
22 March 2018

2017 Academy Annual Report

Royal Society Te Apārangi

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Chair's Foreword

As Chair of the Academy Executive Committee since July 2017, I would like to extend my thanks to Professor Gaven Martin, who preceded me during the first six months of that year. His efforts in guiding the Academy during that time gave further impetus to the Society's efforts to enhance the profile of the Academy as the intellectual focus of the Royal Society Te Apārangi. Our Profile has been further strengthened and supported by the Society's Council and its very supportive staff.

The highlight of 2017 was the sesquicentennial celebrations, which started with the *International Academies workshop* where we linked up with representatives from a number of academies around the world to discuss the changing roles of academies, public engagement and public trust, supporting diversity in the research workforce, multi-disciplinary research, the role of academies in exemplifying good research practice and collaboration with developing nations. The celebrations ended with a very special Research Honours Dinner in October, which was attended by the Governor General, Dame Patsy Reddy and a number of other special guests.

In 2017 the Society, including the Academy, made considerable progress in advancing its Strategic Plan especially its plan for greater engagement and partnership with Māori, its diversity plan of action and its multi-year drive to increase its relevance across the whole research and scholarly community.

Fellowship issues and the Fellows' Annual Forum

A highlight of the year was the continuing commitment to diversifying the Fellowship. This year sixteen top New Zealand researchers and scholars with a range of research interests, backgrounds and places of work were elected. Professor Gerry Gilmore *FRS* a New Zealand astronomer at the Institute of Astronomy, University of Cambridge was elected an Honorary Fellow for his pioneering research on the Milky Way Galaxy. Because of the 2017 sesquicentennial events and the altered Fellowship selection/induction processes the annual Fellows' Forum was moved to February 2018.

Revised Fellowship and Medals and Awards Processes

A number of procedural changes have been put in place for the 2018 elections. There will be six field-based panels – Humanities; Social and Behavioural Sciences; Technology, Applied Science and Engineering; Health and Medical Science; Physical, Earth and Mathematical Sciences; and Biological and Environmental Sciences – rather than the current 13 discipline-based panels. The goal of this change is to consolidate the selection process by having a broader, more general field-base selection process. To mark the centenary of the election of the first Fellows to the Academy, up to 35 Fellows will be elected instead of the normal 12-15 with the goal of electing up to 20 female fellows. A caveat of this one-off change is the maximum number of males that can be elected will be limited to twelve. Importantly, all nominees will go through the same evaluation panels and the fellowship selection committee. To facilitate this change and continue to strive for greater diversity two bylaws were changed: (i) Bylaw A2.7 to allow a widened pool of nominators, and (ii) Bylaw A2.11 to change the stand down period in exceptional circumstances. I thank the Fellows for supporting these changes and the centenary initiative.

In support of our partnership with Māori three new Māori awards are being set up:

- The Te Puāwaitanga Research Excellence award in recognition of research that has made an eminent and distinctive contribution to Te Ao Māori, and to Māori and Indigenous knowledge.
- The Te Apārangi Te Kōpuūnui Maori Research award which will be awarded annually to early career researchers in recognition of innovative Maori research.
- The Māori Co-creation Research Excellence award, which is yet to be named and hopefully announced at the 2018 Research Honours Dinner.

Another change for 2018 will be the opening up of the Pickering and MacDiarmid Medals to team entries.

Review of the Code of Professional Standards and Ethics

Considerable progress has been made on a review of the Code of Professional Standards and Ethics, which is now out to stakeholders for consultation. A significant change is greater recognition of the Treaty of Waitangi and partnership with the Maori research community. This is a living document that will inevitably undergo further evolution.

Expert Advice

Five expert advice documents were completed and released in 2017 including: fact sheets on *Health Impacts of Climate Change* and *Antimicrobial resistance*; and discussion papers on *Science Technicians*, *The Use of Gene Editing in Healthcare* and *The Use of Gene Editing in Pest control*. Deliberative panels that are currently active include one on Folate and Pregnancy and the other on Gene Editing.

Thanks

It has been a privilege to chair the Academy Executive Committee. I have been ably assisted by the other members of the Committee, particularly the President, Professor Richard Bedford, who has provided wise counsel, and sensitively guided and encouraged the Society's ongoing revitalisation efforts. Special thanks goes to Gill Sutherland, Director – Academy Operations, who manages the operations of the Academy. Dr Andrew Cleland as Chief Executive has been hugely supportive of the Academy and its activities.

Finally, it is always a pleasure to acknowledge major achievements of Academy Fellows outlined in this report. This year Professor Colin Wilson *FRS* was awarded the Rutherford Medal for his exceptional contribution to understanding volcanoes and the hazards they present. Professor Richie Poulton and the Dunedin Multidisciplinary Health and Development research study team were awarded the Prime Minister's Science Prize.

