



Message from the Chief Executive—March 2018

March 19, 2018

Annually the Academy recognises and supports outstanding contributions to the advancement of science. One of the ways we achieve this is by supporting a number of awards. Support is provided to early career scientist, mid-career scientists and to lifelong achievement. The Academy supports research, conferences that focus on rapidly developing fields of research, as well as the presentation of lectures. Our travelling fellowships are designed to support the exchange of scientific ideas domestically and abroad.

See the full list of the Academy's awards and opportunities for scientists science.org.au/academy-newsletter/march-2018-114/academy-awards-and-grants-now-open

Historically, fewer women than men apply for the Academy's Awards. We know that when women do apply they do just as well as male applicants. Help us identify Australia's brilliant scientific minds—women and men—and encourage them to apply for the Academy's Awards.

The March newsletter includes information on how you can register for the Academy's annual



“When you get an award like this, you start to realise that you're making a difference.”

Professor Emma Johnston
2014 Nancy Millis Medal

flagship event, Science at the Shine Dome, to be held on 22-24 May. It's a unique occasion to celebrate science and to honour outstanding achievements in science. Science at the Shine Dome attracts a national and international audience of over 400 people including Academy Fellows, chief scientists, Nobel Prize winners, early- and mid-career researchers, science sector and government representatives, parliamentarians, media and the public. We hope you can join us.

Enjoy reading the March newsletter!

Anna-Maria

Global science leaders call for further action on climate change ahead of CHOGM 2018

March 12, 2018

The Australian Academy of Science has joined Commonwealth of Nations science leaders from around the globe to call on the Commonwealth Heads of Government to use the best available science to guide action on climate change.

The call is part of a Consensus Statement on Climate Change



launched by 22 national academies and societies of science from around the Commonwealth, ahead of next month's CHOGM summit in the United Kingdom.

The consensus statement, which represents the consensus views of tens of thousands of scientists, marks the first time Commonwealth nations have come together to urge their Governments to take further action to achieve net-zero greenhouse gases emissions during the second half of the 21st Century.

Secretary of Science Policy at The Australian Academy of Science, Professor David Day, said the long-term goal of keeping the increase in average global temperature to well below 2 °C above pre-industrial levels, agreed to by 160 parties in the 2015 Paris Agreement, was only the first step in a long journey.

"Even if all the country commitments from the Paris Agreement are met, the best interpretation of the latest data shows that by the end of the century the global climate is likely to be 3°C above pre-industrial levels.

"This is substantially higher than the Paris target to limit warming to less than 2°C, and would have profound impacts affecting billions of people throughout the world," Professor Day said.

Sustainability is one of the key themes to be discussed by Commonwealth leaders at the 2018 CHOGM summit, with a focus on the resilience of developing and vulnerable countries to climate change.

"Recognising different capacities, challenges and priorities, the approaches of each nation will not be the same. But, they must be informed by the best available scientific evidence, monitoring and evaluation," Professor Day said.

"The Academy stands ready to assist the Australian Government, and indeed broader Commonwealth efforts, by continuing to provide sound scientific advice on issues relating to climate change."

Read the Consensus Statement on Climate Change science.org.au/supporting-science/science-policy/position-statements/commonwealth-acad-science-consensus-statement-climate-change



Further reading

The Australian Academy of Science's Australian climate science capability review characterises Australia's current climate science capability and identifies how well the climate science sector is positioned to meet current and future demands for weather and climate knowledge. science.org.au/support/analysis/reports/australian-climate-science-capability-review

The Australian Academy of Science's science of climate change publication explains the current situation in climate science, including where there is consensus in the scientific community and where uncertainties exist. science.org.au/learning/general-audience/science-booklets-0/science-climate-change

Next generation of top researchers to represent Australia on global stage

February 28, 2018

Eight rising stars of Australian science have been selected by the Australian Academy of Science and the Council for the Lindau Nobel Laureate Meetings to attend a highly prestigious annual gathering of Nobel Laureates and promising young scientists from around the world.



