

Can you hear me now? New strategy discovered to prevent hearing loss

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If you're concerned about losing your hearing because of noise exposure (earbud deafness syndrome), a new discovery published online in the *FASEB Journal* offers some hope. That's because scientists from Germany and Canada show that the protein, AMPK, which protects cells during a lack of energy, also activates a channel protein in the cell membrane that allows potassium to leave the cell. This activity is important because this mechanism helps protect sensory cells in the inner ear from permanent damage following acoustic noise exposure. This information could lead to new strategies and therapies to prevent and treat trauma resulting from extreme noise, especially in people with AMPK gene variants that may make them more vulnerable to hearing loss.

"Future research on the basis of the present study may lead to the development of novel strategies preventing noise-induced hearing loss or accelerating recovery from acoustic trauma," said Florian Lang, Ph.D., a researcher involved in the work from the Department of Physiology at the University of Tübingen, in Tübingen, Germany.

To make this discovery, Lang and colleagues compared two groups of mice. The first group was normal and the second lacked the AMPK protein. Hearing of the mice was tested by measuring sound-induced brain activity. All mice were exposed to well-defined noise causing an [acoustic trauma](#) and leading to hearing impairment. Prior to noise exposure, the hearing ability was similar in normal mice and mice lacking AMPK. After exposure, the hearing of the normal mice mostly

recovered after two weeks, but the recovery of hearing in AMPK-deficient mice remained significantly impaired.

"When it comes to preventing hearing loss, keeping the volume down is still the best strategy, and this discovery doesn't prevent loud music from beating on our ear drums," said Gerald Weissmann, M.D., Editor-in-Chief of the [FASEB Journal](#). "This discovery does help explain why some people seem more likely to lose their hearing than others. At the same time, it also provides a target for new preventive strategies - and perhaps even a treatment - for earbud deafness syndrome."

More information: Michael Föller, Mirko Jaumann, Juliane Dettling, Ambrish Saxena, Tatsiana Pakladok, Carlos Munoz, Peter Ruth, Mentor Sopjani, Guiscard Seeböhm, Lukas Rüttiger, Marlies Knipper, and Florian Lang. AMP-activated protein kinase in BK-channel regulation and protection against hearing loss following acoustic overstimulation. *FASEB J.* doi:10.1096/fj.12-208132

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