Professor Barry Scott *FRSNZ*

Chair of the Academy Executive Committee of the Royal Society Te Apārangi

ACADEMY EXECUTIVE COMMITTEE AND ACADEMY REPRESENTATIVES ON ROYAL SOCIETY OF NEW ZEALAND COUNCIL

Until June 2017

Chair:	Professor Gaven Martin FRSNZ
Members	Professor Richard Bedford QSO FRSNZ Dr Ian Brown FRSNZ ^a Professor Philippa Howden-Chapman QSO FRSNZ ^a Professor Barry Scott FRSNZ Professor Dame Anne Salmond FRSNZ Professor Margaret Tennant FRSNZ

From 30 June 2017

Chair:	Professor Barry Scott FRSNZ
Members	Professor Richard Bedford QSO FRSNZ Professor Richard Blaikie FRSNZ Dr Ian Brown FRSNZ Professor Philippa Howden-Chapman QSO FRSNZ ^a Professor Ken Strongman FRSNZ Professor Dame Anne Salmond FRSNZ Professor Margaret Tennant FRSNZ

^a Academy Executive Committee only

FELLOWSHIP AND HONORARY FELLOWSHIP

There were 421 Fellows and 55 Honorary Fellows as at 31 December 2017.

DEATHS

- **Professor Peter Derrick** FRSNZ, formerly of the University of Auckland, died on 5 February;
- **Dr Alan Crawford** FRSNZ, formerly of AgResearch, died on 13 February;
- **Dr John Watkinson** FRSNZ, formerly of AgResearch, died on 14 February;
- **Professor James Watson** FRSNZ, formerly of Caldera Ltd, and a former President of the Royal Society of New Zealand, died on 14 February;

- **Professor Philippa Wiggins** FRSNZ, formerly of the University of Auckland, who died on 16 March 2017;
- **Professor Alistair Scott** FRSNZ, formerly of the University of Auckland, died on 25 May;
- **Professor Patrick Bateson** Hon FRSNZ, formerly of the University of Cambridge, died on 1 August;
- **Professor Michael Hartshorn** FRSNZ, formerly of the University of Canterbury, died on 15 December.

Obituaries have been, or will be lodged on the Royal Society website as they are provided.

PUBLIC HONOURS

New Year Honours 2017

Knight Companion of the New Zealand Order of Merit (KNZM)

Distinguished Professor Richard Faull ONZM, of Auckland, for services to medical research

Companion of the New Zealand Order of Merit (CNZM)

Emeritus Professor John Burrows ONZM QC, of Christchurch, for services to the State

Queen's Birthday Honours 2017

Companion of the New Zealand Order of Merit (CNZM)

Professor Richie Poulton FRSNZ, of Dunedin, for services to science and health research

Officer of the New Zealand Order of Merit (ONZM)

Professor Philippa Gander FRSNZ, of Porirua, for services to the study of sleep and fatigue

Member of the New Zealand Order of Merit (MNZM)

Professor Sally Brooker FRSNZ, of Dunedin, for services to science

Emeritus Professor John Hearnshaw FRASNZ FRSNZ, of Christchurch, for services to astronomy

NATIONAL AWARDS AND APPOINTMENTS

Royal Society of New Zealand Medals and Awards

Awarded at Research Honours Dinner

Top New Zealand researchers were recognised for their work with the presentation of prestigious awards at the Royal Society of New Zealand 2017 Research Honours event held in Auckland in October 2016. Several Fellows were among the winners.

The top honour, the Rutherford Medal, presented for an exceptional contribution to New Zealand research, was awarded to volcanologist **Professor Colin Wilson FRS, FRSNZ** of Victoria University of Wellington. His research has shown how large volcanoes behave before and during explosive eruptions, including those that created Lake Taupo, expanding our understanding of volcanoes and the hazards they pose. The Governor-General, Her Excellency Dame Patsy Reddy, presented the Rutherford Medal, which carries a \$100,000 prize from the government.

The **Liley Medal** was awarded by the Health Research Council of New Zealand to dentist Associate **Professor Jonathan Broadbent**, University of Otago, for a study showing a clear long-term association between a child's upbringing and the state of their teeth as a middle-aged adult.

The Health Research Council of New Zealand also awarded the **Beaven Medal** to **Professor Alistair Gunn** FRSNZ, University of Auckland, for pioneering the use of mild cooling to treat babies with brain injuries at birth.

The Thomson Medal was awarded to **Professor Charles Eason** CRSNZ. He received this medal for his inspirational leadership in his research career, particularly in the areas of drug development and pest control, and also as the Chief Executive of the Cawthron Institute in Nelson, which has expanded its expertise in aquaculture breeding, seafood safety, nutraceuticals and coastal and freshwater ecology.

The Callaghan Medal for science communication was awarded to Professor **Peter Shepherd** FRSNZ, University of Auckland, for developing activities to increase the understanding of science by the New Zealand public. These include a programme to keep biology teachers, and their students, up to date with the latest developments in the life sciences and expanding the Queenstown Research Week.

Professor Sally Brooker FRSNZ, University of Otago, was awarded the Hector Medal for designing and making molecules with exceptional properties such as the ability to act like a switch or magnet or to accelerate chemical reactions. Some of these molecules may contribute to a 'greener' future, allowing creation of compostable plastics or even the production of hydrogen from light energy, which would be the ultimate 'green' fuel.