PhD student Jessica Kretzmann from the University of Western Australia

The Australian delegation will join 592 other scientists, all under the age of 35, to present their medical research to Nobel Laureates and their colleagues, exchange ideas and share experiences with other young researchers.

The PhD students and postdoctoral researchers selected to attend the 68th Lindau Nobel Laureate Meeting in Lindau, Germany, from 24-29 June 2018, are:

- **Lee Ashton**—Postdoctoral researcher, University of Newcastle—who is researching participation-based lifestyle interventions to improve the health of young men
- **Ryan Farr**—Postdoctoral Fellow, CSIRO Geelong—who is identifying and characterising biomarkers of viral encephalitis, like the Rabies virus, to enable early treatment
- **Jessica Kretzmann**—PhD student, University of Western

Australia—who is working on developing a safe and efficient method to deliver gene therapies to treat breast cancer

- **Hayley McNamara**—PhD student, Australian National University—who is researching how immune cells respond to parasites, so that improved vaccines can be developed to combat malaria
- **Gregory Quaife-Ryan**—PhD student, University of Queensland—who is focusing on the role of a group of genes, known as long non-coding RNAs, in cardiac regeneration
- **Elena Schneider**—Postdoctoral Research Fellow, University of Melbourne—who is researching treatment options for cystic fibrosis and multi-drug resistance
- **Amy Shepherd**—PhD student, Florey Institute of Neuroscience and Mental Health—who is researching Alzheimer's Disease,

utilising specialised rodent touchscreens to look at specific cognitive deficits

- **Yuan Zhou**—Postdoctoral researcher, University of Tasmania—who is identifying genetic variants and environmental factors that influence the development of multiple sclerosis.

According to the Council for the Lindau Nobel Laureate Meetings, this year's meeting will set two records: 43 Nobel Laureates will take part, the most ever at a medicine meeting, while 84 countries are sending their best young scientists to the meeting. Fifty percent of the young scientists attending this year are women.

Academy President Professor Andrew Holmes said the Lindau meetings are globally recognised for providing inspirational role models to young researchers.

“These meetings give young researchers the opportunity to interact with their scientific heroes, exchange ideas, gain exposure to areas in their chosen disciplines and establish new contacts and networks with their peers,” Professor Holmes said.

PhD student Andrew White from the University of Queensland attended the 67th Lindau Nobel Laureate Meeting. He was impressed by the message from several Laureates about the importance of basic research.

“They all mentioned that when they first made their discoveries their papers were not accepted by the scientific community for some time, and were sometimes even ridiculed by other scientists because their discovery were against the norm. In order to make their ground-breaking discoveries they needed to focus on research areas that people perceive as impossible or too difficult to do,” Mr White said.

The group will also take part in a post-meeting study tour, led by renowned Australian scientist and Academy Fellow, Professor Jennifer Martin.

Successful candidates receive a grant towards the cost of airfares, participation in the meeting and the study tour, made possible thanks to the generous support of the Science and Industry Endowment Fund (SIEF).

Learn more about the Lindau Nobel Laureate Meeting science.org.au/opportunities/travel/nobel-laureates-meetings/lindau-nobel-laureate-meetings/about-lindau-nobel

Academy awards and grants now open

March 19, 2018

Nominations and applications for the Australian Academy of Science’s 2019 honorific awards, research conferences, research grants and travelling fellowships are now open.

Nominations for honorific awards

The Academy is calling for nominations for its prestigious honorific awards for early-career, mid-career and career researchers.

Previous winners of the Academy’s honorific awards have gone on to great achievements, including winning Nobel Prizes and election to international Academies for their outstanding contributions to science.

Career awards are presented in chemistry, mathematics, Earth sciences and physical sciences. Candidates for the Matthew Flinders Medal and Lecture must be nominated by Fellows of the Academy.

