# The Graeme Clark Foundation Newsletter - 2015

Lilly and Theo recently implanted

## Graeme Clark Award for Science Innovation in Schools

Sir Paul Nurse AC, Professor Graeme Clark AC presented the Award to Maffra Secondary School

Maffra Secondary School wins the School's award for Science Innovation in Schools

The Foundation has been thinking long and hard about how to nurture the next generation of medical researchers in Australia, and how to inspire young people into science. Graeme Clark's success with the cochlear implant arose from a clear vision for what could be achieved, innovation, bringing together a brilliant team of experts across disciplines and steely determination. With each generation new opportunities present themselves to improve the treatment of sensory deficits like hearing, and the Foundation wishes to encourage bright young people to hone their creativity to achieve the next breakthroughs. We thought that a good place to start was with high school children, and in 2015 decided to present an Award to the Australian school that best embodied inspiring creativity across different disciplines to solve a new problem. The

2015

**2015 has been an exciting year for the Graeme Clark Foundation. We have seen the inaugural Graeme Clark Award for Science Innovation in Schools, presented at the annual Graeme Clark Oration at the Melbourne Conference and Convention Centre, and excellent progress research supported by the Foundation.**

**"By donating to The Graeme Clark Foundation, you are helping children and adults with sensory impairment better experience hearing, vision, and touch.**

**Your donation is literally life-changing!"**

organisers of the Graeme Clark Oration kindly agreed that the award would be presented during the Oration, which was this year presented by Professor Sir Paul Nurse, President of the Royal Society and Nobel Laureate. The award generated considerable interest amongst schools across both urban and regional Victoria, with high quality applications being received. Maffra Secondary College was announced as this year's winner, receiving the Award from Professor Clark from the podium of the Oration in March. Over 100 thrilled students from Maffra were present. Maffra won for the innovation and community engagement of their Broadening Horizon's Program. Year 7 and 8 students selected a topic that inspired them, researched this topic over 8 weeks under the mentorship of a local community leader, and then present their outcomes to local community forums and schools. The program embodies the values of the Foundation, and we were delighted to help Maffra's work be recognized and to inspire other schools to have their students aspire to a career in science.

**Ear disease amongst Indigenous Australians**

Professor Stephen O'Leary,
Dr Mary John,
Professor Graeme Clark AC,
Dr Donald (Scotty) Macleish AO,
Dr Philip Michael

We are pleased that Foundation scholar, Dr Mary John, completed her PhD this year, under the direction of Professor Stephen O'Leary in the Department of Otolaryngology, University of Melbourne. Mary studied ear infection (known as "otitis media"), which causes hearing loss throughout childhood in the majority of Australian Indigenous children living outside urban areas. Otitis media starts at a very young age, often within the first few months of life and persists throughout childhood, causing hearing loss by an accumulation of thick mucus ("glue") behind the eardrum. In a third of these children, the eardrum perforates which exacerbates the hearing loss and makes the ear prone to discharge, especially after the child has been swimming.


Mary John graduation day

Otitis media has been particularly difficult to treat amongst Indigenous children and simple measures that work in urban areas, such as the prescription of antibiotics, have a limited effect. In light of this, Mary looked at a completely different approach. It is known that the bacteria that reside at the back of the nose influence the likelihood that a child will develop otitis media. These bacteria colonise the child's nose very early on in life and persist throughout life. Mary considered whether otitis media might be reduced by the introduction of "healthy" bacteria, known as probiotics, to displace the disease-causing bacteria at the back of the nose.

Dr Mary John with
Professor Graeme Clark AC

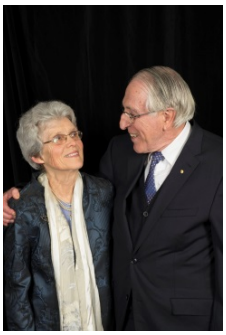
Using laboratory approaches, Mary was able to establish that probiotics could indeed displace unhealthy bacteria. The bacteria studied did not however successfully colonise the human post-nasal space, so it seems that while this approach holds promise, other probiotics may need to be considered in order to prevent otitis media.

Mary has returned to an academic position at the Christian Medical College, Vellore, where she continues to treat disadvantaged people with otitis media.

Her PhD training in Melbourne, made possible by the support of the Foundation, has prepared her to make a global difference to ear disease and hearing loss. The Foundation wishes her every success in her endeavours.

