

# Pluripotent Stem Cell Therapy as a Promising Treatment for Inner Hair Cell Regeneration

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Sensorineural hearing loss (SNHL) is a condition where the inner ear hair cells, which reside in the inner ear, become damaged and are unable to self-regenerate or repair. SNHL is responsible for 90 percent of hearing loss in adults and is usually a permanent form of deafness. Pluripotent stem cell (PSC) regeneration is the process of using stem cells to regenerate damaged parts of the body. Thus, there is potential to regenerate damaged or dead hair cells with the use of PSC to recover hearing function. However, the process of regenerating hair cells through PSC regeneration remains unknown. Here, I sought to find the best approach based on prior literature for PSC regeneration on inner ear hair cells. In this review I consider the prior approaches/experiments of stem cell regeneration to determine the plausibility of regenerating hair cells with PSC. I discovered there are advantages in using PSC to regenerate hair cells, for example PSC can differentiate in vitro, in vivo, and can be derived from somatic cells. In addition, somatic cells can be used to replicate the PSC's in vitro. However, some disadvantages to this process also exist, such as the potential for cancer formation and tissue rejection. Regardless, this review argues that PSC therapy is a promising treatment for the regeneration of inner ear hair cells. Further research on how PSC can be used to regenerate hair cells may produce promising results for treating SNHL, as well as helping to understand regenerative therapies. Ultimately, there is great potential for PSC to be a viable option for the regeneration of hair cells as a treatment for deafness.