the field of cell physiology. He is internationally

known for his ground-breaking development of the patch clamp technique and further discoveries concerning the function of single ion channels in living cells, which allow cells to communicate with their surroundings.

Using this technique, Professor Neher was able to take ion channels from a physiological concept to the reality of biological macromolecules, revolutionising modern biology, facilitating research, and contributing to the understanding of the cellular mechanisms underlying several diseases including diabetes and cystic fibrosis.

For his outstanding contributions, in 1991 he was awarded, along with Bert Sakmann, the Nobel Prize in Physiology or Medicine.

What are you most proud of in your research?

"Following the development of the patch clamp, researchers worldwide adopted this technique for the study of diseases and drug action. Although I never did clinical work myself, this indirectly led to novel medications and improved therapies, which I am proud of."

What does your election to the Academy mean to you?

"I first visited Australia in 1985 and since then kept contact with many of my colleagues. I consider election to the Academy as a major recognition of my work and as a unique chance to maintain contacts.

"The laws of nature do not distinguish between countries and continents. The goal of science is to decipher these laws and scientists share their insights in this respect in a remarkable way. Most of us see our task as a joint effort, which is substantially enhanced by international cooperation."

Professor Langdale and Professor Neher join just 33 Corresponding Members of the Academy, including Nobel Laureates Professor Elizabeth Blackburn and Professor Rolf Zinkernagel and Fields Medal recipient Professor Akshay Venkatesh.

Academy reports national progress in diversity and inclusion during 2019

June 01, 2020



In 2019, the Academy celebrated its 65th year and the 60th year of the Shine Dome. The cover shows dome construction workers at a 'richtfest' party, celebrating the completion of the concrete phase of the dome's construction. Photo courtesy of Eric Lipponen, photographer unknown

National progress in diversity and inclusion in the science sector was one of the many achievements highlighted in the Academy's **recently published annual report for 2019**⁸.

Guided by the priorities of Fellows and led by the Academy Council, major achievements included the launch of three major women in STEM initiatives, support for nearly 5000 early- and mid-career researchers, and the publication of a Reconciliation Action Plan.

"The annual report demonstrates the Academy's national leadership role in diversity and inclusion," said Academy President Professor John Shine.

"After broad national consultation, and working with other organisations, we published the Women in STEM Decadal Plan and encouraged organisations to publish their progress implementing the plan. In August we initiated an

online directory, STEM Women, which has done a lot to make women more visible.

"The Academy Council also took the 'panel pledge' to further strengthen the positive influence we can have on diversity."

Academy Fellows received many Australian and international honours and awards, with Professor Cheryl Praeger being awarded the Prime Minister's Prize for Science.



Watch Prime Minister's Prize for Science 2019 on YouTube: youtu.be/ARMeDewnmps

Early in 2019 the Academy produced a scientific report on the causes of the mass fish kills in the Darling River.

"The report was widely circulated and re-affirmed our ability to respond quickly with credible, expert information needed to inform decisions," Professor Shine said.

Support for early- and mid-career researchers included specific professional development events tailored to their needs, networking opportunities, and funding to attend events. A particular highlight was the success of Rhys Pirie, who became the first Australian to win Young Innovator of the Year at the global Falling Walls competition in Berlin.

Global activities

Global activities included the announcement of \$1 million by the Science and Industry Endowment Fund to continue funding young scientists to attend the Lindau Nobel Laureate and Heidelberg meetings for a further 10 years. Funding for collaborative international research managed by the Academy totalled nearly \$1.5 million, and the Academy was able to quantify the many benefits returned to Australia through its membership of

global science organisation, the International Science Council.

The Academy reached out to Australians through many public events around the country. We finished the year with 2.1 million followers on Facebook and produced a successful measles vaccination campaign on behalf of the Australian Government.

“Our education programs continued to help teachers and students be inspired by mathematics and science, and our first event connecting Fellows with Year 12 students was an energising experience for all,” Professor Shine said.

The Academy, through its National Committees, published 10-year plans to guide the future of nutrition science and information and communication sciences. It also published a Q&A booklet for all Australians on genetic modification, and Future Earth Australia published a strategy to achieve sustainable cities and regions in Australia by 2030.

Donations, partnerships and grants

The Academy’s work was enhanced through partnerships with the philanthropic sector, governments, industry, and a range of others in the STEM sector.

“Donations, partnerships and grants played a crucial part in the impacts we made during the year. The annual report is an excellent example of just how much our creative and determined organisation can achieve,” he said.

[Read the 2019 Annual Report⁹](#)

Academy Council takes Panel Pledge to encourage gender diversity

May 26, 2020

All Academy Council members have signed the **Panel Pledge**¹⁰, making a public commitment to only participate in events where efforts have

been taken to ensure women have meaningful representation.

Each Academy Council member holds a significant leadership role and is held in high esteem in their respective fields. Through the Panel Pledge each Council member is now empowered to speak up and create change across the events that they are involved in.

