



# Research Directions

Office of Research Services

## ***Perceiving Tone Languages With Cochlear Implants***

**Professor Denis Burnham and Dr Christine Kitamura at MARCS Auditory Laboratories, Associate Professor Valter Ciocca at Hong Kong University, and Associate Professor Jim Patrick, Chief Scientist with MARCS industry partner, Cochlear Limited, have secured funding from the Australian Research Council to investigate optimal methods for training tone language (notably Chinese) children with cochlear implants how to perceive their native language more effectively.**



'Cochlear implants stimulate the auditory nerve via electrodes to provide auditory information to people who would otherwise be functionally deaf' said Professor Burnham. 'As brilliant as the implants are, cochlear implants cannot convey pitch effectively. Pitch is necessary for perceiving and speaking tonal languages such as Cantonese and Mandarin, in which word meaning is conveyed not only by consonants and vowels, but also by tones — pitch characteristics carried on the vowels' added Professor Burnham.

Mr Damien Smith has been awarded an Australian Postgraduate Award (Industry) PhD scholarship to work on the project. Mr Smith completed an honours degree at Sydney University in 2005, specialising in training methods in speech perception and production, an ideal background for the project.

The main aim of the project is to devise training methods for teaching tone perception and production, drawing on experimental psychology methods, auditory, lip and face speech information, exaggerated tonal cues and metalinguistics instruction. The methods will be tested with adults and children, and evaluated with a view to establishing an optimal method.

An effective method to train tone perception and production in cochlear implant recipients will benefit the thousands of Australian and overseas tonal language speakers.

The MARCS / Cochlear Ltd liaison in this project is an exciting development, which was set up by the University of Western Sydney Business and Industry Advisory Panel and the University of Western Sydney Office of Regional Development.

**Project Title:** *Optimal Training Methods for Lexical Tone Perception by Children with Cochlear Implants: Application of Experimental Psychology Techniques*

**Funding has been set at:** \$122,661 with combined funding from the Australian Research Council and Cochlear Limited

June 2006.

### Contact Details:

[d.burnham@uws.edu.au](mailto:d.burnham@uws.edu.au)

<http://marcs.uws.edu.au>

<http://www.cochlear.com>