

An Integrative Bioinformatics Approach for Studying the Network Biology of Meniere's Disease to Prioritize Pharmacotherapy and Diagnostic Biomarkers

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Abstract

Meniere's disease, an inner ear disorder that was first described by Prosper Meniere, is manifested by tinnitus, hearing difficulties, and vertigo. In this thesis, we used computational biology method to study the network biology of Meniere's disease in order to prioritize drug targets. key findings in this project are the role of apoptosis and hair cell death in the pathogenesis and the development of Meniere's disease, moreover, our results uncovered the importance of considering NOX3, MAOB, and NMDA receptor as potential drug targets. We also focused on the characteristics of MD, tinnitus, and hearing difficulties in the Jordanian population by conducting a cross-sectional study using a validated reliable questionnaire, findings show that insomnia, noise exposure, recurrent otitis media, and the use of ototoxic drugs may increase the

risk for tinnitus and hearing difficulties. Furthermore, we found that tinnitus starts affecting younger age, thus it is recommended to follow good listening behaviors such as avoiding noise exposure, and minimizing the use of headphones.

Keywords: Meniere's disease, tinnitus, apoptosis.