With more than 20 Council members and observers taking the pledge, the impact across the Australian science sector is already being seen. Most recently, a Council member was made aware of an all-male committee at a research institute and highlighted this needed to be addressed.



(L to R) Academy Chief Executive Anna-Maria Arabia and Council members Professor John Shine, Professor David Day and Professor Louise Ryan have signed the Panel Pledge, along with the all Council members.

Signing the Panel Pledge is one of the priorities outlined in the **Academy’s Women in STEM Decadal Plan Champion’s response**¹¹.

In addition, based on feedback from February’s Catalysing Gender Equity 2020 conference, the Academy will create a collection of existing resources and case studies to assist events and conferences in improving their gender balance which will be hosted on **STEM Women**¹².

Change is a collaborative effort and Council and the broader Academy encourage all those in STEM to consider how taking the Panel Pledge may have a positive influence on diversity and inclusion in their own networks. To learn more contact diversity@science.org.au.

⁹ www.science.org.au/about-us/governance/annual-and-financial-reports/annual-report-2019

¹⁰ www.science.org.au/supporting-science/diversity-and-inclusion/panel-pledge

¹¹ www.stemwomen.org.au/sites/default/files/2019-11/Australian-Academy-of-Science.pdf

¹² www.stemwomen.org.au

Pandemic risks wiping out hard-won gains by women in STEM

May 22, 2020

Hard-won gains for women's advancement in the science, technology, engineering and maths (STEM) workforce are now at risk of a major setback due to the COVID-19 pandemic.

Even before the pandemic hit, women were under-represented in STEM. Early evidence from during the shutdown suggests women in the STEM sector have suffered even greater job losses than men.

It also points to women carrying a greater share of responsibilities for caring and distance learning duties during isolation.

Australia's scientific and technical services industry recorded job losses of 5.6% from mid-March to mid-April 2020, with jobs down 6.3% for women compared with 4.8% for men in this field.

The findings **are in a research report**¹³ requested by the Minister for Industry, Science and Technology, the Hon Karen Andrews MP, published today.

The report was produced by the **Rapid Research Information Forum**¹⁴, a group of 35 research sector lead organisations. The forum is chaired by Australia's Chief Scientist, Dr Alan Finkel, and its operations are led by the Australian Academy of Science.

Lead author Professor Emma Johnston AO FTSE, Dean of Science at UNSW Sydney, said the peer-reviewed report confirms an urgent need for STEM employers to closely monitor and mitigate the gender impact of the pandemic on jobs and careers—or the hard work over many years to recruit and retain more women in STEM could be undone.

"The challenges are likely to be most acute for women in STEM with children under 12," Professor Johnston said.

"The combination of juggling working from home while supervising distance learning for children has made women's well documented 'double burden' even greater again."

Science & Technology Australia (STA) and the Australian Academy of Technology and Engineering (ATSE) collaboratively led the women in STEM RRIF report.

ATSE Chief Executive Officer, Kylie Walker said diversity in the workforce is integral to higher quality and more resilient STEM research and application.

"The diverse perspectives that women bring to the STEM sector enable and drive better outcomes for scientific and technology-based industries," Ms Walker said.

Science & Technology Australia CEO Misha Schubert said job insecurity was even more of a risk for women than men in the STEM workforce.

"With casual and short-term contract jobs likely to be the first to go, women are at particular risk—with women in STEM one and a half times more likely to be in insecure jobs," she said.

The co-authors agreed the report was a reminder to STEM employers about the need for them to be vigilant on gender equity or they risk losing their hard-won gains.

The report synthesises the available evidence base on this matter, has been informed by experts and has been peer reviewed. Details of the report's contributors can be found in the report's appendix.

Read this **latest report**¹⁵ and **all others from the RRIF**¹⁶.

The Rapid Research Information Forum (RRIF) was convened and is chaired by Australia's Chief Scientist, Dr Alan Finkel. It benefits from operational support and leadership from the Australian Academy of Science, and is a collaboration of the participant organisations, listed below.

¹³ www.science.org.au/covid19/women-stem-workforce

¹⁴ www.science.org.au/news-and-events/news-and-media-releases/research-sector-answers-governments-call-best-available-evidence-covid19

¹⁵ www.science.org.au/covid19/women-stem-workforce

¹⁶ www.science.org.au/covid19/rapid-research-information-forum

Forum member organisations

• Australia's Chief Scientist (Chair) • Australian Academy of Science • Australian Academy of Health and Medical Sciences • Australian Academy of Technology and Engineering • Academy of the Social Sciences in Australia • Australian Academy of the Humanities • Royal Society Te Apārangi (New Zealand) • Australian Council of Learned Academies • State and Territory Chief Scientists • Chief Science Advisor to the Government of New Zealand • Scientific expert members of the National Science and Technology Council • CSIRO • Universities Australia • Science & Technology Australia



COVID-19 impacts on Australian research workforce predicted to be significant

May 12, 2020

Australia's research workforce will be severely impacted by the COVID-19 pandemic and the effects are likely to be felt for an extended period. Universities in particular have been dealt a double blow by the pandemic.

