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NEWSLETTER

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Message from the Chief Executive— November 2020

November 26, 2020



The Academy is delighted that our Fellow Dr Cathy Foley has been appointed Australia's Chief Scientist. Currently CSIRO's Chief Scientist, Dr Foley will take up the position in January and we look forward to supporting

her role as a scientific advisor to the government, including pandemic-related advice, and as a driver of collaboration between industry and the research sector. As the Prime Minister said, the role of the Chief Scientist has never been more important. Congratulations Cathy!

We warmly thank Dr Alan Finkel, Australia's Chief Scientist, for his tireless work and achievements that have advanced science in Australia. Also an Academy Fellow, Dr Finkel has provided evidence-based support to the government while working to address many big challenges Australia is facing—bringing them to broad attention, generating discussion, and providing options for future directions. Thank you Alan—we look forward to your continuing contributions in Australia and internationally.

The Academy celebrated and supported NAIDOC Week with two online events that generated much interest and continue to be shared and watched widely. 'The science of a continuous culture' was the theme, with the Indigenous panellists speaking passionately and openly about their knowledge, experiences and challenges. Their messages are thought-provoking and compelling and I encourage you to **watch the recordings**¹.

Known as the home of science in Australia, the Academy's iconic Shine Dome is undergoing two significant transformations. The first is now clearly visible and is the restoration of the dome's copper roof following the devastating hailstorm in January. The roof will, for a relatively short time, be a shiny copper colour, softening to a dark brown over the next 12 months. We are also working with the University of Canberra and others to make the Shine Dome represent the best in science and technology with an innovative sustainability plan for a net-zero emissions future. Supported by a government grant, the plan will guide future decisions while protecting the Shine Dome's national heritage values.

Finally, congratulations to those Fellows who achieved recognition this month, including receiving Eureka Awards and election to international science bodies, and to the recipients of Academy award funding.

Enjoy this month's newsletter and stay safe and well,

Anna-Maria

Academy welcomes new Chief Scientist Dr Cathy Foley

November 09, 2020

The Australian Academy of Science congratulates Dr Cathy Foley AO PSM FAA FTSE on her appointment as Chief Scientist of Australia.

Academy President, Professor John Shine, warmly welcomed the appointment.

"As an accomplished physicist, the first dedicated Chief Scientist of CSIRO and numerous leadership roles, Dr Foley has made outstanding

¹ science.org.au/news-and-events/news-and-media-releases/naidoc-week-events-explore-science-continuous-culture

contributions to Australian science from discovery to commercialisation and in influencing policy development.

“Cathy is an inspirational role model for her peers and the next generation,” Professor Shine said.

“We look forward to continuing our work with the Office of the Chief Scientist under Cathy’s leadership to provide science evidence to inform Government decision making, as we have throughout the COVID-19 pandemic through initiatives such as the **Rapid Research Information Forum**².”

Dr Foley’s research is in the field of solid-state physics and its applications, combining quantum physics, material science and research translation. Her remarkable career achievements have allowed Dr Foley to advance all areas of STEM nationally and internationally.



Watch on Vimeo: [Australia’s new Chief Scientist](#)³

Dr Foley’s appointment as Chief Scientist follows her **election as a Fellow of the Academy earlier this year**⁴, for her outstanding contributions to science.

“Science is absolutely critical for Australia’s future,” Dr Foley told the Academy shortly after her election.

“If you look at the things we’ve been facing recently, like bushfires, the COVID 19 virus, even looking at how we can have our sovereign capability so that we can manufacture onshore in difficult times, where transfer of goods of services and boundaries is difficult,” Dr Foley said.

“That all requires us to be able to have high quality science which then leads to new ways

of doing things, but also working out how to translate it from the laboratory, that is something that makes an impact and is used by everyone.”

Dr Foley’s appointment as Australia’s Chief Scientist is for three years, starting in January 2021.

Professor Shine also thanked outgoing Chief Scientist, Dr Alan Finkel AO FAA FTSE for his strong leadership and for advancing science in Australia.

NAIDOC Week events explore the science of a continuous culture

November 20, 2020

Land, water, sky and fire were the focus of two online Academy events for this year’s NAIDOC Week ‘Always Was, Always Will Be’. The events explored how Aboriginal and Torres Strait Islander peoples have nurtured a connection to Country, with a profound sense of responsibility to the natural world, for more than 60,000 years, and the challenges they face. The recordings of the events are compelling watching—we thank the experts involved and all those who joined us online.

Land, water and fire



Watch on YouTube: [Land, water and fire: the science of a continuous culture](#)⁵

On 9 November, a panel discussed their perspectives on the environment, biodiversity and sustainability. The panel was made up of Associate Professor Michael-Shawn Fletcher, a

² science.org.au/covid19/rapid-research-information-forum

³ vimeo.com/473350808

⁴ science.org.au/news-and-events/news-and-media-releases/australias-top-scientists-elected-fellows-of-academy

⁵ youtu.be/F65XKgR0mfk

Wiradjuri man from the University of Melbourne; Associate Professor Bradley Moggridge, a Murri from the Kamilaroi Nation and from the University of Canberra; and Zena Cumpston, a Barkandji woman from the University of Melbourne.