Research scientists from 8 to 15 years post-PhD are invited to apply for the Academy’s mid-career awards, which are offered in experimental biomedicine, and women leaders in any branch of science.

Researchers up to 10 years post-PhD are invited to apply for early-career awards in Earth sciences, mathematics, biology, medical research, engineering, chemistry, statistics, physics and human genetics.

The closing date for the 2019 award nominations is **9 am (AEST) 1 May 2018**. Referees will have until 1 June to submit their letters of support.

Applications for research grants, travelling fellowships, and research conference funding

The Academy has opened applications for research grants, travelling fellowships and research conference support for 2018–19. The closing date is **9 am (AEST) 1 June 2018**.

Close to \$280,000 will be offered by the Academy in 2018 for support for research in:

- medical science
- endangered Australian native vertebrate animals
- environmental science
- history of science
- population and environment
- marine, soil and plant biology.

More than \$50,000 is available for research conference and lecture support and for travelling fellowships to overseas scientists to



visit Australian research centres and deliver national lecture tours. Research conference support includes the Boden Research Conference in the biological sciences; the Elizabeth and Frederick White Research Conference in the physical sciences; and the Fenner Conference on the Environment.

Find out more about grants, fellowships and conference funding offered by the Academy science.org.au/opportunities.

The closing date for application and nomination for Academy grant funding is **9 am (AEST) 1 June 2018**.

Scholarship supports Indigenous scientists to meet parliamentarians

March 19, 2018

Three indigenous scientists attended the annual Science Meets Parliament event in February under a Science & Technology Australia scholarship supported by the

Academy and the ARC Centre for Excellence for Engineered Quantum Systems (EQUS).

This year's scholarship recipients were cardiovascular researcher Ms Amy Searle (VIC, Latji Latji Nation), water scientist Mr Bradley Moggridge (ACT, Kamilaroi Nation), and data scientist Dr Kalinda Griffiths (NT, Yawuru Nation). They joined the approximately 200 scientists, technologists and STEM professionals who met with Australian senators and members of parliament to share their enthusiasm for science and information about their work and discipline.

Gender, cultural and discipline diversity was a focus for this year's event, with 30 'Superstars of STEM' also attending.

The first day focused on professional development, with delegates hearing from leaders in policy, media, science and technology, and advocacy, while on the second day delegates met privately in small groups with parliamentarians and attended a parliamentary forum.

The Academy's contribution supported travel costs for the scholarship recipients, giving them a valuable opportunity to build a profile for their important work.

Photovoltaics leader tours Australia and New Zealand as Frew Fellow

March 19, 2018

The Academy's 2017 Frew Fellow, Professor Albert Polman, toured and lectured in Australia and New Zealand between November 2017 and February 2018 as part of the Academy's Geoffrey Frew Fellowship. The Fellowship brings distinguished overseas scientists to Australia to participate in Australian spectroscopy conferences and to visit scientific centres.

The Australian Optical Society has generously matched the Academy's funding support to this Fellowship since 2015.

Professor Polman is program leader of the Light Management in New Photovoltaic Materials program at



(L to R) EQUS Director and Academy Fellow Professor Andrew White; scholarship recipients Mr Bradley Moggridge, Dr Kalinda Griffiths and Ms Amy Searle; and Academy Chief Executive Anna-Maria Arabia.

the NWO Institute AMOLF in Amsterdam, the Netherlands, and Professor of Photonic Materials for Photovoltaics at the University of Amsterdam. Professor Polman's research group focuses on nanophotovoltaics, the study of light management at the nanoscale to realise solar cells with ultrahigh efficiency that can be made at low cost.

Almost 500 people attended Professor Polman's Frew Lectures about light management in new photovoltaic materials, and time-resolved cathodoluminescence spectroscopy of optical metasurfaces at Monash University and the Australia New Zealand Conference on Optics and Photonics; and light management in new photovoltaic materials at the Australian National University and UNSW.

