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The plasticity of the human auditory midbrain

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Regular electrical stimulation of the central nucleus of inferior colliculus (ICC) in human can lead to a significant improvement in pitch perception, loudness growth function and temporal resolution over time. The psychophysical findings in AMI human subjects reveal high levels of plasticity in ICC neurons, which is not observed in this form at other locations in the auditory midbrain or brainstem. This shows that electrical stimulation of the ICC may improve coding properties towards normal conditions in a deafened system. Thus the appropriate type of stimuli for an auditory midbrain implant should not only elicit useful hearing but also induce positive plastic changes within the ICC.

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