The panellists explained how Indigenous knowledge and science of land, water and fire can inform and improve the management of the natural world.

“Aboriginal and Torres Strait Islander people ... have built an intricate knowledge of the world around us: Country. Country to us is not only the environment, but it’s us, and by keeping Country healthy, we keep ourselves healthy,” Associate Professor Fletcher said.

“[More broadly than the modern view of science], science is essentially the endeavour of observing, experimenting and predicting, and doing this over and over again. This is an endeavour, a process, that all humans undertake and all humans have undertaken through time. It’s nothing unique to any particular culture—it is something that it ubiquitously human,” he said.

Associate Professor Moggridge highlighted that Indigenous knowledge is only just starting to be included in learning curricula, and only when that occurs from pre-school to university can there be an “Indigenisation of science”.

“We are the first scientists ... [our knowledge] needs to be respected for what it is, and then obviously the culture of science needs to change to accept it.”

According to Ms Cumpston, the way forward requires deep cultural and institutional change in how Indigenous input and knowledge is sought and accepted.

From Twitter

“Excellent conversation! So much deep listening, learning & unlearning to be done”

@Jane8Toner, Jane Toner

“Engaging and informative discussion – relationships are important – how can we learn to work together – and modify our expectations in academia”

@eileenamcl, Professor Eileen McLaughlin

The sky and stars



Watch on YouTube: [The sky and stars: the science of a continuous culture](#)⁶

As possibly the world’s first astronomers, the First Peoples of Australia observe the sun, moon and stars to inform navigation, create calendars and predict weather. On 12 November, a panel discussed the astronomy knowledge of Indigenous Australians and how it contributes to global knowledge about the sky and stars. Panellists were Kirsten Banks, a Wiradjuri woman from the University of New South Wales and Djarra Delaney, from the Quandamooka people of Minjerribah, North Stradbroke Island and from the University of Melbourne. Journalist and science communicator, Rae Johnston, a Wiradjuri woman, facilitated the discussion.

Ms Banks says she was always driven to learn from a very young age. It was in high school where she realised she needed to learn more about space and the universe.

“I’m studying ... the stars and the Milky Way galaxy, trying to find out more about the history and formation of our island universe,” Ms Banks said.

Her favourite example of Indigenous knowledge is the celestial Emu. “We call it Gugurmin in Wiradjuri ... you’re looking at the negative spaces, the dark parts of the Milky Way galaxy. Its position in the night sky tells us when it’s the right time to go looking for emu eggs, so the night sky is basically like a celestial menu.

“We should be proud of the huge historical scientific achievement that we’ve had in this country, that we now call Australia, for over 60,000 years.”

⁶ youtu.be/cg-mWBNU2sg

Acknowledging that all things are connected, Mr Delaney has been sharing Indigenous knowledge including that related to weather. “Indigenous weather knowledge calendars ... are based on observable patterns in the environment,” he said.

“With climate change there is dramatic cause for concern because the knowledge has to move so fast now to keep up with these changes. It’s really important knowledge and vital in understanding how climate change is going to impact Australia.”

From Twitter

“What an amazing #NAIDOC2020 event on ‘The sky & stars: the science of a continuous culture’ hosted by @Science_Academy yesterday! Thank you so much to @AstroKirsten @raejohnston and Djarra Delaney for sharing your knowledge and passion for #IndigenousScience! #NAIDOCWeek2020”

@matilda_hd, Matilda Handsley-Davis

“Very engaging talk about the importance of recognizing and respecting Indigenous Science!”

@GabiellaAlleg5, Gabriella Allegretto

The Academy’s Reconciliation Action Plan

The Academy’s **Reconciliation Action Plan**⁷ leads with the vision that ‘the traditional knowledge and cultures of Australia’s First Peoples are highly valued and respected by all Australians, and as one we contribute to creating a better nation and a better world.’

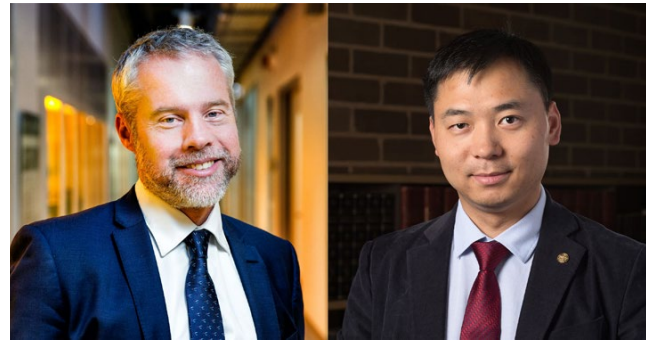
See our progress towards reconciliation⁸.

Academy Fellows get their Eureka moment

November 26, 2020

Two Academy Fellows, Professor **Ben Eggleton**⁹ and Professor **Dacheng Tao**¹⁰, have each won a **2020 Australian Museum Eureka Prize**¹¹.

Professor Tao won the Eureka Prize for Excellence in Data Science. His work on deep learning, which imitates the brain’s ability to process data and make decisions, has enabled the design of algorithms for object detection and image enhancement.



Professor Ben Eggleton FAA FTSE (left) and Professor Dacheng Tao FAA.

