

## MEDICAL RESEARCH UPDATE

### Research funded by the Grand Charity could lead to potential cure for age-related deafness

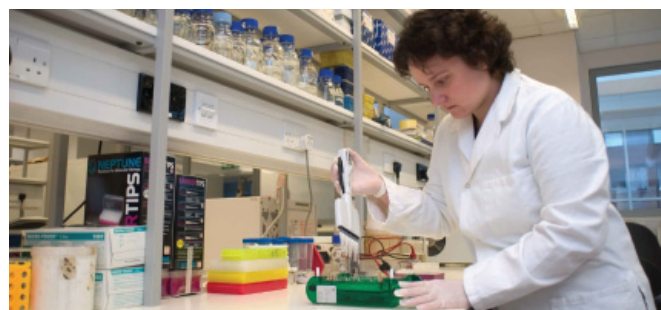
Since 2006, The Freemasons' Grand Charity has funded Deafness Research UK with £180,000 to carry out research by Dr David Furness at Keele University, to look into the causes of age-related hearing loss.

Over 9 million people are affected by age-related hearing loss in the UK, with over half of people aged 60 and above affected in some way. The research carried out has found that much age-related hearing loss is caused when fibrocyte cells (cells in the inner ear) start to degenerate. The loss of function in fibrocyte cells means that other parts of the inner ear begin to deteriorate, leading to further hearing loss and possible eventual deafness. The researchers at Keele University are now attempting to grow new replacement fibrocyte cells inside the ear - the first study of its kind in the world. If this project is successful it could lead to the possible prevention of age-related hearing loss, greatly affecting the lives of millions of people across the world.

#### The project in detail:

The initial grant funded a project which aimed to determine the role of cells in regulating the environment of the inner ear to maintain a stable condition. The results of the project were positive: evidence showed that fibrocyte cells appeared to begin degenerating around 2-3 weeks prior to inner ear hair cells. The relatively short time frame between fibrocyte death and inner ear hair cell damage led the researchers to believe that fibrocyte death caused inner ear hair cell damage, resulting in hearing loss. This gave real value to the prospect of exploring cell replacement techniques, to attempt to prevent age-related hearing loss.

A further grant was then made to continue the project, which made huge progress by demonstrating a link between fibrocyte depletion and the death of inner ear hair cells. This led the researchers to believe that if it were possible to replace degenerating fibrocytes



using cultured cells, then it may also be possible to regenerate the damage done to hearing, as a result of age-related hearing loss.

The latest stage of the project has been to develop a transplantation technique to inject tagged cells into the inner ear, which the researchers can then identify, thus determining whether the transplantation prevents or reduces age-related hearing loss.

Dr Furness stated in an interview with the Telegraph newspaper:

*"If we can find a way to replace fibrocytes through stem cell therapy when they start to degenerate, but before other parts of the inner ear get damaged, we could potentially have found a way to prevent age-related hearing loss."*

*"The second stage of our research is to do just that - grow fibrocytes in culture specifically to treat age related hearing loss. We're still in the preliminary stages of the research, but are growing these cells successfully and the next stage will be to find a way to transplant them effectively into the ear."*

*News of this grant was reported in the Telegraph, on the 28th December 2011:*

<http://www.telegraph.co.uk/health/healthnews/8951436/Stem-cell-treatment-to-prevent-hearing-loss.html>

**Deafness Research UK is a national charity dedicated to helping deaf and hard of hearing people through medical research and education.**

For further info: [www.deafnessresearch.org.uk](http://www.deafnessresearch.org.uk)