

# Study offers clues to beating hearing loss

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Researchers at the University of Leeds have made a significant step forward in understanding the causes of some forms of deafness.

The Leeds team has discovered that the myosin 7 motor protein - found in the tiny hairs of the inner ear that pick up sound - moves and works in a different way from many other myosins.

Dr Michelle Peckham from the University of Leeds' Faculty of Biological Sciences says: "We're really excited by this discovery as it could lead to new insights into certain forms of deafness. Mutations in this protein have been linked to hearing loss, particularly of the type connected to Usher syndrome, which is a form of degenerative deaf-blindness."

There are around 40 myosin motor proteins in the human body, the most familiar of which is the type of myosin found in skeletal and heart muscle. But all cells have many different kinds of myosin.

Dr Peckham says: "What's exciting about our findings is that we have found that, unlike muscle myosins, which have two heads, myosin 7 only has one. What's more, for the first time we've found how this myosin can be switched on and switched off. When switched off, the tip of its tail curls round and contacts the head, and switched on this contact is broken and the myosin stretches out. This knowledge should help inform any further studies into how a mutation can create problems in hearing."

Follow-up studies could include a more detailed analysis of the role of

myosin 7 in Usher syndrome, an inherited genetic condition, which affects hearing, sight and balance. It can vary in its severity; in some cases a child may be born deaf and their sight may deteriorate during childhood, whilst in others the syndrome can go undetected into the teens when hearing and sight usually begins to deteriorate.

There is no cure for Usher syndrome and sufferers are usually offered assistance in managing their disabilities.

Dr Peckham says: "Our studies on how normal myosin 7 works pave the way for understanding how a defective myosin 7 protein in Usher patients results in deafness."

The study is published in the *Proceedings of the National Academy of Sciences Online Early Edition* this week.

Source: University of Leeds

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