Professor Eggleton and his team of Dr Eric Mägi, Dr Moritz Merklein, Dr Alvaro Casas Bedoya, Dr Yang Liu and Associate Professor Stephen Madden won the Eureka Prize for Outstanding Science in Safeguarding Australia. A microchip produced by the team, which uses the interactions between light and sound, can improve microwave signal processing in performance, efficiency and cost.

Four Fellows were also **Eureka Prizes finalists**¹²:

- Professor Geordie Williamson, a world-leading mathematician in geometric representation theory, was a finalist for the CSIRO Eureka Prize for Leadership in Innovation and Science
- Professor Michelle Coote, regarded as a pioneer in computational chemistry for modelling radical polymerisation processes, was a finalist along with her team for the UNSW Eureka Prize for Scientific Research
- Professor Chris Dickman is internationally recognised for his contributions to our understanding of terrestrial vertebrates. His Cat Ecology, Impact and Management team was a finalist for the Eureka Prize for Applied Environmental Research

⁷ science.org.au/supporting-science/diversity-and-inclusion/reconciliation-action-plan

⁸ science.org.au/supporting-science/diversity-and-inclusion/reconciliation-action-plan/progress-towards-reconciliation

⁹ science.org.au/profile/ben-eggleton

¹⁰ science.org.au/profile/dacheng-tao

¹¹ australian.museum/get-involved/eureka-prizes/2020-eureka-prizes-winners

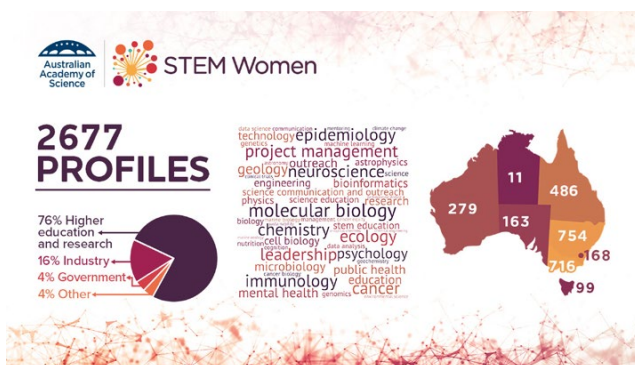
¹² australian.museum/get-involved/eureka-prizes/2020-eureka-prizes-finalists

- Professor Robert Parton, known for his pioneering work on the plasma membrane organisation of mammalian cells, was a finalist along with the BioNanoVR team for the ANSTO Eureka Prize for Innovative Use of Technology.

Watch the 2020 Eureka Prizes award ceremony¹³

Searchable STEM Women database increases representation of women

November 03, 2020



STEM Women has a highly diverse demographic.

After celebrating its anniversary in August 2020, STEM Women has published its successes and future development in its **first-year impact report**¹⁴.

The online directory **STEM Women**¹⁵ was established as a simple tool to combat the lack of representation of women in science, technology engineering and mathematics. By creating a STEM Women profile, women can gain more opportunities to share their expertise and progress their careers and personal capabilities.

STEM Women set a target to publish more than 1000 profiles in its first year. This target was well and truly exceeded. Over 2600 women have created a STEM Women profile, and more than 41,000 people have visited the site.

STEM Women members demographic

Earlier this year, STEM Women carried out an evaluation to determine the directory's demographic and how the website is accessed by women in STEM, including current and potential members. Three-quarters of STEM Women members work and study in the higher education and research (HER) sector, with substantial variety in STEM subject matter expertise. Over 10 per cent of profiles identify with several diversity attributes including culturally and linguistically diverse, LGBTQI+, Aboriginal, Torres Strait Islander, having a disability and neurodiverse.



STEM Women members nominated the reasons they created a profile.

STEM Women members indicated that visibility, support, opportunities, and community were some of the main reasons they decided to join STEM Women. Additionally, 30% of survey respondents regularly used the search function on STEM Women, indicating that members are taking the initiative to learn more about and engage with their community.

Seekers find women in STEM

STEM Women allows seekers to search for experts via six filters: expertise, state, city, opportunity type, diversity attribute, and whether they have a working with children check. Out of the total 9570 searches made over the first year, seekers searched by expertise in 76 per cent of searches, which cements STEM Women as a discovery database.

¹³ australian.museum/get-involved/eureka-prizes/2020-award-ceremony-watch

¹⁴ stemwomen.org.au/sites/default/files/inline-files/STEM-Women-Impact-Report-2020.pdf

¹⁵ stemwomen.org.au

Seekers searched with 1574 different expertise terms, the most common being chemistry, cancer, astronomy and nutrition.



The graphic features the Australian Academy of Science logo and the text 'STEM Women' at the top. Below this is a search bar containing the number '9570' and a magnifying glass icon. Underneath the search bar, the text 'searches on stemwomen.org.au' is displayed. The background of the graphic is a network of red and white nodes and lines.

STEM Women has been hugely successful as a discovery database.

Opportunities

The survey asked members to identify what opportunities they would like to be offered, such as speaking and outreach opportunities, media engagements, committee and board invitations or award nominations.

Committee and board invitations were the most highly regarded opportunity by respondents, which provides a key focus area for future promotion and partnering strategies.

