

Handbook of Brain Microcircuits

By Gordon Shepherd MD DPhil

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Microcircuits are the specific arrangements of cells and their connections that carry out the operations unique to each brain region. This resource summarizes succinctly these circuits in over 40 regions - enabling comparisons of principles across both vertebrates and invertebrates. It provides a new foundation for understanding brain function that will be of interest to all neuroscientists.

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Editorial Review

Review

"Few would question that one of the major frontiers being explored in neuroscience is the understanding of brain circuits and the ways in which they process information and generate behavior. This outstanding volume by Shepherd and Grillner is essential reading for anyone participating in that exploration or following it as an observer. The 52 chapters in this volume come from the world's leading experts on microcircuits, and it covers a wide span of topics ranging from chemotaxis in C. elegans to microcircuitry of the primate prefrontal cortex."
- John H. Byrne, PhD, June and Virgil Waggoner Chair and Chairman, Department of Neurobiology and Anatomy, The University of Texas Medical School at Houston, Houston, TX

"In the brain hardware sculpted throughout life by a dynamic and continuously updated software, endowed with a biological complexity absent in machines, microcircuits provide fundamental units of processing. In this outstanding book with 52 sharp and authoritative chapters, the hardware, software and interneuronal dialogue of such fundamental units are presented throughout the neuraxis, and from primates to invertebrates. Fascinating and highly informative, the comprehensive view offered by this book provides an essential and unique insight to all investigators engaged in the very demanding endeavour of understanding how the brain works, both concerning its diversity and its unifying concepts."
- Marina Bentivoglio, MD, Department of Neurological, Neuropsychological, Morphological and Motor Sciences, Faculty of Medicine, University of Verona, Verona, Italy

"Neural circuits have come of age. Long recognized to be the crucial link between the cellular and systems-level approaches to the nervous system, it is only recently that new optical, genetic and physiological techniques have allowed neural circuits to become accessible to systematic investigation. This book, written by the leading authorities in the field, celeb

About the Author

Professor Shepherd was educated at Iowa State College and Harvard Medical School during the 1950s, and received further training at Oxford University, the National Institutes of Health, and Karolinska Institutet. He has been at the Yale University School of Medicine since 1967, and has held visiting positions at the University of Pennsylvania, College de France, Ecole Normale Superieure, Oxford University, and Institut Pasteur. In his research he and his collaborators introduced computational modeling into studies of brain neurons, revealed a new type of neuronal interaction between dendrites, and showed how smells are represented in the brain by distinct patterns of activity. His work has led to new concepts of brain organization, including the term microcircuits to describe canonical types of neuronal interactions. He has been editor in chief of the Journal of Neurophysiology and the Journal of Neuroscience. His books include The Synaptic Organization of the Brain, Neurobiology, and Creating Modern Neuroscience: The Revolutionary 1950s. His Foundations of the Neuron Doctrine was the first to focus on the dramatic events around the classical work on the neuron in the 19th and early 20th century. The present work takes up the even more dramatic events around the work at mid-20th century that established the modern neuroscience of today.
Professor Grillner was educated at the University of Goteborg in Sweden. He is past Chairman if the Nobel

Assemply at the Karolinska Institutet. Currently he is Director of the Nobel Institute for Neurophysiology at the Karolinska Institutet in Stockholm.

Users Review

From reader reviews:

Hayden Roberts:

Now a day folks who Living in the era where everything reachable by interact with the internet and the resources in it can be true or not require people to be aware of each facts they get. How individuals to be smart in obtaining any information nowadays? Of course the answer then is reading a book. Looking at a book can help folks out of this uncertainty Information specially this Handbook of Brain Microcircuits book because this book offers you rich info and knowledge. Of course the knowledge in this book hundred % guarantees there is no doubt in it as you know.

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