**An update from the Board**

This year saw the retirement of A/Professor Brian Pyman after dedicated service to the Board. Brian helped pioneer the surgical techniques and medical management for cochlear implantation, standing along-side Graeme Clark before and after the first implant. Brian grew to be deeply respected for his teaching of medical students, and the enthusiasm with which he instructed surgeons from around the world in the art of cochlear implantation. He was particularly well known for his teaching of surgeons across Asia. The Board wishes Brian a happy retirement after a long and productive career.



Margaret & Graeme Clark

Our Board Chairman, Laureate Professor Emeritus Graeme Clark was honoured as a co-recipient of the 2015 Russ Prize from the United States National Academy of Engineering. This highly prestigious prize was awarded for Graeme's engineering of the cochlear implant. Graeme also celebrated his 80th birthday this year. Friends, colleagues and patients gathered for a formal dinner at the Melbourne Convention and Conference Centre. A smaller, and more intimate gathering followed with the staff of the Royal Victorian Eye and Ear Hospital with which Graeme has been associated for 50 years and where Graeme undertook his first cochlear implant surgeries. The night was shared with patients, medical staff, nurses and audiologists who worked with Graeme. The highlight was a performance by a choir of hearing impaired children, many of whom have received a cochlear implant; a fitting tribute to the outstanding contribution Graeme has made to the lives of people around the world.

Therese Kelly (CEO Taralye,
Lady Lynee Cosgrove, Sir Peter Cosgrove AK MC,
Professor Richard Dowell

We are pleased to announce that Professor Richard Dowell, the Graeme Clark Professor of Audiology and Speech Sciences at the University of Melbourne, has joined the Board. Professor Dowell is known internationally for his contributions to audiology and cochlear implantation. He heads up both the teaching and the research in audiology at the University, and brings a wealth of experience to the Board that will help us fulfill our mission. Richard's position was inaugurated through a donation from the Foundation to the University of Melbourne, and it is fitting that the first incumbent should serve on the board.

The donation from the Foundation has allowed Professor Dowell to grow and broaden the portfolio of research at the Department of Audiology and Speech Pathology. The Department continues its work with the HEARing CRC and its other partners, but has an extensive range of projects in its own right. Some major activities of 2015 have included the awarding of an ARC linkage project to study the effect of restoring hearing with a cochlear implant on age-related cognitive decline. The team have also published a paper detailing the outcomes for children in Australia who received a cochlear implant before the age of 12 months. The study provides the first powerful evidence of benefits in communication development for when children are implanted younger than 12 months of age.


Professor Matti Anniko congratulating Professor Stephen O'Leary on receiving the Acta Prize Award

Professor Stephen O'Leary, the Chair of Otolaryngology at the University of Melbourne has received several international honours this year, for his work on the medical and surgical treatment of ear disease and hearing loss. In May this year, Professor O'Leary received the Gunnar Holmgren Medal from the Swedish ENT Society, which he received in Stockholm. In August this year Stephen received the Acta Otolaryngologica Prize from the Collegium Otorhinolaryngologicum Amiticiae Sacrum in San Francisco. Stephen supervised Dr Mary John's PhD, and is also dedicated to improving the ear health and hearing of Indigenous Australians.

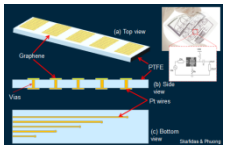
His team is running a national NHMRC-funded trial to improve surgical treatment for otitis media, and has this year developed new ways of improving cochlear implant surgery by monitoring hearing during the implant operation. In addition, his team is developing a progressing new treatment to prevent hearing loss after noise exposure.

**Centre for Neural Engineering**

Professor Stan Skafidas

Professor David Grayden

Although results with the Australia's multi-channel Cochlear Implant (Bionic Ear) have surpassed expectations a quantum leap is still needed to achieve near normal hearing. A new research direction to achieve this goal came to light when Graeme and team examined the hearing bones of his first patient bequeathed for research a number of years ago. They reveal that fine patterns of stimulation with a new generation of electrodes inserted into the inner ear may achieve a whole new direction in the research. This is especially possible using graphene electrodes and the latest integrated circuit technology. This research is being led by Professor Stan Skafidas, Director of the Centre for Neural Engineering at and Professor David Grayden, Laboratory Leader of Bionics, Centre for Neural Engineering at The University of Melbourne. Funds are needed for research students to undertake the work.




Graphene is better known through the use of graphite or carbon in pencils. It is about 100 times stronger than steel, conducts electricity well and the ground-breaking experiments that led to its proponents receiving the Nobel Prize in physics in 2010.