Welcome to our first newsletter for the year. Our year started on a very exciting note in February with six innovative musical works, *INTERIOR DESIGN: Music for the Bionic Ear*, played to a large audience in the George Theatre, St. David’s University, Melbourne. This music, specifically written for cochlear implant recipients, was the culmination of many months of research and development by composers who worked closely with our Music and Pitch project team at the Institute. The concert was a starting point for cochlear implant users to discover new types of sounds, and new types of music in the years to come whilst helping our researchers continue to develop a hi-fidelity Bionic Ear.

Late in March we held the “Graeme Clark Visiting Research Fellow” Public Lecture at the Australian Centre for the Moving Image, Federation Square. The lecture was delivered by Professor Colette McKay, who is currently working on collaborative projects for three months at the Bionic Ear Institute. Since 2007 Colette, an Australian, has been heading the Audiology and Deafness Research Group within the School of Psychological Sciences at the University of Manchester in the UK. Working in Professor Graeme Clark’s group Colette helped in the development and evaluation of the SPEAK processing strategy, which after 14 years still provides the principles upon which the majority of cochlear implants function today.

Another highlight this year will be our 2nd International Medical Bionics conference being held at Philip Island in November. This conference will bring together a wide range of eminent and early career researchers working in the diverse field of medical bionics. International and local delegates will bring expertise from disciplines as diverse as biotechnology, engineering, ICT, polymer science, nanotechnology and medicine. There will be one aim that unites all those attending the conference – to search for solutions to the human health challenges of the future.

2011 is indeed an exciting year for all of us at the Bionic Ear Institute.
Dr Diane Lazard, who recently arrived from Paris, is an Ear, Nose, and Throat (ENT) surgeon at l’Assistance Publique-Hôpitaux de Paris. In 2007 she joined the cochlear implant team of Professor Chouard, who is recognised internationally as one of the pioneers in this field. Diane now works in the leading cochlear implantation centre in Paris, directed by Professors Meyer and Sterkers. She also has a research background with a PhD in Neurosciences from the Ecole Normale Superieure, Paris. The topic of her PhD was to identify cognitive predictors of cochlear implantation outcomes, based on functional Magnetic Resonance Imaging studies. Diane studied cerebral plasticity induced by deafness in adults who were candidates for cochlear implants.

As a post-doctoral researcher at the Institute, Diane is currently working on two projects with guidance from Professors Hugh McDermott and Peter Blamey. In the first project, she is aiming to investigate the auditory sensation associated with electric stimulation produced by the cochlear implant. Until now, we have had little notion of what electric stimulation actually sounds like to a deaf implant recipient. Recently, however, an increasing number of recipients are adults who have some natural acoustic hearing in the ear that is not implanted. In Diane’s project, some of these recipients will be asked to adjust sounds generated experimentally until they are perceived as similar to the sensations created electrically by the implant. The results will enable researchers, clinicians, and parents of deaf children to listen to acoustic simulations of cochlear implants that are much more accurate than simulations that have been devised previously. This is expected to lead to improvements in the way implants function in future.

The second project involves the collection of a large amount of data from international cochlear implant clinics to identify reliable predictors of outcomes for implant recipients. There are 12 clinics in Europe, North America, and Australia who have agreed to collaborate. The data includes relevant information about each patient both before and after cochlear implantation. The analysis of this data will enable clinicians and prospective recipients (or their caregivers) to make better-informed decisions about the likely outcomes of implantation before surgery.

Bionic Eye project attracts PhD student

Ronald Leung is in the first year of his PhD candidature at the Bionic Ear Institute and a member of the Bionic Vision team. He received his Bachelor of Biomedical Engineering (Honours) degree at the University of Melbourne in 2010. During his time at Melbourne University, he performed research at the Bionic Ear Institute under the Undergraduate Research Opportunities Program from the Bio21 Cluster. Ronald says: “I have a strong interest in the application of technology to medical problems, and the Bionic Eye project is a perfect opportunity to pursue this interest.”

A Bionic Eye aims to restore vision in blind patients through stimulation of nerve cells in the retina using electrical pulses. Parts of the implant will be placed within the eye. If medical problems arise post-operatively, or an improved device becomes available in future, the implant may need to be removed or replaced. Ronald’s PhD research aims to ensure the implant is designed appropriately so that these procedures can be performed safely. His research requires expertise in engineering and biology, and will help define the mechanical design of the retinal implant.

Ronald receives an Australian Postgraduate Award and is supervised by Institute researchers Associate Professor Chris Williams, Dr David Nayagam, Professor Robert Shepherd and Associate Professor Richard Williams from St. Vincent’s Health.

The conference will explore the following themes:

- Overview of medical bionics: design, development & commercialisation
- Bionic Hearing: improved hearing technologies
- Bionic Vision: retinal and CNS prostheses
- Neurobionics: neural interfaces for CNS and spinal cord stimulation
- Enabling technologies for medical bionics: ICT, smart materials and drug delivery technologies, and ‘blue-sky’ projects
- Future directions in medical bionics

An exciting program is being assembled that includes keynote speaker Professor Jim Patrick, Senior Vice President and Chief Scientist at Cochlear, and international invited speakers.