Dr Roger Cooper FRSNZ, GNS Science, has been awarded the Hutton Medal for his contributions to understanding the geological foundations and the earliest organisms of Zealandia and beyond and for his role in maintaining and developing paleobiology expertise in New Zealand, which uses rocks to study ancient biology.

Emeritus Professor Laurie Bauer FRSNZ, Victoria University of Wellington, has been awarded the Humanities Medal for his influential research in descriptive linguistics. His world-renowned research has focussed on word-formation, the description of New Zealand English, and the sound structure of language.

Professor Cris Shore FRSNZ, University of Auckland, was awarded the Mason Durie Medal for his contributions to political anthropology and the study of organisations, governance and power. He has pioneered the use of anthropological methods to study policy and institutions.

Professor Ngahuia te Awekotuku MNZM received the Pou Aronui Award for her outstanding service to humanities-aronui over 40 years, showing an enduring commitment to indigenous culture and heritage. She is an acclaimed author of award-winning research and works of fiction and poetry, recognised arts curator and critic, and stalwart of Writer's Festivals locally and overseas.

Professor Tracey McIntosh, University of Auckland, was awarded the Te Rangi Hiroa Medal for advancing our understanding of enduring social injustices that undermine Māori wellbeing and inhibit social cohesion and meaningful cultural diversity in Aotearoa. Her research focuses on how to correct the intergenerational transmission of social inequalities, how they pertain to Māori, and influence new indigenous knowledge and policies that work for Māori and the nation.

Professor Murray Cox, Massey University, was awarded the Te Rangi Hiroa Medal for his anthropological work to reconstruct processes of transformation and change in past societies using genetic data. His research has revealed a number of social features from the past such as marriage rules and farming expansion in South East Asia.

Professor Peter Tyler FRSNZ FNZIC, Victoria University of Wellington, was awarded the MacDiarmid Medal for designing and synthesising a new raft of potential drugs that target the enzymes of many diseases. This has led to the development of newly approved lymphoma drug, Mundesine, that is giving patients new hope.

Professor Stephen Henry, Auckland University of Technology, was awarded the Pickering Medal for his development and commercialisation of a surface-modification technology, called Kode™ Technology, which shows huge promise for therapeutic use including fighting cancer, reducing surgical infections and healing wounds.

Professor Kim Pickering FIPENZ, University of Waikato was awarded the Scott Medal for her development of composite materials that are more sustainable. Many composite materials are not biodegradable or recyclable, but she has used more sustainable materials as fibres for reinforcing, for example hemp, wood and harakeke or New Zealand flax.

Professor Ian Woodhead, Lincoln Agritech, was awarded the Scott Medal for advancing electronic engineering, particularly in developing sensors for the agricultural and environmental sectors, including an electric fence performance sensor, and an electronic soil moisture sensor that allows for more efficient irrigation systems.

Associate Professor Geoff Rodgers, University of Canterbury, received the Cooper Award, the Royal Society Te Apārangi Early Career Research Excellence Award for Technology, Applied Science and Engineering, for developing new technology for earthquake-safe buildings that do not require repairing after large earthquakes.

Dr Ian Hamling, GNS Science, received the Hamilton Award, the Royal Society Te Apārangi Early Career Research Excellence Award for Science, for advancing understanding of New Zealand's diverse tectonic and volcanic processes using satellite-based techniques. He led work to rapidly define the Kaikoura M7.8 earthquake, the findings of which have implications for seismic hazard models used worldwide.

Dr Aroha Harris, University of Auckland, was awarded the inaugural Royal Society Te Apārangi Early Career Researcher Award in Humanities for her substantial contributions to the award winning Māori history, Tangata Whenua: An Illustrated History, which spans the entirety of Māori history. She was lead author of the section on sociocultural history of twentieth-century Māori.

Ryan Thomas, a PhD student at the University of Otago, received the Hatherton Award for experimental work leading to the first direct observation that certain atomic particles follow what's known as the Pauli exclusion principle when colliding multiple times, so long as sufficient collision energy is maintained. This work demonstrates and extends our knowledge about the fundamental properties of quantum particles.

Dr Danny Osborne, University of Auckland, was awarded the inaugural Royal Society Te Apārangi Early Career Research Award in Social Sciences for advancing understanding of the psychological barriers to collective action. His research examines New Zealanders' attitudes and shows that people's basic needs for stability, beliefs about their collective ability to change the system, and culture specific beliefs about past injustices all undermine collective action.

Other Royal Society of New Zealand Awards

Professor Philip Hulme FRSNZ from Lincoln University was selected as the **Leonard Cockayne Lecturer** for 2018. The Leonard Cockayne Lecture Award commemorates the life and work of Leonard Cockayne by the encouragement of botanical research in New Zealand. Leonard Cockayne FRS FRSNZ (7 April 1855 – 8 July 1934) is regarded as one of New Zealand's greatest botanists and a founder of modern science in New Zealand.

The 2018 R.H.T. Bates Scholarship was awarded to **Lauren Vargo**, Antarctic Research Centre, Victoria University of Wellington.