A new research report published today¹⁷ details how a dramatic drop in international student fees and business research spending will impact the sector significantly in the next six months and beyond.

University job losses of up to 21,000 full time equivalent (FTE) positions are projected over the next six months of which an estimated 7,000 could be research-related academic staff.

Research interruptions and travel and visa restrictions suggest that more than 9,000

international research students will not resume their research in 2020, according to the report's authors.

The report's authors are concerned that women, early-career researchers and recent graduates will disproportionately experience negative impacts.

The report was produced by the **Rapid Research Information Forum**¹⁸, a group of 35 research sector lead organisations. The forum is chaired by Australia's Chief Scientist, Dr Alan Finkel, and its operations are led by the Australian Academy of Science.

The Australian Academy of Technology and Engineering (ATSE) led the workforce report.

ATSE Chief Executive Officer, Kylie Walker said industry sectors may experience a reduced capacity to innovate given that universities perform approximately 43% of all applied research in Australia.

"A decline in innovation may limit economic growth by slowing the development of new

¹⁷ www.science.org.au/covid19/research-workforce

¹⁸ www.science.org.au/covid19/rapid-research-information-forum

technology, skills, and efficiency gains in service and production processes,” Ms Walker said.

The report also found:

Income to universities, medical research institutes, publicly funded research agencies, CRCs, and the industrial sector is suffering from the loss of foreign students and a sharp decline in business research spending and philanthropy.

These impacts are greater than during the 2008 global financial crisis and are being observed internationally.

To try and make ends meet as budgets contract, universities are reducing the number of casual teachers and increasing the teaching loads of permanent staff, further limiting their research capacity.

The rapid research brief responds to a request for advice from the National COVID-19 Coordination Commission on what impact the pandemic is having and likely to have on Australia’s research workforce, and whether we will have the research workforce capability to support our recovery efforts.

The report synthesises the evidence base on this matter, has been informed by relevant experts and has been peer reviewed. Details of the report’s contributors can be found in the report’s appendix.

Read the report.¹⁹

Background information

The Rapid Research Information Forum **was launched on 29 April**²⁰. The first four published reports respond to questions posed by the Minister for Health, the Hon Greg Hunt MP; and the fifth to the Minister for Education, the Hon Dan Tehan MP.

The RRIF will answer a range of questions in upcoming reports at the request of Industry, Science and Technology Minister the Hon Karen Andrews MP; and Health Minister the Hon Greg Hunt MP.

The growing list of questions includes:

1. COVID-19 vaccines and treatments being developed globally that are regarded as having most promise (including national and international collaborations and consortia), and what are the mechanisms for action for each of these?
2. What motivates people to download and continue to use the COVIDSafe app?
3. What impact is the COVID-19 epidemic having on women in the STEM workforce?
4. How long does the SARS-CoV-2 virus remain viable on different surfaces, particularly cotton, wool, other common textile blends, cardboard, plastic, stainless steel and copper?

Read all the reports of the forum²¹

Applications open for Falling Walls Lab 2020

May 08, 2020

The Academy invites applications from postdocs and students, entrepreneurs, engineers and innovators to present at the virtual event Falling Walls Lab Australia 2020 in September.

Falling Walls Lab Australia is an inspiring annual forum for the next generation of exceptional innovators. It promotes breakthroughs that impact science and society and connects promising young scientists and entrepreneurs from all fields.



Falling Walls Lab Australia is an inspiring annual forum for the next generation of exceptional innovators.

Successful applicants will be selected to participate in Falling Walls Lab Australia, each giving a three-minute presentation on their research, business model or initiative based on the concept ‘Which walls will fall next?’. In accordance with physical distancing measures due to COVID-19, the event will be a virtual Lab this year and will be held on 8 September 2019.

A Lab will also be held in Queensland in August, hosted by Study Queensland, for applicants

¹⁹ www.science.org.au/covid19/research-workforce

²⁰ www.science.org.au/news-and-events/news-and-media-releases/research-sector-answers-governments-call-best-available-evidence-covid19

²¹ www.science.org.au/covid19/rapid-research-information-forum

within that state. The finalists for this Lab will be automatically accepted into the Canberra Lab to compete for a place in the Berlin Finale. The call for applications for the Queensland Lab will open in the coming weeks and information on this will be updated when available.

A jury of distinguished academics and business people will select the winner of Falling Walls Lab Australia and the winner will be automatically admitted to the international Falling Walls Lab Finale held on 8 November 2020.

The format of the finale will depend on physical distancing measures in place at the time, but it is envisaged that the finale will be a virtual Lab.

At last year's **Falling Walls Lab Finale in Berlin**²², Australian researcher Rhys Pirie won first place and was named the 2019 Young Innovator of the Year.

Apply now to be part of this exciting opportunity²³.

Applications close 5 pm (AEST) Monday 20 July.



