Editorial

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This special edition of *Audiology and Neuro-Otology*, 'Cochlear Transduction and Transmission', represents the second of three issues containing papers arising from the 'Auditory Function and Dysfunction: Molecular and Physiological Mechanisms' symposium held in Auckland, New Zealand in August 2001. The symposium was a satellite to the 34th International Congress of the International Union of Physiological Sciences (IUPS) and provided a forum for presentations by research groups with wide-ranging expertise in basic and clinical auditory sciences. Speakers were asked to provide a synopsis of their specialty area, considering background, current research initiatives and future implications. These synopses were grouped into three categories, the other two being 'Auditory Central Nervous System Processing and Plasticity' published in the July–August 2001 issue (vol. 6, No. 4) and 'Gene Therapy and Therapeutic Interventions' to be published in a later issue. These three special editions highlight current perspectives of auditory science and provide clear indicators of the rapid move towards integrating basic science into clinical application in audiology and neuro-otology.

The current issue 'Cochlear Transduction and Transmission' includes three themes. The first considers advances made in understanding the cellular and molecular basis of active tuning in the mammalian cochlea, the 'cochlear amplifier'. This is particularly pertinent given the identification of 'prestin' as the outer hair cell protein responsible for electromotility and in all likelihood, underpinning the exquisite sensitivity and tuning of our cochlear sensory epithelium. The second theme considers the structural relationships between sensory and supporting cells in the inner ear and their underlying membrane

properties. This is followed by papers on peripheral auditory synaptic transmission and neurohumoral signalling. These synopses highlight principal areas of study into the mechanical, structural and functional features of the hearing organ, and consider key signalling factors regulating cellular physiology and cochlear and vestibular homeostasis, including mechano-electrical, voltage- and ligand-gated ion channels. The section also considers the molecular interactions controlling vesicle fusion and transmitter release in the hair cells, and multimodal transmission involving glutamate and other auditory afferent and efferent neurotransmitters and neuromodulators.

The final issue to follow 'Gene Therapy and Therapeutic Interventions' links the contemporary understanding of molecular signalling processes associated with the development and maintenance of hearing to applications for gene therapy, genetic screening, and pharmacological intervention in hereditary and environmentally induced hearing loss.

We believe that the interchange at the symposium was of tremendous value, providing a rare opportunity, particularly within the Australasian region, for communication between wide-ranging disciplines within the hearing sciences and the clinic. The editors thank the organising committee, all the contributors to the symposium, and the sponsors: Deafness Research Foundation of New Zealand, Oticon Foundation (NZ), Cochlear, Phonak (NZ) and the Auckland Medical Research Foundation. Finally, special thanks to the authors and reviewers of the synopses presented in these *Audiology and Neuro-Otology* editions for producing outstanding perspectives on major areas of basic and applied hearing science.

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