

Centre for Genomic Regulation in Barcelona (CRG) Discover a protein involved in deafness.

18/11/09 at 02:20am GMT +1

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Article Source:

Researchers from the Centre for Genomic Regulation in Barcelona (CRG), led by Hernan Lopez-Schier, Discover a protein involved in deafness.

The work, published by the Journal, National Academy of Sciences (PNAS), presents the first detailed study of a protein directly involved in auditory cell function, as both cause loss of hearing problems and balance. This is the Tmie transmembrane protein, essential for hearing and balance.

The inner ear hearing cells are responsible for transforming the sound stimuli into an electrical signal that travels through the neurons to be processed in the brain. So far, little is known about proteins that are responsible for the transduction process, i.e., those proteins involved in the transformation of stimulus into an electrical signal.

Tmie protein across the cell membrane regulates the ability of the cell mechanoreceptors in hearing. The researcher at the Centre for Genomic Regulation (CRG) Hernan Lopez-Schier, in collaboration with researchers from the Howard Hughes Institute and Rockefeller University, describes the role of this transmembrane protein as essential for proper hearing and balance.

While knowing the genes and proteins associated with hearing problems, it is very difficult to work with this type of sensory organ. The main problem is that these organs contain very few of these cells and can not be studied in cell culture. It is essential to work in vivo to study the sensory organs and their effects.

This particular job could not be studied in humans and mice make it very complicated because of the inaccessibility of the inner ear. The group of Sensory Cell Biology and Organogenesis led by Dr. López-Schier works with zebrafish as an animal model, which is equal to the inner ear of most vertebrates, but that presents a greater accessibility for viewing and manipulation. In addition, fish have a sensory organ called the lateral line, it consists of hearing cells along the body. The lateral line allows them to detect movement in the water and gives them information about their prey or predators.

This work provides new clues for the study of deafness in humans, since the same protein also causes balance problems in mice and profound deafness in humans.

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