The Australian competitors in Berlin in November 2019, Rhys Pirie, Dr Elena Schneider-Futschik and Kate Secombe, with Academy representatives Professor Andrew Holmes and Paul Richards.

Rhys Pirie—six months after breaking the wall of broken glass



Watch “Rhys Pirie (UQ) wins Falling Walls Lab 2019” on YouTube: youtu.be/WXt97s4o2fM

“We tend to think of glass as the good guy in the packaging world,” says University of Queensland PhD student, Rhys Pirie, during his three-minute pitch at the 2019 Falling Walls Conference in Berlin. “And there’s a good reason for this—it is, in theory, infinitely recyclable. But there’s a big problem with glass. More specifically, with little pieces of glass in the glass supply chain.”

The **Falling Walls Conference**²⁴ is a global gathering of innovators and scientists, brought together to share their breakthroughs and visions to impact science and society. The Falling Walls Foundation is a non-profit organisation in Berlin dedicated to the support of science and the humanities. It was established in 2009, 20 years after the fall of the Berlin Wall. At its heart is the question ‘Which are the next walls to fall?’ as a result of scientific, technological, economic and sociological breakthroughs.

Challenging and inspiring

Each year, the foundation supports scientific organisations around the world to host their own **Falling Walls Lab**²⁵, a challenging and inspiring format for emerging bright minds. This forum promotes interdisciplinary connections between aspiring academics, innovators, entrepreneurs, investors and professionals, known for their excellent work. Participants are given three

²² www.science.org.au/news-and-events/news-and-media-releases/australian-scientist-claims-young-innovator-year-falling-walls-berlin

²³ www.science.org.au/opportunities/travel/grants-and-exchange/falling-walls-lab-australia

²⁴ www.falling-walls.com/

²⁵ www.falling-walls.com/lab/about

minutes to present their research work, business model or initiative to a broad audience from science and industry, including a distinguished jury who selects the most innovative and promising idea.

This year's winner of Falling Walls Lab Australia will participate in the global finals at Falling Walls Berlin in November, giving them a unique chance to become the next big success story in innovation.

In 2019, that success story was Australia's own Rhys Pirie, with his presentation 'Breaking the Wall of Broken Glass'. We spoke with Rhys about his background and involvement with the Falling Walls competition, the impacts on his career, and what life has been like since winning in Berlin last November.

In his winning pitch, Rhys explained how his research took broken glass that is currently unable to be recycled and headed for landfill, and extracted valuable sodium silicate out of the formerly 'useless' glass. Also known as 'water glass', sodium silicate is a compound containing sodium oxide and silicon dioxide (silica) that forms a glassy solid soluble in water. This compound is sold as solid lumps or powders, or as a clear, sticky liquid.

"We can actually extract silicon from these tiny pieces of broken glass and use it in thousands of different consumer goods—everything from silicon gel to toothpaste," Rhys explains. By winning Falling Walls Berlin, Rhys was named Young Innovator of the Year, a title that has provided him with invaluable exposure and networking opportunities with some of the most distinguished names in science and innovation.

"The last six months since winning in Berlin have definitely been a bit of a rollercoaster," Rhys says. "Winning in Berlin certainly wasn't something that I expected to happen. You don't go to a place like that with hundreds of other great communicators with fantastic ideas and expect to win. Because of that, I probably hadn't given as much thought to how important it would be for me from a career point of view. The experience has really helped me to network, and gain exposure to a lot of people that I otherwise wouldn't have been able to."

A 'good opportunity'

Rhys initially became involved in the program after his supervisor sent through an email advertising the competition. "I thought it looked like a good opportunity to talk about my research, and meet other young people doing interesting things," Rhys says. "I also wanted the opportunity to travel a little bit. That's why I signed up." Rhys had been working on the silicon project that he took to Falling Walls Australia, and then onto Falling Walls Berlin, for just over two and a half years—the majority of his PhD.

"Falling Walls is an excellent opportunity for researchers to showcase things that they've already been working on," Rhys says. "I think that was one of the stronger points of my presentation—I actually had data to back up my idea. It's one thing to have a groundbreaking idea, but it's another thing to have a proof of concept."

"Falling Walls is an excellent opportunity for researchers to showcase things that they've already been working on. I think that was one of the stronger points of my presentation—I actually had data to back up my idea."

— Young Innovator of the Year for 2019, Rhys Pirie

Travel, social and funding restrictions imposed in response to the COVID-19 pandemic have stalled research worldwide. Graduate students and early-career scientists have been particularly hard hit, having seen their plans for field research and projects suddenly thrown into uncertainty. Long-term research projects are facing unprecedented breaks in data collection, and there is growing uncertainty about the availability of grants and funding sources.

Going virtual in 2020

Falling Walls Lab Australia will be held on 8 September 2020 and, for the first time, will be in a virtual format—giving contestants a unique opportunity to showcase work that may have been stalled or postponed in light of current circumstances. Their three-minute pitch, possibly filmed in their own living room, could change science.