“With the current gender disparity in the fields of engineering and IT, the STEM Women database has provided a brilliant and much needed central resource to bring forward the profiles of women in STEM from all across Australia ... Through my profile I got the opportunity to have an amazing experience to mentor a team of students.”

Dr Mureena Bano, Senior Lecturer, School of Information Technology, Deakin University

Beyond year one

Moving forward, STEM Women will set the target to reach 5000 profiles by August 2021. It aims to grow member representation across all sectors of the STEM workforce, particularly industry and government sectors, as well as those with VET qualifications. It is also aiming to increase

the representation of senior women in STEM to inspire the next generation of senior executive women. Achieving more equal representation of profiles across the states and territories is also a priority.

Additional functionalities for profiles are being explored, such as calls for blog submissions and showcasing examples of STEM Women members connecting and collaborating.

STEM Women was created and supported by the Australian Academy of Science in partnership with CSIRO, Science & Technology Australia and the Australian Science Media Centre, along with financial support from the Australian Government. STEM Women aligns with the visibility opportunity outlined in the **Women in STEM Decadal Plan**¹⁶, and the vision of the Australian Government’s **Advancing Women in STEM strategy**¹⁷.

Towards net-zero emissions at Australia’s home of science

November 15, 2020



The Australian Academy of Science has committed to reducing its impact on climate change by working towards a net-zero emissions future for the Shine Dome.

The University of Canberra has partnered with the Academy to develop a sustainability plan that will renew or replace environmental systems at the **National Heritage Listed**¹⁸ Canberra landmark.

¹⁶ science.org.au/support/analysis/decadal-plans-science/women-in-stem-decadal-plan

¹⁷ industry.gov.au/data-and-publications/advancing-women-in-stem-strategy

¹⁸ environment.gov.au/heritage/places/national/academy-of-science

Researchers from the University of Canberra's Faculty of Arts and Design have received more than \$200,000 in funding for 'The Sustainable Shine Dome' project as part of the Commonwealth Government's National Heritage Grants.

"The plan researches and adopts world leading strategies and innovative approaches to protect and sustainably manage the place's national heritage values," said Professor Dr Michael Jasper.

"A sustainability plan responsive to changing technologies ensures the Shine Dome continues to represent the scientific energy and experimentation of the Academy of Science."

The project began in June, and talks are currently underway with project partners GHD and GML Heritage to assess the current state of the building and explore possible modifications.

The project will see the adoption of world-leading strategies and innovative approaches to ensure progressive energy and emissions reductions while protecting and sustainably managing the Shine Dome's national heritage values.



Sustainable Shine Dome project team (from left): Michael Jasper, University of Canberra; Dave McLauchlan, GHD; Katie Little, Academy; Noam Maitless, GHD; Anna-Maria Arabia, Academy; Tracy Ireland, University of Canberra; Hans Bachor, Academy; Catherine Forbes, Rachel Jackson and Kaylie Beasley, GML Heritage

As part of the project, the public will have the opportunity to take part in a series of educational activities to improve the awareness of the Shine Dome's national heritage values, with the first activity **beginning in December**¹⁹.

Australian Academy of Science Chief Executive, Anna-Maria Arabia, said the Academy is thrilled that the University of Canberra has been awarded an Australian Government Heritage Grant to develop a sustainability plan for the iconic Shine Dome.

"A sustainability plan to guide what is needed to reduce the Shine Dome's energy and emissions footprint, is not only good for the environment but also reflects the values and work of the Fellows of the Academy who call the Shine Dome home," Ms Arabia said.

"The Shine Dome, Australia's home of science, was the first building to be listed on the National Heritage List and its preservation and protection is important so it can be enjoyed by future generations."

The project is being undertaken simultaneously with the restoration of the copper covering the dome, which **was damaged in a hailstorm**²⁰ in late January. **Read more**²¹ about the restoration of the Shine Dome roof.

The Shine Dome remains **open for business as an event venue**²² during the works and bookings are welcome.

Learn more about the **history of the Shine Dome**²³.

Margaret Middleton Fund for endangered Australian native vertebrate animals: 2021 funding announced

November 16, 2020

Three early-career researchers have been awarded funding for ecology projects in 2021 thanks to the Australian Academy of Science's Margaret Middleton Fund for endangered Australian native vertebrate animals.

The fund provides grants to support emerging researchers with ecology projects that have

¹⁹ science.org.au/news-and-events/events/sustainable-shine-dome-envisioning-sustainable-futures-heritage

²⁰ science.org.au/news-and-events/news-and-media-releases/canberras-iconic-landmark-damaged-hailstorms

²¹ science.org.au/news-and-events/news-and-media-releases/australias-home-science-shine-brighter-ever

²² shinedome.org.au

²³ science.org.au/about-us/shine-dome/history-shine-dome

tangible conservation outcomes for endangered native vertebrates.

The 2021 recipients are:

- Dr Jenna Crowe-Riddell, University of Adelaide
- Ms Finella Dawlings, Monash University
- Ms Angela Simms, La Trobe University.



(L to R) Margaret Middleton Fund recipients for 2021: Angela Simms, Dr Jenna Crowe-Riddell and Finella Dawlings.

