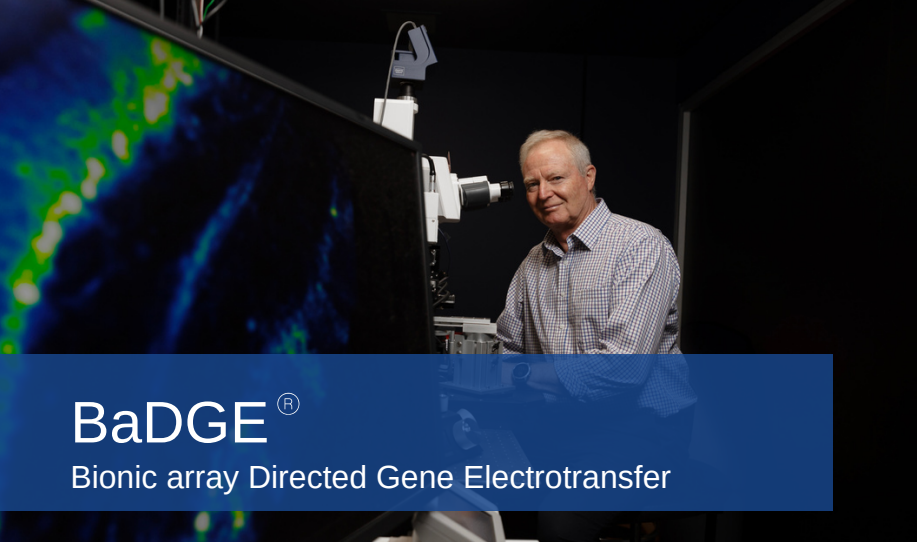

BaDGE®

Bionic array Directed Gene Electrotransfer

UNSW SYDNEY

UNSW Tyree Foundation Institute of Health Engineering

The UNSW BaDGE® platform enables targeted delivery of genetic instructions that tell cells to create desired therapies.

The Challenge

The adoption of gene therapy as standard of care is challenged by the ability to target tissues and cells that the genetic molecules (DNA/RNA) are delivered to and the whole-body side-effects that occur.

The Solution

BaDGE® technology uses an electric pulse to to direct engineered DNA/RNA into cells. There are some big benefits to the BaDGE® approach. First, the genetic molecules are only introduced locally to the tissues that require the therapy. Second, the molecules injected are biologically inactive when outside of a cell, meaning limited off-target effects in the absence of the BaDGE® electric pulse. The BaDGE® platform technology has been investigated for use in many areas including, restoring hearing, epilepsy, macular degeneration, and muscle reinnervation. There is also potential to use it for vaccine delivery and modifying genes to replace dysfunctional or add missing genes.

The Impact: Restoring hearing to the profoundly deaf

In a collaboration with Cochlear, a cochlear implant with BaDGE® technology has successfully progressed to first-in-human clinical trials. The aim is to regenerate the auditory nerve to enhance the sounds of cochlear implants, giving better hearing outcomes for cochlear recipients.

At a glance

- A novel platform technology for gene therapy
- World first cochlear therapy
- Tyree IHealthE facilitation for commercialisation

At Tyree IHealthE, we are working to migrate this technology into a broad electro-therapeutic platform.

Tyree IHealthE has established an ideal ecosystem across biomedical engineering and medical molecular engineering and neuroscience for refinement of the BaDGE platform and translation to promising gene therapy applications.

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