Rhys is currently working for the New South Wales Government but his glass recycling project is far from over. "Since winning Falling Walls we've been able to secure funding through

the University of Queensland to conduct some internal testing of sodium silicate extraction, and that's just coming back with the first results now, which are looking quite positive," he says.

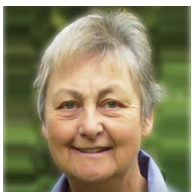
"If you're thinking of applying, just do it," Rhys says. "You have nothing to lose. It's a fantastic experience and great exposure for your research. If nothing else, it's an opportunity to think about how you communicate your research, and also to meet lots of other people who are doing interesting things in lots of different fields."

Applications for Falling Walls Australia are open until 6 July. A jury of distinguished academics and businesspeople will select the winner of Falling Walls Lab Australia 2020, who will be automatically admitted to the Falling Walls Lab Finale in Berlin on 8 November. **Watch Rhys's three-minute pitch**²⁶ in Berlin, **find out more about**²⁷ this opportunity. Make sure to **read the application information**²⁸ on the Academy website.

We can't wait to hear your pitch!

In memoriam gift to the Academy celebrates the life and work of Professor Sally Smith

May 29, 2020



Emeritus Professor Sally Smith FAA: World leading researcher in soil-plant reactions. Photo: Professor Andrew Smith and family

Academy Fellow Professor

Andrew Smith recently made a donation in memory of his wife Professor Sally Smith FAA to support two Academy awards for PhD students and early- to mid-career researchers. The awards are the Aboriginal and Torres Strait Islander Scientist Travelling Research Award and the Max Day Environmental Science Fellowship Award.

Andrew said that Sally understood the challenges of being a young researcher and it is fitting that this gift supports these awards.

Sally died suddenly in September 2019, aged 78, after a distinguished research career based at the University of Adelaide. Sally, who was elected to the Academy in 2001, was a world authority on soil-plant reactions. Andrew and daughters Caroline and Hilary decided that these Academy awards fit well with Sally's ongoing commitment to train and mentor young scientists as they seek to develop their research careers, and to the importance of travel to establish links in research. They were attracted by the emphasis on multi-disciplinary research involving environmental science and that—especially in the case of the relatively new Aboriginal and Torres Strait Islander Award—they can extend into social sciences.

An unusual honour, announced soon after Sally's death, was her inclusion in a select list of just 46 women associated with the University of Adelaide from many walks of life who have helped blaze the trail for gender equality.

In her own words, Sally said that her career: "... depended on accidents, incredible mentors and collaborators, persistence and a hefty measure of good luck." For younger scientists she said: "...Never give up" and "collaborate whenever you can." She summarised her career in an invited **profile**²⁹, published in *New Phytologist*, a prominent journal with which she had a long association (*New Phytologist* 2019, 221: 648-9).

Professor Tim Cavagnaro, formerly Sally's PhD student, who went on to work overseas and is now back at the University of Adelaide as leader of the Soil Ecology group on the Waite campus, writes:

"Sally took a physiologist's approach to her research; that is, she wanted to know 'how things work'. And when experiments did not work she would advise that 'it was all part of life's rich tapestry'. Sally used many tools and techniques in her research, including whole plant physiology, molecular biology, morphological studies, mycorrhiza defective mutants, and isotope tracing."

26 https://www.youtube.com/watch?v=cycwr5q6k_q

27 <https://falling-walls.com/lab/faq-for-applicants/>

28 <https://www.science.org.au/supporting-science/awards-and-opportunities/falling-walls-lab-australia>

29 nph.onlinelibrary.wiley.com/doi/full/10.1111/nph.15569

The Academy gratefully acknowledges this generous gift that will provide research opportunities to young researchers for many years to come through its annual Aboriginal and Torres Strait Islander Scientist Travelling Research Award and Max Day Environmental Science Fellowship Award.



Choose the Shine Dome for your next Canberra event

May 29, 2020

As we look forward to the easing of restrictions across Australia, the Academy is now taking bookings for the Shine Dome venue for late 2020 and beyond.

The Shine Dome celebrated its 60th anniversary last year, hosting 154 conferences, meetings, weddings, memorials and other events involving a phenomenal 11,000 participants. In August, the Dome opened its doors to the public in celebration of National Science Week and welcomed more than 3000 people in one day, while in November alone a record 36 events were hosted at the Dome.

Earlier this year, the unique building attracted the attention of Grand Designs host Kevin McCloud on his Australian tour, and an opening sequence to the popular series was filmed at the Dome. In March the Dome was one of the participating locations in Canberra's famous Art, Not Apart festival, attended by over 2000 people.

The Dome is the perfect choice of venue for corporate events, conferences, meetings,

lectures, private celebrations and much more. Its central theatre is surrounded by an array of multi-purpose venue spaces, all of which are naturally well-lit.

The pathway bordering the moat provides views of the city and the hills beyond. It's a location that makes any event memorable.

We are welcoming bookings for late 2020 and all of 2021 and our team can help you with your plans.

Our professional audio-visual team are on-hand to help with the technical aspects of events. We also work with local caterers and our menu features a range of Canberra produce.