From detecting creatures in grasslands and oceans to improving turtle incubation and investigating sea snakes, all three projects promise to provide valuable insights for conserving our native vertebrates.

Dr Crowe-Riddell will use the funding to research critically endangered species of Western Australian sea snakes. By analysing environmental DNA and tissue samples, she'll investigate the population densities and distributions of two similar-looking (cryptic) sea snake species in the Exmouth area.

This data will be useful for assessing how best to protect sea snake populations and for managing environmental impact studies for oil and gas exploration or infrastructure developments proposed in the area.

Ms Dawlings' project also involves detecting biodiversity and population numbers, but is focused on small mammals and birds in eastern Australian native grasslands. Dawlings' project will use thermal scanners to detect the presence of endotherms (heat-emitting animals) such as the plains-wanderer and fat-tailed dunnart.

The use of this more efficient and effective thermal scanning method is likely to improve long-

term monitoring projects and assist in conserving small grassland fauna.

Ms Simms received funding for a project that will investigate the conditions of river turtle egg incubation to find out how young in these vulnerable species can get the best start in life.

The findings will have direct impacts on management of captive incubation programs for endangered turtle species.

The Margaret Middleton Fund for endangered Australian native vertebrate animals was established in 2000 with **Dr Margaret Middleton**²⁴, who donated generously to this fund across her lifetime. Dr Middleton was a long-time supporter of the Academy and early-career scientists, with the fund supporting almost 90 projects to date.

Applications for the 2022 awards will open in early 2021.

More information about the Margaret Middleton Fund for endangered Australian native vertebrate animals²⁵

Research on the intergenerational impacts of Maralinga nuclear tests supported by Moran Award

November 20, 2020

Henrietta Byrne from the University of Adelaide.
Photo: supplied

Henrietta Byrne from the University of Adelaide is the recipient of the Academy's 2021 Moran Award for History of Science Research.

She receives the award for her proposal entitled 'Legacies of exposure: Tracing scientific and



²⁴ science.org.au/about-us/support-us/donor-stories/vale-dr-margaret-middleton-pillar-science-and-academy

²⁵ science.org.au/opportunities/research-funding/margaret-middleton-fund

Indigenous understandings of exposures from the Maralinga atomic testing (1956–84)’.

Ms Byrne will explore how Australian science has responded to the question of intergenerational impacts of environmental exposures on bodies over time, focused around the British atomic testing conducted in Maralinga, South Australia between 1956 and 1968.

The National Archives of Australia and the Australian Institute of Aboriginal and Torres Strait Islander Studies library, as well as interviews with leading anthropologists, will inform her research.

Her work will not only provide an important examination of scientific understandings of environmental exposure, but will also focus explicitly on the Indigenous aspects of this history.

Ms Byrne said that the award will allow her to study the relationships between Indigenous knowledges, settler colonial histories and science and technology studies.

“I’m honoured to have the support of the Australian Academy of Science to undertake this study. It is a great opportunity to engage with the archives in a way that highlights the experiences and ongoing activism of Aboriginal people whose land was exposed to radiation.”

This research is part of her broader PhD project in Anthropology and Gender Studies on environmental exposures and epigenetics in Indigenous Australian contexts.

The **Moran Award for History of Science Research**²⁶ is worth up to \$5000, and is aimed at postgraduate students and other researchers with expertise in the history of Australian science. Applications for the 2022 award will open in early 2021.

Australia’s home of science to shine brighter than ever

November 15, 2020

A shiny dome

The home of Australian science, the Shine Dome, will sport a shiny new top and be far more energy efficient as works begin to repair the **damage from January’s hailstorm**²⁷ which severely dented the Dome’s copper roof tiles.



The Shine Dome is being restored, beginning with the curves of the arches. Photos: Australian Academy of Science

Australian Academy of Science Chief Executive Anna-Maria Arabia said she is thrilled that the restoration works are underway.

“When the Shine Dome was first built, its design was described as unconventional and futuristic. It created all sorts of challenges for the architects and engineers involved and the restoration is no different today,” said Ms Arabia.

“This 21st century restoration of the Shine Dome will see innovative solutions used to bring the outside of the building back to its former glory.”

The concrete roof of the dome is sheathed in copper—and under the copper is a layer of vermiculite which partly insulates the interior from outside temperatures.

Rather than removing the existing copper tiles, the dome will be covered by a second layer of new copper, with a waterproof material placed between the two layers.

The dual layer will create an innovative ventilated roof. Airflow between the copper sheets will provide insulation and improve the building’s energy efficiency.

²⁶ science.org.au/opportunities/research-funding/moran-award-history-science-research

²⁷ science.org.au/news-and-events/news-and-media-releases/canberras-iconic-landmark-damaged-hailstorms

Work has begun to replace the copper over each of the 16 arches, where water drains from the roof into the moat.

The original copper was intended to oxidise to a dark green-brown over 10 years, but the clean air of Canberra meant that it took much longer.

The same will be true for the new copper which initially will be very shiny, fading to a dark brown over the coming 12 months and eventually to a light green over several decades.

Completed in 1959 and designed by Roy Grounds to provide a home for the Australian Academy of Science, the Shine Dome, previously known as Becker House, was the first Canberra building to be added to the National Heritage List.

