

Frequency tuning of mechanical responses in the mammalian cochlea

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The search for mechanisms responsible for the high sensitivity and sharp frequency tuning of first-order auditory neurons has produced surprising results. The cochlea, the mammalian auditory receptor, responds to acoustic stimuli with a sharply frequency tuned, nonlinear vibration that enhances low level stimuli, but generates appreciable distortion. This highly sensitive mechanical response is achieved by an electro-mechanical feedback process in which outer hair cells reinforce cochlear motion at low stimulus intensities.