Quantifying glacier fluctuations is important for understanding how the cryosphere responds to climate variability and change. Photographs of past ice extents have become iconic images of climate change, but until now, incorporating these images into quantitative estimates of glacier fluctuations has been problematic. Lauren's research includes the development of a new method to quantitatively measure past glacier fluctuations from historic images. The method is being developed for application to 50 New Zealand glaciers that have been monitored by aerial photographs since 1977, but until now have only been qualitatively evaluated. Quantifying recent changes in New Zealand glaciers is of particular interest, as they provide one of the few Southern Hemisphere records of maritime glacier variability, and their high sensitivity to climate makes them excellent indicators of climate change.

Charles Fleming Senior Scientist Award

Dr Pascal Serguey, University of Otago, received the 2017 Charles Fleming Senior Scientist Award, to assist with his research expenses for his project to resolve key physical processes governing the distribution and evolution of New Zealand's snowpack by leveraging the state-of-the-art CROCUS snowpack model developed and maintained by the Centre d'Etude de la Neige of Meteo France.

Charles Fleming Publishing Award

Dr Colin Webb FRSNZ was awarded a 2017 Charles Fleming Publishing Award to support him with the publication of his second and final volume on the 'Seeds of Indigenous New Zealand Plants'.

Lynley Hargreaves was also awarded a 2017 Charles Fleming Publishing Award to support her with the completion of the book 'Vanishing Ice – a story of New Zealand glaciers'.

Awards to Fellows during the year

Prime Minister's Science Prize

The 2016 Prime Minister's Prize was awarded to the Dunedin Multidisciplinary Health and Development Research Study led by **Professor Richie Poulton** FRSNZ, and presented to the team at a function at Parliament in February 2017. The research is providing the most detailed data on human development ever amassed and is based on researching the lives of about 1,000 children born in Dunedin in 1972 and 1973.

Life membership NZ Society of Anaesthetists

In November **Professor Alan Merry** ONZM FRSNZ was awarded Life Membership of the New Zealand Society of Anaesthetists and was honoured with an annual lecture in his name to be a feature of the joint ANZCA New Zealand National Committee (NZNC) and New Zealand Society of Anaesthetists Annual Scientific Meeting (ASM). One of his research grants (with Professor Simon Mitchell) was awarded The Harry Daly Research Award in October. This award was established by the Faculty of Anaesthetists, Royal Australasian College of Surgeons, in 1981 and is made each year to the grant ranked most highly by the ANZCA Research Committee.

New Zealand Plant Protection Medal

Dr Max Suckling FRSNZ received the New Zealand Plant Protection Medal in August 2017 from the New Zealand Plant Protection Society for research on a range of insect pests for a range of sectors, including pioneering work on developing mating disruption techniques for controlling insect pests. Of particular note, his work on insect sex pheromones has been taken up in many sectors, including pipfruit, summerfruit, and border biosecurity.

Dan Walls Medal

Professor Howard Carmichael FRSNZ was awarded the Dan Walls Medal in absentia at the NZIP conference in July. The medal was presented to him later in the year (September) during a colloquium visit to the University of Canterbury. The medal is presented annually to the physicist working in New Zealand for at least the past ten years and who is deemed to have made the greatest impact both nationally and internationally in his/her field of research.

Geoscience Society of New Zealand Honorary Membership Award 2017

Professor Cam Nelson FRSNZ received the Geoscience Society of New Zealand Honorary Membership Award 2017 for especially meritorious service to the Society and to the advancement of the geosciences

KiwiNet Research Commercialisation Awards

Professor Richard Furneaux FRSNZ received the KiwiNet Research Commercialisation Award - Baldwins Researcher Entrepreneur and KiwiNet Research Commercialisation Award - BNZ Supreme Award in July

SH Wilson Medal

Professor Dave Crow FRSNZ was awarded the SH Wilson Medal for geochemistry by Geoscience Society of NZ in November.

Levy Oration

In November **Professor Stephen Goldson** FRSNZ presented the annual Levy Oration to the New Zealand Grassland Association in Whangarei and was awarded the Levy Oration Medal and Certificate. This award recognises excellence and an outstanding contribution to the understanding and practice of pastoral science.

Maurice Wilkins Centre NZIC Chemical Science Prize

Professor Jadranka Travis- Sejdic FRSNZ was awarded 2017 Maurice Wilkins Centre NZIC Chemical Science Prize in December.

New Zealand Society of Oncology Translational Research Award

Professor Peter Shepherd FRSNZ was awarded the New Zealand Society of Oncology Translational Research Award in August.

Fellowships, Memberships and Lectureships

In August **Professor Brett Delahunt** FRSNZ was elected an Honorary Fellow of the New Zealand Institute of Medical Laboratory Sciences (HonFNZIMLS) for his significant contribution to pathology and to the medical laboratory science profession. In November he became the first New Zealander to be admitted as a Freeman of the Worshipful Company of Educators. The Company is one of the London Guilds and has the role of promoting excellence in Education.

