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Otoacoustic Emissions - 45 Years Later

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Message from the Guest Editors

Dear Colleagues,

Since David Kemp discovered OAEs 45 years ago, various models have been proposed to explain them. Kemp himself thought that OAEs were "the arrival at the basal termination of the cochlear transmission line of a backward travelling wave, created by reflection of a forward travelling wave at localized mechanical impedance discontinuities." But this doesn't account for a number of key features, and he thought there may be local active sources, possibly the hair cells. Similarly, there are some models which treat spontaneous OAEs as coming from local active oscillators. Yet Shera (2002) thinks that "SOAEs do not require the autonomous mechanical oscillation of the cellular constituents of the ear, but are cochlear standing waves, produced by the cochlea acting as an analog of a laser oscillator".

Are any of the local or global models close to the truth of the matter? This special issue aims to provide a wide-ranging assessment. Do the models fully explain OAEs? What about SOAEs in frogs and lizards? Is the coherent reflection theory fully consistent? Your contributions are eagerly sought.