It continues to attract worldwide attention and awards for its unique architectural design.

The restoration work on the Shine Dome is being carried out by ARC Roofing and is expected to be completed by early 2021.

The Shine Dome remains open for business as an event venue during the repairs and **bookings are welcome**²⁸.

Read more²⁹ about the history of the Shine Dome.



The roof of historic Ian Potter house was also damaged by hail and is being repaired. Photo: Australian Academy of Science

Ian Potter House renovation

Repair and refurbishment works have also begun on Ian Potter House, the office space of the Academy staff, which also suffered severe hailstorm damage. Ian Potter House is located adjacent to the Shine Dome.

Built during the Federal Capital Commission's building program for the transfer of public servants to Canberra in 1927, Ian Potter House was originally the Acton Private Hotel. Ian Potter House was placed on the ACT Heritage Register in 1998.

The restoration work on the building is expected to be completed in mid-2021.

Eric Martin and Associates Architects are involved in both the Ian Potter House and Shine Dome restoration projects.

Research collaboration supports health care in India

November 26, 2020



Associate Professor Christina Aggar (standing, centre left) is working with Indian researchers as part of her Australia–India Strategic Research Fund Early- and Mid-Career Researcher (EMCR) Fellowship. Image supplied.

An Australian researcher and her colleagues are fostering a strategic approach to health care education and research capability between Australia and India with the support of a fellowship from the Academy.

Associate Professor Christina Aggar was one of 19 recipients of the **2020 Australia–India Strategic Research Fund (AISRF) Early- and Mid-Career Researcher (EMCR) Fellowships**³⁰. The fellowship supported her to travel to India and

²⁸ shinedome.org.au

²⁹ science.org.au/about-us/shine-dome

³⁰ science.org.au/supporting-science/awards-and-opportunities/australia-india-strategic-research-fund-aisrf-early-and-mid-career-fellowships-2020-0

work with leading researchers on a mobile digital learning program to support nurses' leadership and communication skills in chronic disease management.

Associate Professor Aggar is from the School of Health and Human Sciences at Southern Cross University and is a registered nurse with clinical experience in aged care, palliative care, rehabilitation and community health. Her research interests include transition programs for new graduate nurses, clinical skills education, and chronic care and rehabilitation.

The aim of the research project was to evaluate undergraduate Indian nurses' acceptance and adoption of the mLearning program. It was a collaboration with Professor Sudha Raddi and colleagues at the Kaher Institute of Nursing Sciences in Karnataka, India, with the support of the EdTech company Practera.

Associate Professor Aggar arrived in India in early March for a six-week visit, but returned to Australia 10 days later due to COVID-19. While in India she was able to introduce the program at the Kaher Institute and continued to manage the roll-out of the online program from Australia.

"The findings will contribute to mLearning literature and provide valuable information to education providers, assisting in future program development and implementation," she said.

The opportunity presented by the AISRF resulted in a consortium of Indian universities committing to further develop the digital education technology.

Associate Professor Aggar said her visit to India enabled her to better understand the healthcare system and how best to approach the challenge of supporting healthcare students to develop their leadership and communication skills.

"Future program evaluations will explore gender experiences, particularly related to empowerment and leadership skills of women. Further testing of this model with Indian undergraduate nursing students will strengthen the cultural applicability of the model.

"This project has been timely, as WHO declared 2020 the International Year of the Nurse and the Midwife. The experience provided me with the opportunity to highlight the capacity and clinical expertise of nurses to meet the increasing health care challenges of the 21st century."

Academy videos head to the Moon and back

November 26, 2020

The Academy continues to produce engaging science-based videos that generate broad interest and are viewed and shared widely on social media. Below are some of our most recent videos—see our **Curious website**³¹ and **Global Science TV**³² for hundreds more.

It's official: Water on the Moon

Two new studies confirm the 'unambiguous detection' of water on the Moon, finally differentiating water from other combinations of hydrogen and oxygen.



Watch on Vimeo³³

COVID-19 vaccine: Contenders explained

We asked Professor Ian Frazer from the University of Queensland about all the newest potential COVID-19 vaccines.

31 www.science.org.au/curious/videos

32 www.facebook.com/globalsciencetv

33 vimeo.com/472008496



Watch on Vimeo³⁴

The Aussie doctor who gifted sound

Academy Fellow Professor Graeme Clark was instrumental in developing the cochlear implant.

www.science.org.au/curious/video/aussie-doctor-who-gifted-sound



Watch on Vimeo³⁵

The following videos are published by Global Science TV and produced by the Academy in partnership with the International Science Council.

2020 medical breakthroughs of the year

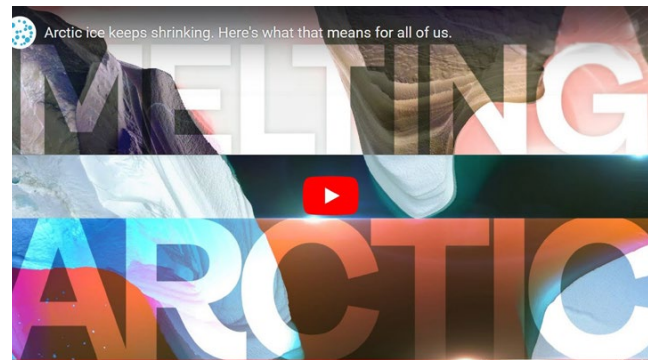
We teamed up with the international Falling Walls event and Berlin Science Week to showcase breakthrough thinking from some of our greatest scientists.



