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“Neural fossils” within the human brain: a useful methodology to assess the efficiency of noise reduction algorithms in hearing aids?

While ear movements play a vital role in many animals for focusing attention and localizing sound sources, the human ear remains largely static. Nevertheless, remnants of the orienting ear movement system persist as a "neural fossil" in our brains, preserved for approximately 25 million years within our evolutionary lineage. Recent research has demonstrated that the activity of the superior auricular muscle, as part of this “neural fossil”, in individuals with normal hearing distinctly differentiates between challenging and less demanding auditory tasks. For the first time, this measure was utilized to objectively evaluate the efficiency of AI-powered noise reduction algorithms in hearing aids. These algorithms resulted in a significantly reduced electromyogenic activity of the superior auricular muscle, indicating that auditory relief diminishes the need to "prick up" the ears. Moreover, this auditory relief was globally observable in some participants through facial expressions enhanced via optic flow-based (self-supervised) motion magnification within camera data.