Professor Polman also gave other lectures at UNSW, Sydney University of Technology, ANU, and the International Conference on

Nanoscience and Nanotechnology and the Sydney Future energies conference. He also delivered a very successful solar demonstration to over 400 members of the general public at Monash University and QUESTACON, entitled 'The Sun also rises for free': the science of solar generation, demonstrating with lasers, rainbows, satellites, solar panels, atomic building blocks, the periodic table of the elements and a movie of the nanoworld.

As a result of the Frew visit, Professor Polman has reported several collaborative research projects on light management in solar cells, bringing together UNSW researchers and students in his laboratory in Amsterdam. He expects many fruitful outcomes from these projects in the form of publications, conference presentations, and demonstrator devices. Joint work with UNSW in 2017 has also been funded by a collaborative ACAP research grant in which Professor Polman was an



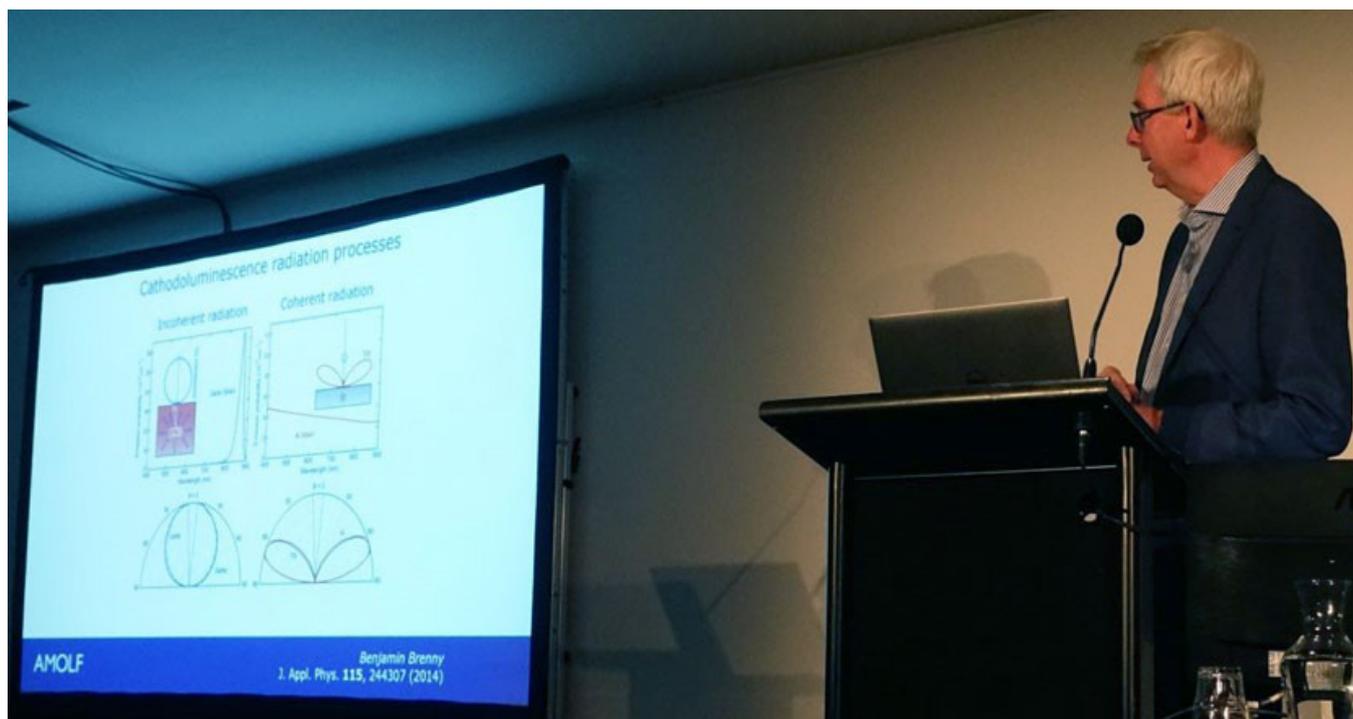
Professor Polman captivating the audience with his colourful solar demonstration at QUESTACON.

international partner. Professor Polman is also partner in four grant applications made by UNSW staff in February 2018.