Watch on YouTube³⁶

Arctic ice keeps shrinking

The climate in the Arctic is changing before all eyes. A major new study has found that the region is shifting to a new climate with open water and rain replacing ice and snow. A feedback loop is also rapidly gaining pace. That's bad for the Arctic AND bad for the planet.



Watch on YouTube³⁷

Impossible black hole

Astronomers from the LIGO and Virgo scientific collaboration have detected a mind-blowing gravitational shockwave. It originated from the biggest merger yet observed between two black holes.

34 vimeo.com/482857592
35 vimeo.com/476157245
36 youtu.be/eS0kupg0wkM
37 youtu.be/wO_6-m4Oh6s



Watch on YouTube³⁸

The Shine Dome is open for bookings

November 26, 2020



Want somewhere unique for your event? The Shine Dome is open for bookings.

The Shine Dome is a National Heritage listed building rich with scientific history. The Academy is now encouraging event bookings at the Shine Dome—the ideal location for many types of events.

The Dorothy Hill Room is one of several conference rooms at the Shine Dome. It is a very versatile space and has a large fold back door that opens into the foyer should additional space be required for networking.

The Dorothy Hill room was named after the eminent Australian geologist and palaeontologist who became the first woman university professor at an Australian university.

Find out more about the Shine Dome as a venue³⁹ or contact the team by emailing shinedome@science.org.au

About Dorothy Hill

Professor Dorothy Hill AC CBE FAA FRS made broad contributions to science, took a leading role in the administration of the University of Queensland and was a powerful supporter of women's educational rights. Professor Hill was the first woman to be elected as a Fellow of the Australian Academy of Science and was the first woman to have served as president of the Academy.

Professor Hill discovered the use of fossil corals in sorting out the correlations of Palaeozoic rocks in Australia, actively supported the scientific study of the Great Barrier Reef, and expanded the knowledge of stratigraphy of eastern Australia.

Born in Brisbane in 1907, she received a scholarship to study geology at the University of Queensland and graduated with first class honours in 1929. The high calibre of her work won her a scholarship to carry out her PhD on carboniferous corals at the Sedgwick Museum of Earth Sciences in the University of Cambridge. After her PhD was awarded in 1932, she received several awards and fellowships to continue her research at Cambridge.

Professor Hill returned to Australia in 1938 to take a position as a research fellow at CSIR (now CSIRO) until 1943. One of her most outstanding contributions was her taxonomical work on the coral faunas of Australia. She added value to the global understanding of coral evolution and the interpretation of stratigraphy, setting standards such as those in the Treatise on Invertebrate Paleontology. She also engaged with resource industries working with the coal, oil, and economic sedimentary rocks of Queensland to share specialist geological knowledge.

Professor Hill concurrently worked as a lecturer and researcher in palaeontology and stratigraphy at the University of Queensland over the next 25 years. She was highly involved in fostering a spirit of independent inquiry among students and encouraged them to investigate research careers. During the Second World War, she worked as an operations staff officer for the Women's Royal Australian Naval Service.

Professor Hill became Professor of Geology at the University of Queensland in 1959. She was

³⁸ youtu.be/VMHNnXqYLtg

³⁹ shinedome.org.au

elected as an Academy Fellow in 1956 and made a Fellow of the Royal Society of London in 1965. She became vice-president of the Academy in 1969 and president in 1970.

Professor Hill was a strong supporter of Australian scientific publishing and was also instrumental in building up the University of Queensland's library collection (the Physical Sciences and Engineering Library was named after Hill).

In 1971, she became President of the Professorial Board of the University of Queensland, the first woman to be so recognised. She retired from the university in the following year and the Dorothy Hill chair was established in her honour. Professor Hill died in 1997.

See Professor Hill's **biographical memoir**⁴⁰.

The **Dorothy Hill Medal**⁴¹ honours the contributions of Professor Hill to Australian Earth science and her work in opening up tertiary science education to women.

Opportunities for scientists— November 2020

November 26, 2020

Academy opportunity

Regional Collaborations Programme COVID-19 Digital Grants

Grants of up to \$10,000 each are available for early-career and mid-career researchers to increase connectivity and engagement between Australian and Asia–Pacific economies in response to the COVID-19 pandemic.

Applications close 14 December 2020

More information on the Regional Collaborations Programme COVID-19 Digital Grants⁴²

External opportunity

Indigenous Media Mentoring Program

Indigenous STEM researchers from around Australia can register their interest in joining the Australian Science Media Centre at the SBS studios in Sydney for intensive media training on 8 and 9 April 2021.

More information on the Indigenous Media Mentoring Program⁴³

Expressions of interest close 21 December 2020

External awards

Order of Australia Honours

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

More information on the Order of Australia Honours⁴⁴

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

The Royal Society Awards

Nominations for the Royal Society's medals and awards to recognise and celebrate excellence in science open on 30 November 2020.

