


# 2025 臺中榮民總醫院院慶國際醫學研討會 TCVGH International Medical Conference

## AI in Medicine

Future of Healthcare by AI



請於 8 月 15 日前回傳表單

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<p>Speech Title</p>	<p>Cochlear implantation and gene therapy: can they be compatible?</p>	
<p>Abstract( 200 words) :</p> <p>Cochlear implantation is currently the treatment of choice for children with severe to profound sensorineural hearing impairment (SNHI). Although most patients with SNHI have good speech perception after cochlear implantation, they do not regain "natural hearing" and cannot enjoy music satisfactorily. Cochlear implants convert external sounds into electrical signals and function only as a mechanical prosthesis. Cochlear implants cannot provide full recovery of hearing sensitivity and/or restoration of the native inner ear sensory epithelium. Furthermore, the benefits of cochlear implants may be limited due to the involvement of retrocochlear pathologies. Therefore, new biological therapeutic approaches based on gene transfer and gene editing tools are being developed to address these unmet clinical needs.</p> <p>It can be envisioned that gene therapy for SNHI will start from certain scenarios: (1) OTOF-related SNHI, as recent animal studies have demonstrated the potential of gene therapy to reverse cochlear pathologies caused by OTOF mutations; (2) syndromic hearing loss, such as Usher syndrome, as there are already FDA-approved gene therapies for ocular or neurological diseases; (3) SLC26A4-related SNHI, as there may be a therapeutic window for gene therapy due to the progressive/fluctuating nature of SNHI; and (4) genetic etiologies associated with poor CI outcomes, such as retrocochlear pathologies caused by PJVK mutations. In this talk, I will discuss these scenarios and present our recent data in humans and experimental models.</p>		