

SPRINGER HANDBOOK OF AUDITORY RESEARCH
Series Editors: Richard R. Fay and Arthur N. Popper

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Auditory and Vestibular Efferents



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Auditory And Vestibular Efferents Auditory And Vestibular Efferents:

Auditory and Vestibular Efferents David K. Ryugo, Richard R. Fay, Arthur N. Popper, 2010-11-22 Efferent sensory systems have emerged as major components of processing by the central nervous system Whereas the afferent sensory systems bring environmental information into the brain efferent systems function to monitor sharpen and attend selectively to certain stimuli while ignoring others This ability of the brain to implement these functions enables the organism to make fine discriminations and to respond appropriately to environmental conditions so that survival is enhanced Our focus will be on auditory and vestibular efferents topics linked together by the inner ear connection The biological utility of the efferent system is striking How it functions is less well understood and with each new discovery more questions arise The book that is proposed here reflects our vision to share what is known on the topic by authors who actually have made the observations

Aging, neurogenesis and neuroinflammation in hearing loss and protection Marta Magariños, Marta Milo, Isabel Varela-Nieto, 2015-09-29 Worldwide 278 million people are estimated to have moderate to profound hearing loss Age related hearing loss also known as presbycusis affects approximately half of the population over 60 years old making it the second most common cause of disability in older people Hearing loss occurs when the sensory cells and neurons of the cochlea degenerate and die The vestibular system which holds the sense of balance shares a common embryonic origin with the cochlea and together conform the inner ear Balance problems are a trait of ageing to the point that balance ability is considered a sensor of physical decline and vestibular degeneration is the most common cause of falls in the elderly Still the molecular bases of ageing in the vestibular system have not been studied in detail Genetic and environmental factors contribute to the progression of age related hearing loss ARHL Being noise the main environmental noxious agent for human hearing in the industrialized societies There is no restorative treatment for deafness but functional replacement by means of prosthesis Therefore prevention and treatment of hearing loss is an unmet medical need To develop innovative medical strategies against hearing loss it is critical to understand the causes of ARHL and the essential pathways responsible for the manifestation of this complex disease In this research topic experts will discuss the stages and molecular elements of the damage and repair processes involved in ARHL from cellular processes to molecules involved in aging Oxidative stress takes a central stage as an essential element in the progression of injury and cell loss and a target for cell protection strategies Finally the mechanisms of action and the potential of novel therapies for hair cell repair and protection will be discussed along with drug delivery strategies Human Neuroanatomy James R. Augustine, 2008 This textbook provides a thorough and comprehensive overview of the human brain and spinal cord *Advances in Audiology and Hearing Science* Stavros Hatzopoulos, 2020-06-09 With chapters from audiology professionals from around the world *Advances in Audiology and Hearing Science* presented in two volumes provides an abundance of information on the latest technological and procedural advances in this ever improving field Volume 1 primarily focuses on revised clinical protocols and provides information on

new research to help guide decisions and criteria regarding diagnosis management and treatment of hearing related issues Topics include new clinical applications such as auditory steady state response wideband acoustic immittance otoacoustic emissions frequency following response noise exposure genomics and hearing loss and more The volume also includes a section on canine audiology allowing students and professionals a broader exposure to hearing science