More information on the Royal Society's medals and awards

Applications close 15 February 2021

Gruber Prizes

Honours individuals in the fields of cosmology, genetics and neuroscience, whose ground-breaking work provides new models that inspire and enable fundamental shifts in knowledge and culture—US\$500,000 for each category

Applications close 15 December 2020

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

41 science.org.au/supporting-science/awards-and-opportunities/dorothy-hill-medal

42 science.org.au/supporting-science/awards-and-opportunities/regional-collaborations-programme-covid-19-digital-grants

43 smc.org.au/news/immmp

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

[More information on the Gruber Prizes](#)⁴⁵

Mahathir Science Award

Awarded to an individual or group in recognition of contributions and innovations towards solving problems in the tropics through Science, Technology, and Innovation. The call for nominations is now open for the Tropical Agriculture and Tropical Architecture and Engineering categories—US\$100,000

Applications close 30 December 2020

[More information on the Mahathir Science Award](#)⁴⁶

Volvo Environment Prize

Awarded to people who have made outstanding scientific achievements within the area of environment and sustainability —SEK\$1.5 million (approximately A\$237,000)

[More information on the Volvo Environment Prize](#)⁴⁷

Applications close 10 January 2021

Lefoulon-Delalande Grand Prize

Awarded to scientists who have made a significant scientific contribution in physiology, biology or cardiovascular medicine—€600,000

[More information on the Lefoulon-Delalande Grand Prize](#)⁴⁸

Applications close 11 January 2021

A.M. Turing Award

Technical award given for major contributions of a technical nature to the computing community—US\$1 million

[More information on the A.M. Turing Award](#)⁴⁹

Applications close on 15 January 2021

AOGS Axford Medal

Recognises outstanding achievements in geosciences and unselfish cooperation and leadership in Asia and Oceania.

[More information on the AOGS Axford Medal](#)⁵⁰

Applications close 19 January 2021

Welch Award in Chemistry

Recognises important chemical research contributions which have had a significant positive influence on mankind—US\$500,000

[More information on the Welch Award in Chemistry](#)⁵¹

Applications close 29 January 2021

[See more external awards](#)⁵²

Fellows update— November 2020

November 26, 2020

Honours and awards to Fellows

Professor Dacheng Tao FAA—Eureka Prize for Excellence in Data Science

Professor Ben Eggleton FAA FTSE and team—Eureka Prize for Outstanding Science in Safeguarding Australia

[Find out more about these prizes](#)⁵³

Dr TJ Higgins AO FAA FTSE—Elected a Fellow of the American Association for the Advancement of Science

Professor Toby Walsh FAA—Elected a Fellow of the American Association for the Advancement of Science

[Find out more about these honours](#)⁵⁴

45 gruber.yale.edu/prize-nominations

46 msa-foundation.org

47 environment-prize.com/the-prize/nominate

48 lefoulon-delalande.institut-de-france.fr/grand-prix-scientifique-2021

49 amturing.acm.org/call_for_nominations.cfm

50 asiaoceania.org/society/public.asp?view=axford_medal

51 welch1.org/awards/welch-award-in-chemistry

52 science.org.au/supporting-science/recognition/external-sources-recognition

53 science.org.au/news-and-events/news-and-media-releases/academy-fellows-get-their-eureka-moment

54 science.org.au/news-and-events/news-and-media-releases/academy-fellows-elected-american-association-advancement-science

Professor John Church FAA FTSE—Elected a Fellow of the American Geophysical Union

Professor Susan Scott FAA—Elected a Fellow of the American Physical Society

Professor Susan Scott FAA—Awarded the UNSW 2020 Dirac Medal for the Advancement of Theoretical Physics, and presented the Dirac Public Lecture.

National Committees update

Opportunities are coming up to contribute to Australia's Future in Space Science, the strategic plan prepared by the National Committee for Space and Radio Science (NCSRS). **Subscribe to the space newsletter**⁵⁵ for space-related news and updates on the consultation sessions, planned for late January 2021. Details will also be advertised on the **NCSRS website**⁵⁶ closer to the date.

Coming events

The Sustainable Shine Dome: Envisioning Sustainable Futures for Heritage

4 December

As part of the **Sustainable Shine Dome project**⁵⁷, we are planning a series of workshops and symposia to explore heritage values and sustainability. Join us on Friday 4 December from 2 – 4.30 pm AEDT online or in person for the first symposium, with a networking opportunity to follow for those who attend in person and wish to stay on.

Register for this event⁵⁸

COVID-19 Webinar Series: Supercomputing to fight COVID-19

7 December

Supercomputing can help our response to COVID-19 by increasing the speed with which we can model the spread of the virus, assisting in finding a vaccine and improving treatments. Join Australian and international speakers 7.30 – 8.30 pm AEDT to discuss how supercomputing is assisting with addressing the COVID-19 pandemic.

Register for this event⁵⁹

⁵⁵ science.org.au/supporting-science/national-committees-science/national-committee-space-and-radio-science/subscribe

⁵⁶ science.org.au/space

⁵⁷ science.org.au/node/16892

⁵⁸ aas.eventsair.com/the-sustainable-shine-dome

⁵⁹ aas.eventsair.com/covid-19-webinar-series