p27 Atoh Combination

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Technology description

Researchers at St. Jude Children's Research Hospital have discovered that the combinatory use of p27Kip1 inhibitors/drugs and Atoh1 activators/drugs could be an effective means to regenerate sensory hair cells in adult human cochleae. This could be an effective treatment for patients who have lost sensory hair cells to restore their hearing. Results also suggest additional combinations of genetic pathways would regenerate hair cells in adult deafened cochleae. While fish, reptiles, and other organisms can regrow cochlear hair cells to restore hearing loss, mammals are unable. Cochlear hair cell related hearing loss in humans is permanent and affects 5% of the world's population (360 Million) and current hearing aids only meet 10% of the demand. In the U. S., 36 million adults report some hearing loss and 2-3 out of every 1,000 babies have hearing impairments. Using the compositions and methods described, we can regrow hair cells to restore hearing, or obtain and grow new cochlear hair cell populations. This invention covers a large range of pharmaceutical compositions comprising agents that activate expression of Atoh1, and agents that inhibit the expression of p27Kip1. The invention also contains methods for administering these compositions.

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