Social media interest in Academy continues to grow

March 19, 2018

The Academy's social media presence continues to grow from strength to strength. There are now more than 237,000 people who



Professor Albert Polman giving his 2017 Frew Lecture at the 2017 Australia New Zealand Conference on Optics and Photonics (ANZCOP) in New Zealand.



have liked our Facebook page, and who receive regular posts from the Academy.

We recently produced a video on behalf of 22 science academies and societies across the Commonwealth. The video promotes the release of a climate consensus statement calling on governments across the Commonwealth to use the best available science to take action on climate change.

The video has now been viewed 156,000 times on Facebook, 44,000 times on Instagram and 11,200 times on Twitter, many from international locations.

In addition to our videos communicating science, we are planning more videos to support Academy activities, including the Canberra public speaker series *The science of us* and our honorific awards.

Coming events

March 19, 2018

Science at the Shine Dome 2018—Celebrating excellence in Australian science **22–24 May, Canberra**

The Academy's three-day flagship

event in May each year brings Australia's most influential scientists to the iconic Shine Dome in Canberra to celebrate science and to honour outstanding achievements in science.

Science at the Shine Dome is an event for researchers from all disciplines and career levels to come together and share knowledge. This includes the admission of new Fellows to the Australian Academy of Science, national awards to honour excellence at all career levels, a networking Gala Dinner with industry and political representatives, and a high-powered symposium on an issue of national importance. A major focus at Science at the Shine Dome is giving early- to mid-career researchers professional development and the opportunity to engage with senior scientists.

Symposium—Predict, respond, recover: science and natural disasters

As part of the event, our one-day symposium is *Predict, respond, recover: science and natural disasters*. It focuses on the role science plays in predicting, mitigating, responding to and recovering from natural hazards and weather events. The symposium will cover a range of significant weather events, along with perspectives from diverse scientific disciplines. It will be of value to anyone with an interest in areas related to natural disasters.

Open to all

Science at the Shine Dome attracts a national and international audience of over 400 people and provides boundless networking

opportunities with Academy Fellows, chief scientists, Nobel Prize winners, early- and mid-career researchers, science sector and government representatives, parliamentarians, media and the public. Online, the event reaches an audience of over half a million via a range of social media and digital technology platforms, making the event truly global.

It's possible to register for some or all of the event.

Join us in 2018 to celebrate excellence in Australian science!
aas.eventsair.com/QuickEventWebsitePortal/science-at-the-shine-dome-2018/science-at-the-shine-dome-2018

Child minding services and carer assistance grants

The Academy offers parents and carers two ways to access support during Science at the Shine Dome:

- carer assistance grants for support at home
- child minding services at the event.

Arrange child minding or apply for a carer assistance grant aas.eventsair.com/QuickEventWebsitePortal/science-at-the-shine-dome-2018/science-at-the-shine-dome-2018/ExtraContent/ContentPage?page=5

Canberra speaker series: The science of us

10 April, Canberra

The first presentation in our Canberra speaker series, 'When life begins', was a sell-out!

Don't miss out on the next presentation, *Medicine made for you*, to be held on 10 April.



a roadmap through which Australia can be a global leader in this space.

Science Pathways 2018: Diversify your thinking

23 – 24 April, Brisbane

Diversify your thinking will bring together early- and mid-career researchers (EMCRs) and scientific leaders from academia, industry and government.

Australia's scientific and innovative future calls for a generation of science leaders equipped with the right tools and strategies to better understand the key considerations for interdisciplinary research and collaborations, to achieve more inclusive and equitable environments, and to improve their access to funding opportunities from non-traditional sources.

