

# Research discovers how the deaf have super vision

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Deaf or blind people often report enhanced abilities in their remaining senses, but up until now, no one has explained how and why that could be. Researchers at The University of Western Ontario, led by Stephen Lomber of The Centre for Brain and Mind have discovered there is a causal link between enhanced visual abilities and reorganization of the part of the brain that usually handles auditory input in congenitally deaf cats. The findings, published online in *Nature Neuroscience*, provide insight into the plasticity that may occur in the brains of deaf people.

Cats are the only animal besides humans that can be born [deaf](#). Using congenitally deaf cats and hearing cats, Lomber and his team showed that only two specific visual abilities are enhanced in the deaf: visual localization in the peripheral field and visual motion detection. They found the part of the [auditory cortex](#) that would normally pick up peripheral sound enhanced [peripheral vision](#), leading the researchers to conclude the function stays the same but switches from auditory to visual.

"The [brain](#) is very efficient, and doesn't let unused space go to waste," says Lomber, an associate professor in the Department of Physiology and Pharmacology at the Schulich School of Medicine & Dentistry, and Department of Psychology in the Faculty of Social Science. "The brain wants to compensate for the lost [sense](#) with enhancements that are beneficial. For example, if you're deaf, you would benefit by seeing a car coming far off in your peripheral vision, because you can't hear that car approaching from the side; the same with being able to more

accurately detect how fast something is moving."

Lomber and his team are trying to discover how a deaf brain differs from a hearing brain to better understand how the brain handles cochlear implants. If the brain has rewired itself to compensate for the loss of hearing, what happens when hearing is restored? "The analogy I use is, if you weren't using your cottage and lent it to a friend. That friend gets comfortable, maybe rearranges the furniture, and settles in. They may not want to leave just because you've come back," explains Lomber.

He also plans to conduct research to see if these changes in the brain also happen to those who could hear at one time, or if auditory experience prevents the changes from occurring.

Provided by University of Western Ontario

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