Should physical distancing or travel restrictions still be in place closer to your booking date, the venue team will help you rearrange your event date and transfer all money paid to the new date.

For all enquiries visit the **Shine Dome website**³⁰ or contact the team on shinedome@science.org.au.

Happy clients

Here are the experiences of just a few of our happy clients.

Mez Kinder, Planner Support Education Manager, Client Services, Capability and Learning

"I want to commend your team, specifically Katie Little, for the exceptional service they provided my team when we held our conference at Australian Academy of Science.

"I have no hesitation in stating that Katie is one of the most exceptional event managers I have the pleasure of working with. I run 24 conferences a year at locations all around Australia and if I could deal with Katie to organise every one of them, I'd be a very happy person. She's efficient, understanding, kind and nothing is a problem for her. She understands my needs as a client, and in some cases knows what I need before I do! I walk into conferences there and do so with absolute confidence that it's going to be a great day.

"The rest of the team was great too, and it was an absolute pleasure to be a client."

³⁰ www.shinedome.org.au/

Leith Bouilly, Science to Policy Leadership Program

“Thank you for the wonderful support you gave us last week. Given that we often change our minds about what we need it was greatly appreciated that you were not only flexible, you did it with a smile.”

Linda Cumming, Executive officer, Peter Cullen Water and Environment Trust

“Katie and her team are outstanding. They are completely aware of every aspect of each event right down to the smallest detail. They take last-minute changes in their stride, and under pressure they are calm and totally assured. You feel as though yours is the only event they are managing when they are juggling several simultaneously. Personalised and highly professional service in a beautiful venue.”

Science policy update—May 2020

May 29, 2020

Academy COVID-19 response

RAPID
RESEARCH
INFORMATION
FORUM



The Academy continues to deliver COVID-19 related activities, such as the **Rapid Research Information Forum**³¹ formed under the leadership of Australia’s Chief Scientist, Dr Alan Finkel.

In May, the Academy led the development of a rapid research report for the Minister for Industry, Science and Technology and the Minister for Health on **the most promising vaccines for COVID-19**³².

Other rapid research reports included:

- **The most promising therapeutics for COVID-19**³³, led by the Academy for Health and Medical Sciences with support from the Academy
- **Impact of the pandemic on Australia’s research workforce**³⁴, led by the Academy, the Australian Academy of Technology and Engineering, and Science & Technology Australia
- **The impact of COVID-19 on women in the STEM workforce**³⁵, led by Science & Technology Australia and the Australian Academy of Technology and Engineering
- **Learning outcomes for online versus in-class education**³⁶, led by the Academy of Social Sciences in Australia.

The second COVID-19 related ‘Science for Australians’ feature has been published.

Humanity cannot afford a COVID-19³⁷ patent battle, written by Professor Dianne Nicol and Associate Professor Jane Nielsen, explores how the COVID-19 pandemic has seen Australia and other countries committing to a shared research and funding effort to develop vaccines and therapeutics for COVID-19. This is in contrast to the traditional global research effort which is normally highly competitive.

Submissions

The Academy has made a submission to the Joint Standing Committee on Foreign Affairs, Defence and Trade on the **inquiry into strengthening Australia’s relationships with countries in the Pacific region**³⁸.

The Academy has also made a submission to the **Royal Commission into National Natural Disaster Arrangements**³⁹, sometimes referred to as the Bushfires Royal Commission. The submission consists of a series of expert briefs on bushfire recovery.

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

32 www.science.org.au/covid19/promising-vaccines

33 www.science.org.au/covid19/promising-therapeutics

34 www.science.org.au/covid19/research-workforce

35 www.science.org.au/covid19/women-stem-workforce

36 www.science.org.au/covid19/learning-outcomes-online-vs-inclass-education

37 www.science.org.au/curious/policy-features/humanity-cannot-afford-covid-19-patent-battle

38 www.science.org.au/supporting-science/science-policy-and-analysis/submissions-government/inquiry-strengthening-relationships-pacific-region

39 www.science.org.au/supporting-science/science-policy-and-analysis/submissions-government/royal-commission-natural-disaster-arrangements

Based on its submission to the **Independent review of the Environment Protection and Biodiversity Conservation Act 1999**⁴⁰ in April, the Academy was invited to participate in a roundtable on 29 May to discuss how science and information can support the EPBC Act to enable effective environment protection and biodiversity conservation. This is part of a series of roundtables led by Professor Graeme Samuel AC to explore key issues and potential future reform directions.