New Zealand Association of Scientists' Medals

Professor Carolyn Burns CBE FRSNZ was awarded the New Zealand Association of Scientists 2017 Marsden Medal at a ceremony on 1 November 2017. The Marsden Medal is awarded for a lifetime of outstanding service to the cause or profession of science, in recognition of service rendered to the cause or profession of science in the widest connotation of the phrase

The Shorland Medal was awarded in November to the Fetal Physiology and Neuroscience Group (director, **Alistair Jan Gunn** FRSNZ) from the NZ Association of Scientists in recognition of major and continued contribution to basic and applied research that has added significantly to scientific understanding and resulted in significant benefits to society.

Research Awards

Dr John McEwan FRSNZ was awarded a Science New Zealand National Award Individual lifetime achievement award in November.

Professor Parry Guilford FRSNZ, an internationally renowned cancer genetics and biology expert, was selected as the recipient of the Distinguished Research Medal, the University of Otago's highest distinction in October. The University awards the Medal for outstanding scholarly achievement,

including the discovery and dissemination of new knowledge, the development of innovative technology, or the development of concepts that lead to significant advances.

The University of Waikato's Te Kotahi Research Institute has won a top research award for a second time. The research team, led by senior Māori academics **Professor Linda Smith** FRSNZ and Associate Professors Leonie Pihama and Jenny Lee-Morgan, has taken out the New Zealand Research in Education's (NZARE) 2017 Group Award, having previously won it in 2015. Te Kotahi research is focused on enhancing the well-being of iwi, Māori and indigenous communities, with a strong emphasis on Kaupapa Māori research.

INTERNATIONAL AWARDS AND APPOINTMENTS

Canadian University honours former University of Otago Vice-Chancellor

Canada's Queen's University conferred the honorary degree of Doctor of Science on former University of Otago Vice-Chancellor **Professor Sir David Skegg** FRSNZ in June. In its citation for his doctorate, Queen's University notes that he is globally recognised for his research on epidemiology, breast and cervical cancer, contraception, drug safety and reproductive health.

Fellowships and Memberships

Professor Donna-Rose Addis FRSNZ was appointed a Fellow of the Association of Psychological Science in May and in December was awarded the "Canada 150 Research Chair in Cognitive Neuroscience of Memory and Aging", a 7-year research fellowship worth \$2.45M CAD, which she will take up at the University of Toronto later in 2018.

Professor Reinhard Klette FRSNZ was honoured as a Helmholtz International Fellow, by the Helmholtz Society, Germany in July; was Guest Professor at Wuhan University, being one of just 2 awarded in 2017 by the president of Wuhan University; and awarded Quancheng City Friendship Award (Highest award of Jinan, Shandong province, China, for foreigners, awarded by the mayor of the city) in September.

Professor Cliff Abraham FRSNZ became President-Elect of the Australasian Neuroscience Society in 2017.

Professor Jeff Tallon was elected Fellow of Institute of Physics (London), FInstP, in November 2017.

In November, **Professor Nik Kasabov** was awarded an Advisory Professorship to Shanghai Jiaotong University, China, until November 2020; received a Visiting Professorship in August to Robert Gordon University, UK, until August 2020; and was made an Honourable Member of the Bulgarian Academic Society for Computer Systems and Information Technology (AOKSIT) in March.

In August, **Professor Mick Roberts** FRSNZ was awarded a Simons Visiting Professorship at Utrecht University. He will be taking it up from 26 February to 9 March 2018.

In November 2017, the Regents of the University of Colorado bestowed upon **Professor Tom Veblen** (Hon FRSNZ) of the title of Distinguished Professor, the highest honor given by the University.

Professor **Peter Phillips** Hon FRSNZ received an honorary doctorate (D.Phil) from University of Cyprus in June.

Professor **Jeffry Simpson** Hon FRSNZ was given the award and title “Distinguished University Teaching Professor” by the University of Minnesota in the U.S, in April.

Professor Colin Townsend FRSNZ was inducted into the inaugural class of Society for Freshwater Science (SFS) Fellows in June at the SFS 2017 annual conference in Raleigh, North Carolina.

Professor **Michael Peters** Hon FRSNZ was appointed Distinguished Visiting Professor, School of Sociology, Beijing Normal University, 2017; and Distinguished Visiting Professor, Education Faculty, ZhengZhou University, 2017. He gave an invited special lecture and was awarded the Lifetime Achievement Award for the Foucault SIG at the American Educational Research Association at the annual meeting this time in SAN Antonio in April 2017.

Thorarinsson Medal

Professor **Bruce Houghton** Hon FRSNZ, was honoured with the Thorarinsson Medal by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) in August. The Thorarinsson Medal is awarded only once every four years for outstanding contributions to volcanology, and is the highest award in international volcanology.

Carl Ludwig Distinguished Prize Lecture

Professor David Peterson Hon FRSNZ was awarded the Carl Ludwig Distinguished Prize Lecture of The American Physiological Society in April and will deliver the lecture in April 2018.

Australia Day Honours

Professor Jon Altman Hon FRSNZ was recognised in the 2017 Australia Day Honours. He was honoured for his significant service to tertiary education as a researcher and administrator, and to the social sciences and Indigenous economic policy.

Special Mention for Best Documentary

In November, **Professor Annie Goldson** FRSNZ received Special Mention for Best Documentary Feature at the Asia-Pacific Film Awards in Brisbane for Kim Dotcom: Caught in the Web.