Bridging the gap between what needs to be achieved in these areas and the current settings represents one of the most important challenges facing emerging researchers. 'Diversify your thinking' will create insightful discussion and present key findings on how to face these challenges and implement solutions. The event offers a highly interactive program with a strong professional development focus for EMCRs and with opportunities to network with other future leaders from different backgrounds.

Opportunities for scientists—March 2018

March 19, 2018

In addition to the Academy's honorific awards and research grants, travelling fellowships, and research conference funding, the following opportunities are now

Featuring Professor John Shine and Professor Carola Vinuesa, you will find out about the incredible world of personalised medicine, in which medical professionals seek to tailor decisions, treatments, practices and therapies to an individual patient. Purchase your tickets early so you don't miss out on what is proving to be a very popular series.

Professor David Black: Molecular design and synthesis

19 March, Brisbane

3 May, Sydney

Professor David Black, recipient of the Academy's 2017 David Craig Medal and Lecture, is presenting a series of lectures across Australia on molecular design and synthesis.

Professor Black has made major contributions to organic chemistry in the general fields of heterocyclic chemistry, coordination chemistry and natural products. He was a pioneer in the use of metal coordination for the control of organic reactions, and has also discovered new reactions of activated indoles leading to the construction of molecular receptors and small peptide mimics.

The final lecture in the series is on 3 May at UNSW Sydney.

Fenner Conference on the Environment: Urban sustainability and conservation

4–6 April, Canberra

This year's Fenner Conference on the Environment, supported by the Academy, is taking a close look at urban sustainability and conservation.

Cities are increasingly recognised for the critical role they play in biodiversity conservation, environmental stewardship and global sustainability. Appropriate and sustainable approaches to the development and management of urban environments are pivotal to our planet's future.

Bridging the gap between research and implementation will be required to achieve evidence-based solutions for urban sustainability and conservation. This conference presents an opportunity for researchers, industry partners and policy makers from the fields of urban sustainability and conservation to meet and co-create

open for applications and nominations.

See more external awards and prizes science.org.au/opportunities/recognition/external-sources-recognition

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

Nominations from Australian researchers for the APEC Science Prize for Innovation, Research and Education (ASPIRE) 2018 are now open.

The theme for this year is 'New Material Technologies' and disciplines under this theme include materials and biomaterials science, polymer chemistry, chemical and mechanical engineering, solid-state physics, nanotechnology and other relevant fields. To be eligible, Australian researchers must be under 40 years of age by 31 December 2018 and be an Australian citizen or Australian permanent resident living in Australia at time of application.

More information on ASPIRE science.org.au/opportunities/travel/grants-and-exchange/apec-science-prize-innovation-research-and-education-aspire

Nominations close **11 April 2018**.

Falling Walls Lab Australia 2018

Applications from Australian researchers, postdocs and students, entrepreneurs, engineers and innovators from all areas to attend Falling Walls Lab Australia 2018 are now open.

20 contestants will be invited to participate in this challenge with each required to give a 3 minute presentation on their research work,

business model, social idea or initiative based on the 'which walls will fall next' concept.

Candidates should be research active in any field of the natural sciences, including technology, engineering and medicine as well as social sciences and humanities.

More information on Falling Walls Lab Australia science.org.au/opportunities/travel/grants-and-exchange/falling-walls-lab-australia

Applications close **28 May 2018**.

Visit to the National Institutes of Health in the USA by a junior scientist

The Academy invites applications from junior Australian scientists, who are no more than 30 at the time of application, to visit the National Institutes of Health (NIH) in the United States of America during 2019 for between 6 and 13 weeks.

The successful applicant will receive a contribution towards the direct return air travel between Australia and the host institution up to a maximum of US\$3,000 provided by the Foundation for the National Institutes of Health (FNIH). A once-off living allowance of up to a maximum of A\$400 will be provided by the Adam J. Berry Memorial Fund (AJBMF). The National Institutes of Health (NIH) will provide a small daily stipend during the participant's stay in America.

