Rapid High-Throughput Screening for Ototoxicity of Agents

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Background: Impaired hearing is by some measures the number one disability in the world. Worldwide, it is estimated that 65 million people in the world’s industrialized countries alone suffer from some type of hearing disability. The CDC estimates that 37.1 million American adults (16.0% of the population) suffer from hearing difficulties. Additionally, it is estimated that roughly 500,000 children in the US suffer from some kind of hearing loss. It is estimated that 44 million citizens of the European Union suffer from some kind of hearing difficulty. Currently, there are no FDA-approved pharmacological treatments for hearing loss.

Invention: University of Arizona researchers have developed a high-throughput assay to be used as a drug development platform specifically for discovering new drugs for the treatment of hearing disorders and hearing loss.

Applications: This high-throughput assay can be used to efficiently and rapidly discover both otoprotective and otoregenerative drugs (i.e. drugs that prevent or repair damage to auditory organs, thus protecting against hearing loss or treating it). It is also capable of detecting ototoxic compounds (i.e. compounds that may cause hearing loss e.g. cisplatin and other chemotherapy drugs). It can thus be used to not only develop new therapies to prevent or treat hearing loss, but also to detect ototoxic side effects in other drugs.

Advantages: The present invention is a novel, high-throughput platform for drug development against hearing loss. Unlike existing systems, enables both behavioral and anatomical assessment of drug candidates. It provides both physiologic and anatomical results, potentially accelerating recognition of otoprotective, otoregenerative, or ototoxic compounds while maintaining a high degree of accuracy and reliability.

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