Researchers identify gene associated with age-related hearing loss

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A large screening programme has identified several genes associated with age-related conditions including hearing loss, retinal degeneration and osteoarthritis. The animal study, published in *Nature Communications*, may lead to studies of the equivalent human gene and help develop screening programmes to identify the risk of developing an age-related condition many years before symptoms appear.

Age is a risk factor for many conditions, including diabetes, cardiovascular disease, hearing loss, dementia and others, but the genes that we carry also influence whether we are more or less susceptible to these. Not much is known about which genes influence age-related conditions, or how they do so.

To explore this further, researchers from Medical Research Council (MRC) Harwell introduced new mutations at random positions in the genes of mice before they were born, and then monitored their health as they aged. If an age-related condition developed, the researchers investigated which particular gene in that mouse had been mutated. One gene identified in this way was Slc4a10. This was already known to be needed for eye function, but this new study linked defective Slc4a10 to age-related hearing loss for the first time.

Identifying this gene and others related to late-onset conditions in mice could now prompt investigation of the same genes in humans to ask if naturally-occurring mutations in them cause similar effects. In future, screening people for defects in the genes identified could help to predict their chances of developing a particular condition, and the findings may one day inform treatment development or timing of interventions.

Lead researcher, Dr Paul Potter of MRC Harwell, said: "Our study is an important springboard for a better understanding of which genes in humans are involved in age-related conditions, and how changes in those genes influence this. This is a first and vital step in developing new therapies."

Dr Lindsay Wilson, Programme Manager for Genetics and Genomics at the MRC, said: "As we get older, we have an increased risk of developing many conditions, including diabetes, cardiovascular disease, hearing loss and dementia. The genes that we carry can influence this, but it is hard to know which do, or how. This study increases our understanding of the genes related to ageing and ill-health and may ultimately help us to identify new treatments."

More information: Novel gene function revealed by mouse mutagenesis screens for models of age-related disease. Potter et al. *Nature Communications*, DOI: 10.1038/NCOMMS12444

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