Scientific Foundations of Audiology: Perspectives from Physics, Biology, Modeling, and Medicine

Anthony T. Cacace, Emile de Kleine, Avril G. Holt, Pim van Dijk
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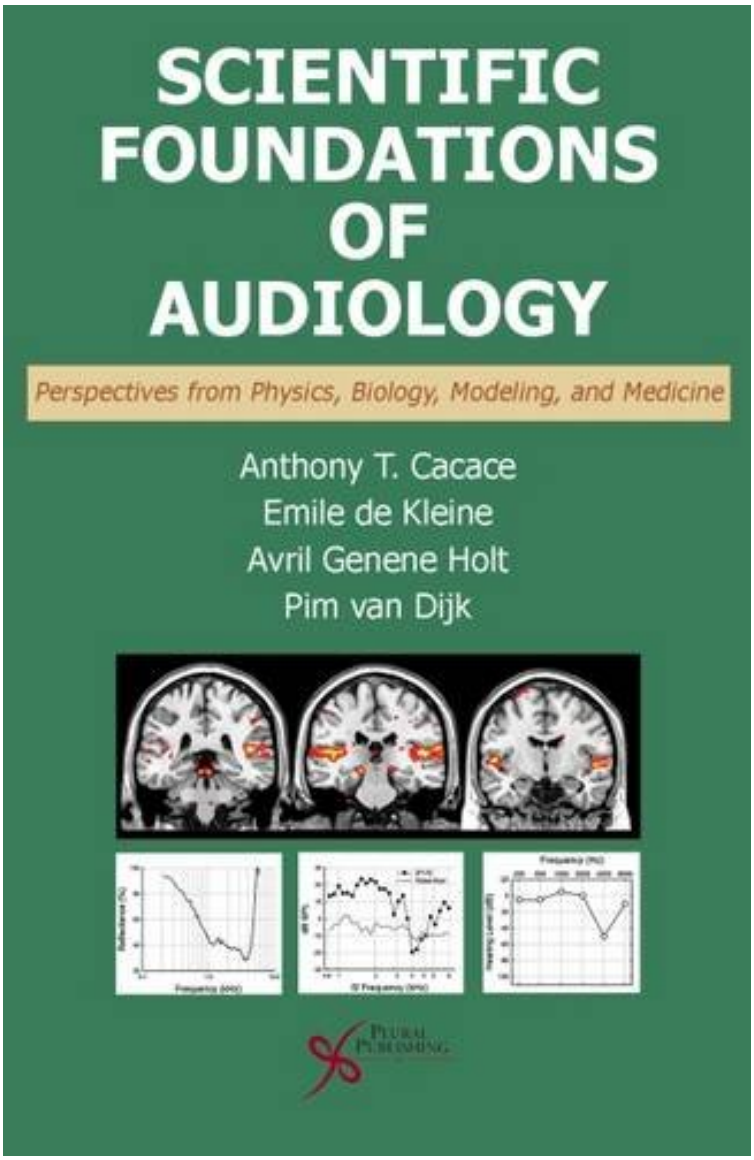

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Anthony T. Cacace, Emile de Kleine, Avril G. Holt, Pim van Dijk : Scientific Foundations of Audiology: Perspectives from Physics, Biology, Modeling, and Medicine before purchasing it in order to gage whether or not it would be worth my time, and all praised Scientific Foundations of Audiology: Perspectives from Physics, Biology,

Modeling, and Medicine:

With advancements across various scientific and medical fields, professionals in audiology are in a unique position to integrate cutting-edge technology with real-world situations. Scientific Foundations of Audiology provides a strong basis and philosophical framework for understanding various domains of hearing science in the context of contemporary developments in genetics, gene expression, bioengineering, neuroimaging, neurochemistry, cochlear and mid-brain implants, associated speech processing and understanding, molecular biology, physics, modeling, medicine, and clinical practice. Key features of this text include: Highly technical information presented in a cohesive and understandable manner (i.e., concepts without complex equations) Discussion of integrating newly developed technology within the clinical practice of audiology State-of-the-art contributions from a stellar array of international, world-class experts Scientific Foundations of Audiology is geared toward doctoral students in audiology, physics, and engineering; residents in otolaryngology, neurology, neurosurgery, and pediatrics; and those intermediaries between innovation and clinical reality. Contents Introduction Contributors Chapter 1. Middle-Ear Reflectance: Concepts and Clinical Applications Jont B. Allen, Sarah R. Robinson, Judi A. Lapsley Miller, Patricia S. Jeng, and Harry Levitt Chapter 2. Otoacoustic Emissions: Measurement, Modeling, and Applications Glenis Long and Bastian Epp Chapter 3. The Audiogram: What It Measures, What It Predicts, and What It Misses Anthony T. Cacace and Robert F. Burkard Chapter 4. Contemporary Issues in Vestibular Assessment Faith W. Akin, Owen D. Murnane, and Kristal Mills Riska Chapter 5. Genetics of Deafness: In Mice and Men Mirna Mustapha and Avril Genene Holt Chapter 6. Molecular-Based Measures for the Development of Treatment for Auditory System Disorders: Important Transformative Steps Toward the Treatment of Tinnitus Avril Genene Holt, Catherine A. Martin, Antonela Muca, Angela R. Dixon, and Magnus Bergkvist Chapter 7. Medical and Surgical Treatment of Inner Ear Disease Lawrence R. Lustig Chapter 8. The Future of Cochlear Implants Richard Tyler, Paul R. Kileny, Aniruddha K. Deshpande, Shruti Balvalli Deshpande, Camille Dunn, Marlan Hansen, and Bruce Gantz Chapter 9. Novel Approaches for Protection and Restoration of Hearing Min Young Lee and Yehoash Raphael Chapter 10. The Olivocochlear System: A Current Understanding of Its Molecular Biology and Functional Roles in Development and Noise-Induced Hearing Loss Douglas E. Vetter Chapter 11. Current Progress With Auditory Midbrain Implants Hubert H. Lim, James F. Patrick, and Thomas Lenarz Chapter 12. Perception and Psychoacoustics of Speech in Cochlear Implant Users Deniz Baskent, Etienne Gaudrain, Terrin Nichole Tamati, and Anita Wagner Chapter 13. Theoretical Considerations in Developing an APD Construct: A Neuroscience Perspective Dennis J. McFarland and Anthony T. Cacace Chapter 14. Normal Sound Processing: fMRI Stefan Uppenkamp and Roy D. Patterson Chapter 15. Tinnitus Neurophysiology According to Structural and Functional Magnetic Resonance Imaging Dave R.M. Langers and Emile de Kleine Index

About the AuthorAnthony T. Cacace, PhD, is an audiologist and research professor of communication sciences and disorders at Wayne State University. He was staff scientist at the Advanced Imaging Center, the Neurosciences Institute, Department of Neurology, and was director of oto-neurological research in the Division of Otolaryngology at Albany Medical College before transitioning to Wayne State University. Dr. Cacace's interests include auditory processing disorders, psychoacoustics, electroacoustics (otoacoustic emissions, middle ear power reflectance), electrophysiology, neuroimaging, and tinnitus. Emile de Kleine, PhD, is a medical physicist-audiologist at the University Medical Center Groningen, The Netherlands. He earned his degree in applied physics at University of Twente, The Netherlands, and subsequently completed his doctorate and his training in audiology at the Department of Otorhinolaryngology at the University Medical Center Groningen. Dr. de Kleine's interests include otoacoustic emissions, cochlear implantation, tinnitus, and hyperacusis. Avril Genene Holt, PhD, is an Associate Professor of Anatomy and Cell Biology at Wayne State University School of Medicine and Research Health Specialist at the John D. Dingell VA Medical Center. Her research in the field of auditory neuroscience has included studies of the anatomy, physiology, neurochemistry and gene expression of the central auditory system. Specifically, she has expertise in deafness related changes in the gene expression and production of neurotransmitters and ion channels in the auditory brainstem. Dr. Holt has expanded her research to include identifying and measuring correlates of tinnitus, including examining neuronal activity, volume, and oxidative stress in central auditory pathways using imaging approaches. Her ultimate goal is to modulate neuronal excitability in an effort to prevent or reverse the maladaptive neuroplasticity frequently observed with conditions such as hearing loss and tinnitus. Pim van Dijk, PhD, is a medical physicist-audiologist at the University Medical Center Groningen and a professor of audiology at the University of Groningen, The Netherlands. His interests include the biophysics of hearing, clinical audiology, and the neuroscience of tinnitus. Dr. van Dijk's recent work includes otoacoustic emission research in various vertebrate species and neuroimaging studies in tinnitus patients.