
The New Zealand Association of Scientists Awards for 2013

Marsden Medal 2013

The NZAS Marsden Medal, which recognises a lifetime of outstanding service to science, is awarded for 2013 to Professor Barry Scott of Massey University. After seminal work on the *Rhizobium*–legume nitrogen-fixing symbiosis (reported in *Nature* in 1979), Professor Scott turned his attention to the fungal endophyte-perennial ryegrass symbiosis that is important to New Zealand agriculture. The identification of the endophyte genes and biochemical pathways responsible for the bioprotective metabolites unique to this symbiosis led to the development of PCR diagnostic assays to field-test the metabolite potential of different endophyte strains. Scott and his group then established that fungal synthesis of reactive oxygen species is essential for this symbiosis (reported in two papers in *Plant Cell* in 2006). The first transcriptome analysis of a fungal-plant association elucidated factors distinguishing a fungal symbiont from a pathogen (published in *Plant Physiology* in 2010).

Professor Scott has also given exemplary service to science, including inter alia: the founding Board of ERMA; active par-

ticipation in the public debates on Genetic Engineering; the Bovine Spongiform Encephalopathy Science Expert Panel; the founding Board (and convenor in 1992) of Queenstown Molecular Biology Meeting Inc. – now an international meeting of ever-increasing scope; Head of the Institute of Molecular BioSciences at Massey University; the current Board of NZ Genomics Ltd; member and current chair of the Committee overseeing the international Asilomar Fungal Genetics Conference; current editorial boards of *Molecular Microbiology* and *Molecular Plant Pathology*. In both the practice of and service to science, nationally and internationally, Professor Scott has made over time the outstanding contributions that fully merit the award of the Marsden Medal.



Shorland Medal 2013

The NZAS Shorland Medal, which recognises major and continued contribution to research that has resulted in significant benefit to society, is awarded for 2013 to Graham Nugent and a team of wildlife ecology and management researchers from Landcare Research, in recognition of their outstanding leadership and prolonged contribution through research to resolve the major environmental and economic problems in New Zealand caused by introduced mammal pests, particularly possums.



The team's skill base spans wildlife ecology, the eco-epidemiology of bovine tuberculosis (TB), computer modelling, animal physiology and behaviour, toxicology, animal welfare and product development. Their research has clarified the role of various pest species as TB vectors and as threats to native biodiversity; helped develop new strategies for local elimination of pest and pest and disease freedom; helped substantially reduce the environmental, non-target, and animal welfare risks caused by pest management; and significantly improved approaches to measuring benefits and outcomes.

This work has contributed greatly to the progressive development of a much more cost effective, but also more sustainable and socially acceptable, suite of pest-management strategies and tools. Underpinning this are their 57 journal publications since 2009 – widely cited nationally and internationally. The benefits have been an efficient possum control industry, major reductions in agricultural production losses from TB, increased protection of native plants and animals, and recognition of New Zealand as global leader in vertebrate pest control.

Research Medal 2013

The NZAS Research Medal, for outstanding research published by a scientist under the age of 40, is awarded for 2013 to Dr Noam Greenberg for his outstanding work in many aspects of the fundamental area of science, the theory of computability. There is no doubt that algorithms and algorithmic thinking lie at the heart of modern society, and hence the understanding of computation is one of the most important and central areas of human endeavour. The year 2012 was the Centenary of Alan Turing's birth, when we celebrated Turing's fundamental insight that there could be universal computing machines. This gave birth to the modern theory of computation and led to the development of the modern computer.



Dr Greenberg's work follows in the tradition of Turing's work, by shedding light on the capabilities and limitations of the algorithms used by modern computers and software. The international quality of his research has been recognised by the award of a Rutherford Discovery Fellowship (2011) from the Royal Society of New Zealand and a Turing Research Fellowship (2012) from the US-based John Templeton Foundation.

Science Communicator Award 2013

The NZAS Science Communicator Award is made to a practising scientist for excellence in communicating science to the general public in any area of science or technology. The recipient for 2013 is Associate Professor Simon Lamb, Victoria University of Wellington.



Dr Simon Lamb has a sustained record of high-impact communication concerning the science of climate change. He stands out particularly because of the international impact of his portfolio of work, including several books and a number of TV documentaries and films that have reached large global audiences. His book, 'The Devil and the Mountain', which describes his own research into the formation of the Andes, was named on the *New York Times* Book Review's list of 100 Notable Books for 2004. This year, he completed a major documentary film project, 'Thin Ice', which has reached a global audience of more than 50,000 people. Dr Lamb is also an active researcher and teacher, who works in Victoria University's School of Geography, Environment and Earth Sciences. His research interests lie in the study of the movements of the Earth's tectonic plates, including the tectonic activity that led to the Canterbury earthquakes in 2010–11.