



From Sound to Synapse: Physiology of the Mammalian Ear

By C. Daniel Geisler

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This comprehensive introduction to the functions of the mammalian ear describes the major steps by which sound is transformed into nerve impulses. The author leads the reader along the pathway followed by the acoustic signal. He starts with the collection of sound by the outer ear, proceeds to its transfer by the middle ear, and finally analyzes its modification in the inner ear, where the sound waves are transformed into nerve impulses. The book concludes with descriptions of some common ear impairments and a brief survey of the treatments available for them. At each stage of the ear's sound processing, Professor Geisler discusses the basic mechanisms, covering current theories and illustrating the discussions with experimental data. Although he uses an extensive array of analogies and mathematical models, he considers only the basic theory and the outputs of the models, not their derivation or formal usage. Where appropriate, related mechanisms in the ears of other vertebrates are considered.

From Sound to Synapse is written in lucid, accessible style that makes no assumptions about the scientific background of the reader apart from a basic familiarity with pulse generation by neurons. It will be of value to researchers and students in sensory physiology, neurophysiology, acoustics, bioengineering, psychoacoustics, and neuroscience. It will also benefit neurologists, audiologists, otolaryngologists, and other clinicians interested in a more detailed description of sound processing.

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About the Author

C. Daniel Geisler, Sc.D., is Emeritus Professor of Neurophysiology and of Electrical and Computer Engineering at the University of Wisconsin-Madison.

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