More information on the NIH visit science.org.au/opportunities/travel/grants-and-exchange/visit-national-institutes-health-usa-junior-scientist

Applications close **12 June 2018**.

Prime Minister's Prizes for Science

Nominations sought for Australia's national science and teaching awards, which carry a total pool of \$750,000 in prize monies.

Categories are:

- Prime Ministers' Prize for Science
- Prime Minister's Prize for Innovation
- Frank Fenner Prize for Life Scientist of the Year
- Malcolm McIntosh Prize for Physical Scientist of the Year
- Prize for New Innovators
- Prime Minister's Prize for Excellence in Science Teaching in Primary Schools
- Prime Minister's Prize for Excellence in Science Teaching in Secondary Schools.

More information on the Prime Minister's Prizes for Science <https://www.business.gov.au/Assistance/Inspiring-Australia-Science-Engagement/Prime-Ministers-Prizes-for-Science>

Applications close **26 March 2018**

Australian Museum Eureka Prizes

Seventeen Australian Museum Eureka Prizes are awarded in the categories of:

- research and innovation
- leadership
- science engagement
- school science.

More information on the Australian Museum Eureka Prize <https://australianmuseum.net.au/eurekaprizes>

Applications close **4 May 2018**.

Young Tall Poppy Science Awards

The Young Tall Poppy Science Awards recognises excellence in early career researchers across all the sciences, alongside a passion and capacity to communicate science to the community. Nominations are for scientists under 35 years of age with between 2 and 10 years postdoctoral experience.

More information on the Young Tall Poppy Science Awards <http://www.aips.net.au/tall-poppies/tall-poppy-campaign/young-tall-poppy-science-awards/>

Applications close **9 April 2018**

2018 TWAS-Lenovo Science Prize

TWAS, The World Academy of Sciences (TWAS) for the advancement of science in developing countries is inviting nominations for the 2018 TWAS-Lenovo Science Prize. The prize gives international recognition to outstanding scientific achievements made by scientists living and working in developing countries.

In 2018 the prize will be given for outstanding achievements in engineering sciences. It carries a monetary award of US\$100,000 provided by Lenovo.

More information on the TWAS-Lenovo Science Prize <https://twas.org/opportunity/twas-lenovo-science-prize>

Nominations close **16 April 2018**.

KNAW Bob Pinedo Cancer Care Award

The KNAW Bob Pinedo Cancer Care Award is a biennial award intended for a researcher (or team of

researchers) whose contribution to (translational) cancer research and compassionate cancer patient care is regarded as outstanding.

The Award consists of a cash prize of €100,000 and a bronze sculpture in the form of Professor Pinedo's hand.

The Academy is responsible for selecting the winner or winners.

More information on KNAW Bob Pinedo Cancer Care Award <https://www.knaw.nl/en/awards/awards/knaw-bob-pinedo-cancer-care-award>

Nominations close **1 May 2018**.

International Prize for Biology

The International Prize for Biology is awarded to an individual who has made outstanding contributions to the advancement of research in fundamental biology. The research field for 2018 is palaeontology, with a prize of 10 million Yen.

More Information on the International Prize for Biology <http://www.jsps.go.jp/english/e-biol/index.html>

Applications close **20 April 2018**

Bower Award and Prize for Achievement in Science

The Bower Award and Prize for Achievement in Science is awarded to individuals who have made significant contributions to green and sustainable chemistry—chemistry focused on the technological design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances.

US\$250,000

More information on the Bower Award and Prize for Achievement in Science <https://www.fi.edu/bower-award-prize-achievement-science>

Closing date: **31 May 2018**

Fellows update— March 2018

March 19, 2018



Honours and awards to Fellows

Professor Jacques Miller AC FAA FRS—2018 Japan Prize, for discovery of B and T lymphocyte lineages and its impact on understanding disease pathology and therapeutic development. Won jointly with Dr Max Cooper.