Fukuchi Award

Professor Richard Beasley FRSNZ was senior author of the paper '*Randomized controlled trial of the effect of regular paracetamol on influenza infection*' which was recognised by *Respirology* as the best original research paper published in the journal by means of the **Fukuchi Award**.

Shenzhen International Award in Plant Sciences

Professor Peter Raven Hon FRSNZ was awarded the Shenzhen International Award in Plant Sciences 2017 in July at the International Botanical Congress which takes place every 6 years.

IUPAC Service Award

Professor Margaret Brimble FRSNZ was awarded an "IUPAC Service Award for Outstanding Service to IUPAC in the Advancement of Chemistry Worldwide" in July.

Moyal Medal

Professor Hinke Osinga FRSNZ won the 2017 Moyal Medal for research contributions to mathematics, physics or statistics and gave the associated lecture at Macquarie University on 2 November.

Periodontology Award

In December, **Professor Greg Seymour** FRSNZ was made an Honorary life Member of the Japanese Society of Periodontology. This is the highest award of the Society and was in recognition of his contribution to Periodontology worldwide

2016 Shoenfield Prize

In May, **Professor Rod Downey** FRSNZ was awarded the 2016 Shoenfield Prize for writing in logic for the book ``Algorithmic Randomness and Complexity'' with his former postdoctoral student Denis Hirschfeldt (now Professor at the University of Chicago).

Roger Revelle Medal

Dr Kevin Trenberth Hon FRSNZ was awarded the 2017 Roger Revelle Medal in July. This award is given to an honoree who has made outstanding contributions to the understanding of the atmosphere and its interactions with other parts of the climate system.

President-Elect of the Asia-Pacific Neural Network Society

Professor Nikola Kasabov FRSNZ, is now President-Elect of the Asia-Pacific Neural Network Society (APNNS) for 2018, to serve as its President in 2019. APNNS is a premier society of researchers and practitioners from all countries in the Asia –Pacific, Middle East and Russia, working in the areas of neural networks and artificial intelligence.

Norman J. Siegel New Member Outstanding Science Award

In March Distinguished **Professor Jane Harding** ONZM FRSNZ was awarded the Norman J. Siegel New Member Outstanding Science Award of the American Pediatric Society.

Burrows Award

Professor Sally Brooker MNZM FRSNZ was awarded the 28th Inorganic Chemistry Award of the Royal Australian Chemical Institute (RACI), the Burrows Award, in July 2017.

Joseph Cushman Medal

Dr **Bruce Hayward** FRSNZ received the 2017 Joseph Cushman Medal for Excellence in Foraminiferal Research in October in Seattle.

Prelog Medal

Professor Stephen Kent Hon FRSNZ received the Prelog Medal and gave the Prelog Lecture at the ETH Zurich in November. Over the past four decades, Stephen Kent has profoundly shaped the field of peptide and protein chemistry. His many and diverse contributions have altered the way scientists tackle the production of these biomacromolecules.

Lifetime Achievement Award

Professor Jim Flynn FRSNZ received the International Society for intelligence (ISIR) Lifetime Achievement Award in July; and the Prose Award (Association of American Publishers' Honourable Mention in May for "Psychology 2017: *Does your Family Make You Smarter? Nature, Nurture, and Human Autonomy*".

ACADEMY ACTIVITIES

Fellowship

The confirmed Fellowship Selection Panels in 2017 were:

- Animal and Plant Sciences;
- Biochemical and Molecular Biological Sciences;

- Chemical and Physical Sciences;
- Earth Sciences;
- Ecological and Environmental Sciences;
- Engineering;
- Human and Behavioural Sciences;
- Languages, Literature and Cultural Studies
- Liberal Arts
- Mathematical and Information Sciences;
- Medical and Health Sciences;
- Social Sciences;
- Technology and Applied Sciences.

In 2017 there were 150 nominations for Fellowship, including 35 women scientists, and 28 new nominations. There were four nominations for Honorary Fellowship.

The breakdown of nominations considered (Honorary Fellowship in brackets) in 2016 was:

Animal and Plant Sciences	6
Biochemical and Molecular Biological Sciences	3
Chemical and Physical Sciences	15 (1)
Earth Sciences	10
Ecological and Environmental Sciences	10
Engineering	7
Human and Behavioural Sciences	11 (1)
Liberal Arts	9
Languages, Literature and Cultural Studies	13
Mathematical and Information Sciences	13
Medical and Health Sciences	23 (2)
Social Sciences	19
Technology and Applied Sciences	11

Eleven panels met by teleconference call and recommended candidates in both traditional and applied areas of research. The Academy Executive Panel assessed 5 nominations that had specific nature.

The Fellowship Selection Committee, which was an expanded Academy Executive Committee of 26 to ensure that all areas of science, technology and the humanities are appropriately represented, received information, via the online portal, on each candidate highly recommended by the 13 discipline-based Panels plus the Academy Executive Panel (a total of 41 highly recommended fellowship nominations and one Honorary Fellowship nomination).