Diversity and inclusion update—May 2020

June 02, 2020

Catalysing Gender Equity 2020: outcomes and next steps



Delegates discuss experiences of how merit has been measured through their careers during the EMCR Forum 'Fair play in competitive selection and defining 'merit' ', workshop at the Catalysing Gender Equity Conference 2020, 19–20 February, Adelaide. Photographer: Tom Carruthers

Earlier this year the Academy, in collaboration with Science in Australia Gender Equity (SAGE), hosted a major event, Catalysing Gender Equity 2020, in Adelaide. The event brought together 400 representatives from academia, industry, government and education to advance the opportunities outlined in the **Women in STEM Decadal Plan**⁴¹. Following a poignant Welcome to Country from Kurna Senior Clan Elder Aunty Georgina that highlighted the need for access to science for all, the conference provided a

stage for inspirational plenary speakers and participation in 12 action-focused workshop sessions. The event also hosted an **equity action gallery**⁴².

The Academy has released a **summary report**⁴³ that collates the key learnings and practical solutions and outlines some of the next steps needed to advance gender equity in STEM fields. This report comprises feedback from delegates and core messages from speakers to create an overview of the event and the next steps being taken by the Academy, SAGE and other organisations in the STEM sector.

Catalysing Gender Equity 2020 provided a unique opportunity to connect and unite leaders across the Australian STEM community in the shared goal of enhancing the participation of girls and women in STEM. With the event report now released, the Academy will continue to capture the gender equity activities of organisations through the **Women in STEM Decadal Plan Champions**⁴⁴ opportunity, engage with peak groups in STEM, and continue to grow and expand the **STEM Women database**⁴⁵.

If you would like to know how you or your organisation can support gender equity in STEM, please visit the Academy's **diversity and inclusion webpage**⁴⁶.



Discover resources and opportunities for women in STEM

The Academy's **STEM Women**⁴⁷ directory is now host to a growing collection of resources and opportunities aimed at increasing the

40 www.science.org.au/supporting-science/science-policy-and-analysis/submissions-government/submission-independent

41 www.science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan

42 www.stemwomen.org.au/blog/catalysing-gender-equity-2020-equity-action-gallery

43 www.science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan

44 www.stemwomen.org.au/champions

45 www.stemwomen.org.au/

46 www.science.org.au/supporting-science/diversity-and-inclusion/panel-pledge

47 www.stemwomen.org.au/

attraction, retention and progression of girls and women in STEM.

Find out more about the **range of programs, articles and tools**⁴⁸.

Opportunities for scientists—May 2020

May 29, 2020

External awards

RACI National Awards

Awards in five categories: Academia, Distinction, Education, Women in Chemistry and Young Scientists.

Applications close 12 June 2020

More information on the RACI National Awards⁴⁹

Eppendorf & Science Prize for Neurobiology

The international Eppendorf & Science Prize for Neurobiology is awarded annually to one young scientist for the most outstanding neurobiological research based on methods of molecular and cell biology conducted during the past three years—US\$25,000.

Applications close 15 June 2020

More information on the Eppendorf & Science Prize for Neurobiology⁵⁰

Victoria Prize for Science and Innovation

Recognises leadership, determination, and creativity, highlighting the many ways in which research and development of international significance are conducted in Victoria — US\$50,000.

Applications close 15 June 2020

More information on the Victoria Prize for Science and Innovation⁵¹

Victoria Fellowships

Recognises the important role of innovation in Victoria's economic future and the need for Victorians to be skilled in science, technology, engineering, and mathematics—US\$,000.

Applications close 15 June 2020

More information on the Victoria Fellowships⁵²

BBVA Foundation Frontiers of Knowledge Awards

Awarded in basic sciences (physics, chemistry, mathematics), biology and biomedicine, information and communication technologies, ecology and conservation biology, climate change—€400,000.

Applications close 30 June 2020

More information on BBVA Foundation Frontiers of Knowledge Awards⁵³

Queen Elizabeth Prize in Engineering

Rewards and celebrates an individual (or up to five individuals) responsible for an innovation that has been of global benefit to humanity—£1 million.

Applications close 17 July 2020

More information on the Queen Elizabeth Prize in Engineering⁵⁴

2021 Australian of the Year Awards

Celebrates the contributions of those leading Australians who excel in their chosen field or who make outstanding achievements for the betterment of others.

Applications close 31 July 2020

More information on the 2021 Australian of the Year Awards⁵⁵

See more external awards and prizes⁵⁶

48 www.science.org.au/news-and-events/news-and-media-releases/discover-resources-and-opportunities-women-stem

49 www.raci.org.au/events-awards/national-awards

50 corporate.eppendorf.com/de/company/scientific-awards/global-award/

51 www.veski.org.au/vicprize-criteria

52 www.veski.org.au/vicfellow-criteria

53 www.frontiersofknowledgeawards-fbbva.es/conditions/

54 qeprize.org/nominate

55 www.australianoftheyear.org.au/

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

National Committees update—May 2020

May 29, 2020

IUGG Newsletter



Under the auspices of the **National Committee for Earth Sciences**⁵⁷, the Academy's Liaison Committee for the International Union of Geodesy and Geophysics (IUGG) provides a regular update about the activities of IUGG and its associations which may be of particular interest to scientific communities in Australia, and also includes local news and information on relevant funding opportunities, conferences and awards. The activities and interests of IUGG and its associations span the Earth system and its space environment. The update provides a way to bring these diverse communities together to foster engagement and discussion.

