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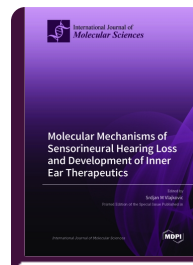
## **Molecular Mechanisms of Sensorineural Hearing Loss and Development of Inner Ear Therapeutics**

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The sense of hearing is vulnerable to environmental challenges, such as exposure to noise. More than 1.5 billion people experience some decline in hearing ability during their lifetime, of whom at least 430 million will be affected by disabling hearing loss. If not identified and addressed in a timely way, hearing loss can severely reduce the quality of life at various stages. Some causes of hearing loss can be prevented, for example from occupational or leisure noise. The World Health Organization estimates that more than 1 billion young people put themselves at risk of permanent hearing loss by listening to loud music over long periods of time. Mitigating such risks through public health action is essential to reduce the impact of hearing loss in the community. The etiology of sensorineural hearing loss is complex and multifactorial, arising from congenital and acquired causes. This book highlights the diverse range of approaches to sensorineural hearing loss, from designing new animal models of age-related hearing loss, to the use of microRNAs as biomarkers of cochlear injury and drug repurposing for the therapy of age-related and noise-induced hearing loss. Further investigation into the underlying molecular mechanisms of sensorineural hearing loss and the integration of the novel drug, cell, and gene therapy strategies into controlled clinical studies will permit significant advances in a field where there are currently many unmet needs.

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