NEW FELLOWS 2017

Sixteen top New Zealand researchers and scholars with a range of research interests, backgrounds and places of work were announced as Fellows of the Royal Society of New Zealand after the Fellowship Selection Committee, an honour which recognises true international distinction in research and scholarship.

The new Fellows are as follows:

Professor Charlotte MacDonald, School of History, Philosophy, Political Science and International Relations, Victoria University of Wellington, is a historian who has used innovative methods to study 19th century colonies and empires, New Zealand history, gender and women's history and cultural history of bodies, modernity, sport and spectating.

Professor Paul Trebilco, Department of Theology and Religion, University of Otago, has made original contributions in three main areas: Jewish communities in Asia Minor; early Christians in the city of Ephesus, modern-day Turkey; and investigations into self-designation and group identity in early Christians.

Professor Michael Parekowhai, University of Auckland, is an artist who explores perceptions of place and nationhood through sculpture, installation and photography. His research investigates the ambiguities of identity, the sensitivities of historical memory, the role of appropriation and assimilation in the artistic canon, and the significance of biculturalism.

Professor Mengjie Zhang, School of Engineering and Computer Science, Victoria University of Wellington, has made significant contributions in the area of artificial intelligence in the field of evolutionary learning and optimisation, particularly in the areas of image analysis; feature selection and pattern recognition; and transfer learning (where machine learning can be applied to a related problem).

Professor Margaret Wetherell, School of Psychology, University of Auckland, is internationally known for her work developing discourse theory and methods for social psychology for studying how do the things people say and do affect society and how does society influence people. She has also developed a new theoretical approach to affect and emotion for social research.

Professor Tony Ward, School of Psychology, Victoria University of Wellington, has primarily researched forensic and correctional topics, prominently centered on violent and sexual offenders and rehabilitation. His theoretical contributions have resulted in substantial empirical research projects and innovations in treatment around the world.

Professor Mark Henaghan, Faculty of Law, University of Otago, is New Zealand's leading family law scholar, who has had a major impact on the judicial system, legislative reform and legal practice in New Zealand.

Professor Margaret Mutu, Māori Studies, University of Auckland, has advanced scholarship with her cutting-edge analysis of Māori language texts relating to Te Tiriti o Waitangi and Māori claims against the Crown, oral histories and traditions, and Treaty settlements.

Professor Jadranka Travas-Sejdic, School of Chemical Sciences, University of Auckland, has made significant contributions to the research field of biosensing. She has developed hand-held, in-field detection systems using conducting polymers for fast sensing of biological molecules and small molecular targets of biological interest.

Professor Michele Leggott, English, Drama, and Writing Studies, University of Auckland, is a renowned poet and poetry scholar who seeks to open up poetry to as many audiences as possible. She was appointed New Zealand Poet Laureate in 2007-2009. Her first book of poetry *Like This?* won the International PEN First Book of Poetry and in 1995 *DIA* won the New Zealand Book Award for Poetry.

Professor Miriam Meyerhoff, School of Linguistics and Applied language Studies, Victoria University of Wellington, is a leading sociolinguist, a discipline that studies the effect of any or all aspects of society on how language is used. Her research has focused on language use in New Zealand, the Pacific and the UK. Her latest research focusses on variation in the English of Auckland citizens, a richly linguistically diverse community.

Professor Richard McDowell, AgResearch, Invermay, is an international authority on the management of contaminant losses from agricultural land and their impact in freshwater, particularly phosphorus. He has developed 18 of the 21 strategies available internationally to reduce phosphorus loss from land to water.

Dr Nicholas Mortimer, GNS Science, Dunedin, is a geologist who have played a key role in exploring, revealing and promoting the continent of Zealandia. The foundation for this has been his multifaceted work on the older crystalline rocks of on-land New Zealand, including their relationships with Australia and Antarctica.

Distinguished Professor Viviane Robinson, Faculty of Education and Social Work, University of Auckland, has shown through her research the importance of educational leadership in student outcomes. She has designed and evaluated interventions to increase school leader's skills and has developed resources for leadership development that are trademarked and used internationally.

Professor Noam Greenberg, School of Mathematics and Statistics, Victoria University of Wellington, researches the computable contents of mathematics and algorithmic randomness. He has developed a new research programme in 'higher' randomness, in which computability is used to give a hierarchy of randomness: the more complex the tests, the higher the degree of randomness that is required to pass these tests.

Professor Rick Millane, Department of Electrical and Computer Engineering, University of Canterbury, is internationally recognised for his theoretical and computational methods for imaging biological molecules and tissue with wide applications across physical, biological and medical sciences.

The Society also announced the election of an Honorary Fellow. The election of Honorary Fellows aims to encourage strong ties with leading international scientists and scholars and New Zealand's research community.

Honorary Fellow

Professor Gerry Gilmore FRS, Institute of Astronomy, University of Cambridge, UK, leads efforts to understand the structure and origin of our Galaxy and to deduce the nature of dark matter in the early Universe.

INTERNATIONAL ACADEMIES' WORKSHOP

In April 2017, its 150th anniversary year, the Society hosted a workshop of colleagues from other research-based academies and related organisations. Their contributions to the workshops were richly insightful. We were pleased that through hosting this workshop, it was possible to share their insights with our other guests from the New Zealand research and scholarly community.