To learn more about the 2nd International Medical Bionics Conference please visit our website www.medicalbionics.org.au
On the evening of Sunday 13 February deep under the spire of the Arts Centre in Melbourne, six newly-commissioned works, specifically designed for listening via a cochlear implant, were recently premiered to an audience of cochlear implant users, their family and friends, and the general music-loving public. 600 people attended two performances. The concert, named INTERIOR DESIGN: Music for the Bionic Ear, was the result of a unique collaboration between scientists working on the Music & Pitch project at the Institute, and Robin Fox, a Melbourne-based experimental music composer and performer who held a Synapse Residency position at the Bionic Ear Institute for 6 months.

Along with Robin, five other composers were involved: Eugene Ughetti, Natasha Anderson, Ben Harper, Rohan Drape, and James Rushford. Each composer spent some time at the Institute learning about cochlear implants, and brought unique elements of their own artistic practice to bear on the issues of music enjoyment with a cochlear implant. The result was a concert that varied from quiet, contemplative works played by a string trio, to fully-electronic audio-visual displays and an all-percussion finale. Despite the variety there were common themes. Many of the works featured a visual aspect, strong rhythmic elements, simple melodies with widely-spaced intervals, and some used special tuning systems designed to optimally stimulate the electrode array in a cochlear implant. Survey data was collected during the performance, and it is anticipated that the data will help the Music & Pitch researchers in the development of the next generation of cochlear implant sound-processors.

Robin Fox, Musician, Composer and Sound Artist.

"Speak Percussion" performing Eugene Ughetti’s composition Syncretism A.

Three anonymous comments from focus groups held on the night:

"Most of the music tonight, to me, was understandable. I experimented both with and without the hearing aid. The first piece I enjoyed very much, with the clarinet, and the last piece with the percussion was absolutely wonderful."

"The first piece I found had a lot of discord, and didn’t sound very nice, but the rest of it I really enjoyed, especially the percussion and synthesised piece – I think I got a lot out of the evening."

"I found with all of them that I could hear individual instruments, which is something I haven’t been able to do for years. My tastes even before I lost my hearing were not particularly modern, but the drumming pieces I especially enjoyed."

Li Cunxin receives Advocacy Award from Research Australia

One of the Directors on the Bionic Ear Institute’s Board, Li Cunxin, was the recipient of Research Australia’s Celebrity Advocacy Award in 2010. This award recognises an Australian celebrity who has used their fame and influence in advocacy, fundraising or building awareness of health and medical research.

Right: Sophia Li accepting the Advocacy Award on behalf of Li Cunxin from the Governor of NSW, Professor Marie Bashir. Left: Li and Sophie.

Li has been an active Board member for the Bionic Ear Institute for five years. His daughter, Sophie, is a bilateral Bionic Ear recipient. Since 2003 Li and Sophie have been strong advocates of medical bionics research, and work tirelessly to raise community awareness. Li has been involved in a number of high profile fundraising events for the Institute and is an inspirational celebrity speaker.
The Australian Ballet

Special Offer to Supporters:
The Australian Ballet
Romeo & Juliet

Monday, 12 September 2011, 6.30pm
State Theatre, the Arts Centre, Melbourne
with Orchestra Victoria

The Australian Ballet is offering supporters of the Bionic Ear Institute an opportunity to purchase tickets ahead of the general public to a Preview of Graeme Murphy’s world premiere Romeo & Juliet on Monday 12 September. The Australian Ballet will generously donate 50% of the income from ticket sales to the Institute’s medical bionics research.

Over 400 years old, the tale of Romeo & Juliet is as timeless as it is heartbreaking. Young passion smoulders at its core, but in this ballet Graeme Murphy also tackles the consequences of greed, war, factionalism, and what happens to humanity when love dies. Set to the original Prokofiev score, with costumes by Australian design luminary Akira Isogawa, Romeo & Juliet promises to be a masterpiece from first blush to final devastation.

For more information on Romeo & Juliet visit http://www.australianballet.com.au/romeoandjuliet

Tickets to this special preview will be on sale to the general public in late May, so be sure to secure great seats now by phoning The Australian Ballet on 1300 369 741.

Pre-sale ticket prices

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Hendy’s Kokoda Trek Challenge raises $12,000

Hendy O’Toole has accomplished a result that many people would find hard to achieve. Not only did she train hard to walk the gruelling eight-day Kokoda Trek in July last year, but she also spent many hours over 18 months generating awareness and raising $12,000 for hearing research.

Community support is vital to our research programs, and we thank Hendy, the Croydon Lions Club members, family and friends who enthusiastically supported this fundraising project.

L to R: Professor Rob Shepherd, Hendy O’Toole and President of Croydon Lions Club, Gerard O’Toole.

Woodards celebrates 90 years and continues to help make a real difference to people’s lives

Woodards, a real estate company with a 12-office network across Melbourne’s most sought-after suburbs, is one of the Bionic Ear Institute’s most generous and loyal supporters.

In February Woodards organised a special Casino fundraising event at The Carlton Brewhouse, Abbotsford. Over 160 people enjoyed the fun and games, and with their kind support contributed to the success of the evening, raising $10,068.

Mr John Piccolo, Woodards CEO, said: “One of our philosophies is to make a positive contribution to the broader community. Our partnership with the Bionic Ear Institute, through their medical research, enables us to help make a difference to people’s lives.”