The **International Union of Geodesy and Geophysics**⁵⁸ is responsible for advancing, promoting and communicating the knowledge of the Earth system, its space environment, and the dynamical processes responsible for change. With its constituent associations the IUGG organises international assemblies and workshops, undertakes research, assembles observations, gains insights, coordinates activities, liaises with other scientific bodies, plays an advocacy role, contributes to education, and works to expand capabilities and participation worldwide.

The first issue of this newsletter will be released in June. Please **subscribe**⁵⁹ to this newsletter to keep up to date on the news, opportunities and events related to IUGG and its associations, with a local focus.

Space and Radio Science News and Opportunities



The **National Committee for Space and Radio Science**⁶⁰ provides a regular update about international scientific unions and committees, news from the local scientific community, and information on relevant funding opportunities, conferences and awards. The update is providing a way to keep the community informed on the progress of the strategic plan for space science, which is currently being prepared by the committee.

Development of the plan is being informed by the activities of 11 working groups and through extensive community consultation. Details are available at www.science.org.au/space, including the opportunity to contribute to consultation.

All issues of the committee's update are available on the **Academy website**⁶¹. To keep up to date with the news, events and opportunities in space and radio science please **subscribe**⁶² to receive the update.

Fellows update—May 2020

May 29, 2020

Awards to Fellows

Professor Maria Byrne FAA—2019 Established Researcher Medal by the Australian Coral Reef Society for outstanding contribution to the science and management of Australian coral reefs

Professor Bruce Stillman AO FAA FRS—Dr. H.P. Heineken Prize for Biochemistry and Biophysics, for his ground-breaking research on the way DNA is copied in eukaryotic cells, a crucial component to understanding genetics

57 www.science.org.au/supporting-science/national-committees-science/national-committee-earth-sciences/subscribe-geodesy

58 www.iugg.org/publications/ejournals/IUGGej2005.pdf

59 www.science.org.au/supporting-science/national-committees-science/national-committee-earth-sciences/subscribe-geodesy

60 www.science.org.au/supporting-science/national-committees-science/national-committee-space-and-radio-science/subscribe

61 www.science.org.au/news-and-events/newsletters/space-and-radio-science-news-and-opportunities

62 www.science.org.au/supporting-science/national-committees-science/national-committee-space-and-radio-science/subscribe

Obituary

Professor Lord Robert (Bob) McCredie May of Oxford OM AC FAA FRS FTSE FRSN

8 January 1936 to 28 April 2020

Professor Lord May



Professor Lord Bob May, Emeritus Professor at Oxford University and a Fellow of Merton College, Oxford, was admitted as a Corresponding Member of the Academy in 1991.

Professor Lord May was a skilled theoretical physicist and made major advances in the field of population biology, infectious diseases and biodiversity. He is celebrated for his research achievements and his contributions to academia as an inspiring lecturer and educator.

Professor Lord May began his career in the physics department at the University of Sydney and gained a personal professorship at the age of 33. He pursued his research interests in the dynamics of animal populations at Imperial College London and then at Princeton University, where he took up a professorship in the biology department. Here he used his skills as a theoretical physicist to make major advances in the field of population biology. Over the next three decades, these tools were further extended to the study of infectious diseases and biodiversity. His work led to major contributions to the science of ecology, including seminal contributions to the emerging discipline of ‘chaos’.

In 1988, Professor Lord May took up a post as Royal Society Research Professor at Oxford University. He served as Chief Scientific Adviser to the UK Government and Head of its Office of Science and Technology between 1995 and 2000 and as President of the Royal Society between 2000 and 2005, having been elected a Fellow in 1971.

His fundamental research achievements and contributions as an outstanding educator were widely recognised by many international

awards, elections to learned societies and honorary degrees. These accolades included the Academy’s Pawsey Medal (1967); the Knight Bachelor (1996) for services to science; Companion of the Order of Australia (1998); the Order of Merit (2002); the Japanese Blue Planet Prize (2001) and the Royal Society’s Copley Medal (2007), its oldest and most prestigious award. In 2001, he became one of the first people’s peers in the House of Lords.

The **Academy’s interview with Professor Lord May**⁶³, conducted by Academy Fellow Professor Robyn Williams in 2008, provides further details of Lord May’s career. Please also see the **tribute to Professor Lord May in The Guardian**⁶⁴, the tribute written by Professor Williams and published by **The Lowy Institute**⁶⁵ and the **comments by the President of the Royal Society**⁶⁶, Professor Venki Ramakrishnan.

63 www.science.org.au/learning/general-audience/history/interviews-australian-scientists/lord-robert-may-physicist-and

64 www.theguardian.com/science/2020/apr/29/robert-may-bob-may-lord-may-obituary

65 www.lowyinstitute.org/the-interpretor/bob-may-professor-everything

66 royalsociety.org/news/2020/04/president-of-the-royal-society-comments-on-death-of-the-lord-may-of-oxford-robert-may/