CHANGES TO FELLOWSHIP PROCESS

In November, Dr Andrew Cleland FRSNZ, Chief Executive, and Gill Sutherland, Director, Academy Operations, undertook a national roadshow around the country explaining some significant changes to the Fellowship process and also changes to some medal eligibility

Topics covered included the following:

- Seeking nominations for advancement of science, technology or the humanities, in addition to the distinction in research which has been the focus of the past
- Widening who can nominate people for Fellowship
- The introduction of a Search Panel for new nominations
- Reduction in the number of current evaluation panels from 13 to 6
- Refinement to the selection process
- Key changes to the medals and awards selection process
- Fellowship Centenary Initiative 1919—2019

DONATIONS

The Royal Society has a designated Endowment Fund, into which non-specific donations to the Academy are placed. The Academy Executive Committee gratefully acknowledges the donations made by Fellows and Honorary Fellows to the Academy's activities.

FUNCTIONS

During the early part of 2017, Fellowship certificates and pins were presented to Fellows newly elected in November 2016 at functions in Auckland and Dunedin.

FELLOWS' CONTRIBUTION TO SOCIETY ACTIVITY

Many Fellows continue to actively contribute to the Royal Society of New Zealand's activities through Fellowship Selection Panels and Fellowship Selection Committee;

Selection Committees for Academy Medals/Awards; Membership of Vice Presidents' Advisory panels and ad hoc RSNZ committees; preparation of scientific reports; review of scientific, technological and science education reports published by the Society; and Membership, via the Society, of government and non-government advisory committees.

The Society acknowledges the help of the following Fellows and Honorary Fellows:

Climate change and health

Professor Nigel French FRSNZ – reference group
Emeritus Professor Frank Griffin FRSNZ – reference group
Dr Bryce Buddle FRSNZ – reviewer
Emeritus Professor Peter Joyce FRSNZ – reviewer
Professor Richard Beasley FRSNZ – reviewer
Distinguished Professor Robert McLachlan FRSNZ – reviewer
Professor Emeritus Geoffrey G Duffy FRSNZ – reviewer
Professor John A Windsor FRSNZ – reviewer
Simon Upton FRSNZ – reviewer
Professor Anne Salmond FRSNZ - reviewer

Science Technician Workforce

Professor Jim Johnston FRSNZ – Panel Chair
Dr Ian Brown FRSNZ – Panel member
Professor Gary Hawke FRSNZ – reviewer
Dr Judi Hewitt FRSNZ – reviewer
Dr John Caradus FRSNZ - reviewer

AAS Taxonomic Collections

Dr Wendy Nelson FRSNZ – Working Group member

Folate and Pregnancy

Sir Peter Gluckman FRSNZ – Panel Chair
Professor Emeritus Robert Beaglehole FRSNZ – Panel Chair
Professor Jim Mann FRSNZ - reviewer
Sir David Skegg FRSNZ - reviewer

Gene editing

Professor Barry Scott FRSNZ – Panel Chair
Professor Alexei Drummond FRSNZ – Panel member
Professor Gary Hawke FRSNZ – Panel member
Professor Mark Henaghan FRSNZ – Panel member
Professor Lisa Matisoo-Smith FRSNZ – Panel member
Professor Richard Beasley FRSNZ – reviewer
Emeritus Professor Mick Clout FRSNZ – reviewer
Professor Richard Le Heron FRSNZ - reviewer

Antimicrobial resistance

Professor Nigel French FRSNZ – reference group

Professor Richard Le Heron FRSNZ – reference group

Professor Gary Hawke FRSNZ – reference group

Professor Gregory Cook FRSNZ – reference group

Professor Richard Beasley FRSNZ – reviewer

Dr Bryce Buddle FRSNZ – reviewer

Mentoring guidelines for researchers

Distinguished Professor Peter Hunter, FRSNZ – reference group

Professor Richard Le Heron, FRSNZ – reference group

Professor Linda Tuhiwai Smith FRSNZ – reference group

Professor Margaret Brimble, FRSNZ – reference group

Code of Professional Standards and Ethics review

Distinguished Professor Gaven Martin FRSNZ - Working group convenor

Professor Barry Scott FRSNZ – working group member

Professor Peter Watts FRSNZ – working group member

Fellows have also contributed to assessment panels and undertaken other roles for the various Government Contracts the Society runs.

The Society is grateful to all who contribute to Society activities; collectively they provide a major input to the work of the Society and the advice given to Government and other agencies.

CHAIRS' ACTIVITIES

In addition to the activities mentioned earlier in this report, **Professor Gaven Martin** (Chair of the Academy Executive Committee until 30 June 2017) and **Professor Barry Scott** (Chair of the current Academy Executive Committee from 1 July 2017) have been active in the following activities:

- assessing nominations for Fellowship as part of the Academy Executive Panel;
- reviewing nominations for Fellowship as part of the Fellowship Selection Committee;
- providing feedback to Gill Sutherland, Director—Academy Operations, on various issues when required.