

A simple 'coating' to a cochlear device - could hold the key to better treatments for hearing loss and central nervous system diseases

The Discovery - A modified cochlear device - for 'close-field' electroporation

Central Nervous System (CNS) diseases affect millions of people. CNS diseases can affect the brain or the spinal cord resulting in a range of neurological or psychiatric disorders from Tourette's to Alzheimer's and Parkinson's diseases. Causes of CNS diseases can be trauma, infections, tumours, degeneration, autoimmune disorders and stroke.

The cochlear implant bionic prosthesis has dramatically altered the prognostic landscape for people suffering profound hearing loss, and more broadly, has fostered development of the field of implantable bionic interfaces.

Our researchers have utilized a modified cochlear device for novel 'close-field' electroporation to transduce mesenchymal cells lining the cochlear perilymphatic canals with a non-viral cDNA gene construct driving brain-derived neurotrophic factor (BDNF) expression. The focussing of electric fields by particular microarray electrode configurations led to efficient gene delivery re-establishing BDNF support of the cochlear spiral ganglion neurons lost with deafening.

Key Benefits

- Cochlear implant neural interface significantly improved by gene therapy achieved via implant microarray-mediated electroporation of cells
- Expanded dynamic range of the cochlear nerve to normal hearing control levels.
- New avenues for improved neural interfaces and may broadly enable molecular medicine applications including spinal cord injury, Alzheimer's disease and brain disorders



The Opportunity

UNSW is seeking a commercial partner to licence and/or to work collaboratively with the inventor Professor Gary Housley in the development of this ground-breaking technology.

<https://research.unsw.edu.au/people/professor-gary-david-housley>

For more information contact:

Dr Joe Brennan

Business Development Manager

NewSouth Innovations

Ref 12_2756

T: +61 2 9385 7729 | M: +61 450 469 492

E: j.brennan@nsinnovations.com.au