The Senses: A Comprehensive Reference, 2020-09-30 The Senses A Comprehensive Reference Second Edition Seven Volume Set is a comprehensive reference work covering the range of topics that constitute current knowledge of the neural mechanisms underlying the different senses This important work provides the most up to date cutting edge comprehensive reference combining volumes on all major sensory modalities in one set Offering 264 chapters from a distinguished team of international experts The Senses lays out current knowledge on the anatomy physiology and molecular biology of sensory organs in a collection of comprehensive chapters spanning 4 volumes Topics covered include the perception psychophysics and higher order processing of sensory information as well as disorders and new diagnostic and treatment methods Written for a wide audience this reference work provides students scholars medical doctors as well as anyone interested in neuroscience a comprehensive overview of the knowledge accumulated on the function of sense organs sensory systems and how the brain processes sensory input As with the first edition contributions from leading scholars from around the world will ensure The Senses offers a truly international portrait of sensory physiology The set is the definitive reference on sensory neuroscience and provides the ultimate entry point into the review and original literature in Sensory Neuroscience enabling students and scientists to delve into the subject and deepen their knowledge All inclusive coverage of topics updated edition offers readers the only current reference available covering neurobiology physiology anatomy and molecular biology of sense organs and the processing of sensory information in the brain Authoritative content world leading contributors provide readers with a reputable dynamic and authoritative account of the topics under discussion Comprehensive style content in depth complex coverage of topics offers students at upper undergraduate level and above full insight into topics under discussion

Neurochemistry of the Vestibular System Alvin J. Beitz, 2023-06-09 Neurochemistry of the Vestibular System covers the proliferation of information stemming from the technical advances in the areas of molecular biology and neurochemistry It analyzes developments in areas that relate to the neurochemical organization of the hair cells in the inner ear the vestibular nerve the vestibular nuclear complex and central afferent and efferent vestibular projections The book also identifies future directions for research in the areas of neurotransmitters second messengers transcription factors and molecular mechanisms involved with both normal vestibular function and compensation

Psychoacoustic Music Sound Field Synthesis Tim Ziemer, 2019-08-06 This book provides a broad overview of spaciousness in music theory from mixing and performance practice to room acoustics psychoacoustics and audio engineering and presents the derivation implementation and experimental validation of a novel type of spatial audio system Discussing the physics of musical

instruments and the nature of auditory perception the book enables readers to precisely localize synthesized musical instruments while experiencing their timbral variance and spatial breadth Offering interdisciplinary insights for novice music enthusiasts and experts in the field of spatial audio this book is suitable for anyone interested in the study of music and musicology and the application of spatial audio mixing or those seeking an overview of the state of the art in applied psychoacoustics for spatial audio **Advances in Audiology and Hearing Science (2-volume set)** Stavros

Hatzopoulos,2022-06-07 With chapters from audiology professionals from around the world Advances in Audiology and Hearing Science presented in two volumes provides an abundance of valuable information on the latest technological and procedural advances in this ever improving field Volume 1 primarily focuses on revised clinical protocols and provides information on new research to help guide decisions and criteria regarding diagnosis management and treatment of hearing related issues Topics include new clinical applications such as auditory steady state response wideband acoustic immittance otoacoustic emissions frequency following response noise exposure genomics and hearing loss and more Volume 2 includes sections with material related to hearing devices hearing in special populations such as the children and the elderly as well chapters on the fast growing subfields of otoprotection and regeneration including pharmacologic otoprotection stem cells and nanotechnology Topics include early auditory development in children after cochlear implantation music therapy the effect of music on hearing health and auditory enhancement **Hearing** Stanley A. Gelfand,2017-11-22 This fully updated

and revised sixth edition of Hearing An Introduction to Psychological and Physiological Acoustics provides a comprehensive introduction for graduate students and professionals in audiology and other fields dealing with audition including hearing speech science psychology otolaryngology neuroscience linguistics and speech language pathology The sixth edition reflects the current status of this rapidly evolving multidisciplinary field of hearing science *Sensing in Nature* Carlos López-Larrea,2012-03-07 Biological systems are an emerging discipline that may provide integrative tools by assembling the hierarchy of interactions among genes proteins and molecular networks involved in sensory systems The aim of this volume is to provide a picture as complete as possible of the current state of knowledge of sensory systems in nature The presentation in this book lies at the intersection of evolutionary biology cell and molecular biology physiology and genetics Sensing in Nature is written by a distinguished panel of specialists and is intended to be read by biologists students scientific investigators and the medical community

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