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Mouse genetic model for human Age-Related Hearing Loss

Stanford researchers have made a genetic mouse model to mimic the human LOXHD1 p.R1090Q mutation as a means to further investigate, understand and combat human Age-Related Hearing Loss (ARHL).

The gradual loss of hearing is a common manifestation of aging with both genetic and environmental contributing factors. Apart from the use of hearing aids or cochlear implants, which restore hearing partially, no treatment exists. LOXHD1 is a gene expressed in sensory hair cells of the inner ear and is required for mechanotransduction. In humans, the p.R1090Q mutation in the LOXHD1 gene is associated with the increased susceptibility to ARHL. To further understand the underlying mechanisms and potential treatments, inventors have used CRISPR/Cas9, sgRNA, NLS-Cas9 protein in FVB/NJ background to engineer a genetic mouse model with equivalent Loxhd1 p.R1064Q mutation.

Stage of Development
In vivo: mouse model created

Applications

- The mouse model can be used to:
- evaluate the efficacy of drugs or treatment for ARHL
- Better understand the biology of ARHL and noise-induced hearing loss

Advantages

- First mouse model to mimic human ARHL

Innovators

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