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Editors

The Mammalian Auditory Pathway: Neurophysiology

With 75 Illustrations

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Series Preface

The *Springer Handbook of Auditory Research* presents a series of comprehensive and synthetic reviews of the fundamental topics in modern auditory research. It is aimed at all individuals with interests in hearing research including advanced graduate students, postdoctoral researchers, and clinical investigators. The volumes will introduce new investigators to important aspects of hearing science and will help established investigators to better understand the fundamental theories and data in fields of hearing that they may not normally follow closely.

Each volume is intended to present a particular topic comprehensively, and each chapter will serve as a synthetic overview and guide to the literature. As such, the chapters present neither exhaustive data reviews nor original research that has not yet appeared in peer-reviewed journals. The series focusses on topics that have developed a solid data and conceptual foundation rather than on those for which a literature is only beginning to develop. New research areas will be covered on a timely basis in the series as they begin to mature.

Each volume in the series consists of five to eight substantial chapters on a particular topic. In some cases, the topics will be ones of traditional interest for which there is a solid body of data and theory, such as auditory neuroanatomy (Vol. 1) and neurophysiology (Vol. 2). Other volumes in the series will deal with topics which have begun to mature more recently, such as development, plasticity, and computational models of neural processing. In many cases, the series editors will be joined by a co-editor having special expertise in the topic of the volume.

Richard R. Fay
Arthur N. Popper

Preface

This volume presents comprehensive overviews of our current understanding of the encoding, representation, and transformation of acoustic information within the auditory nerve and the various regions of the brain subserving the sense of hearing. The first chapter provides a general overview of the volume, presenting the integrated view of auditory neurophysiology from the periphery to the auditory cortex. Other chapters focus specifically on the auditory nerve, the various auditory nuclei of the brainstem, and the auditory cortex. One chapter is devoted to the electrophysiology of the human auditory system.

The purpose of this volume is to enable students, clinicians, and hearing researchers to gain a fundamental understanding of the patterns of neural response to sound at various levels of the nervous system, and of the neural pathways and interactions responsible for these patterns. The companion Volume 1 has parallel chapters presenting the neuroanatomy of the mammalian auditory system. Other volumes of the series will deal specifically with the cochlea, human and animal psychoacoustics, development, and the auditory neurophysiology and neuroanatomy of non-mammals.

Arthur N. Popper
Richard R. Fay

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