

In gerbils, stem cells boost hopes of ending deafness

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Scientists working with deaf gerbils said on Wednesday they had found a way of coaxing early stem cells into specialised ear cells that helped the rodents hear sound once more.

The gerbils had been given a chemical to damage key [nerve cells](#) called spiral ganglion neurons (SGNs). These transmit to the brain the signals that are picked up by "hair" cells, which respond to noise.

In a study published in the journal *Nature*, a team led by Marcelo Rivolta at Britain's University of Sheffield said they had found a way to turn human [embryonic stem cells](#) into precursors of these vital ear cells to reverse the deafness.

Stem cells are infant cells that develop into the specialised tissues of the body.

They have sparked great excitement as they offer hopes of rebuilding organs damaged by disease or accident.

Stem cells taken from an early [embryonic stage](#) are the most prized in research because they have the greatest versatility, but the big challenge is ensuring that they differentiate into the right tissue.

Rivolta nurtured the stem cells in a serum bath to gain "otic pregenitor" cells before gently implanting them in the [gerbils](#).

After 10 weeks, the animals had, on average, recovered 46 percent of their hearing loss, according to electrodes that measured their brains' response to sound.

Their average level of detection was around 50 decibels, which is equivalent to a conversation in quiet surroundings.

"The range of recovery went from modest to almost complete, which is remarkable considering the technical challenges involved in the procedure," the paper said.

Many obstacles remain before this laboratory trial can be used on humans, a process that is closely regulated for safety.

But the researchers said that, if these hurdles are overcome, stemcell therapy could one day offer hope for deaf people when used with a cochlear implant, a device that circumvents loss of [hair cells](#).

More information: DOI: 10.1038/nature11415

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