



The New Visual Neurosciences (MIT Press)

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Visual science is the model system for neuroscience, its findings relevant to all other areas. This essential reference to contemporary visual neuroscience covers the extraordinary range of the field today, from molecules and cell assemblies to systems and therapies. It provides a state-of-the art companion to the earlier book *The Visual Neurosciences* (MIT Press, 2003). This volume covers the dramatic advances made in the last decade, offering new topics, new authors, and new chapters.

The New Visual Neurosciences assembles groundbreaking research, written by international authorities. Many of the 112 chapters treat seminal topics not included in the earlier book. These new topics include retinal feature detection; cortical connectomics; new approaches to mid-level vision and spatiotemporal perception; the latest understanding of how multimodal integration contributes to visual perception; new theoretical work on the role of neural oscillations in information processing; and new molecular and genetic techniques for understanding visual system development. An entirely new section covers invertebrate vision, reflecting the importance of this research in understanding fundamental principles of visual processing. Another new section treats translational visual neuroscience, covering recent progress in novel treatment modalities for optic nerve disorders, macular degeneration, and retinal cell replacement. *The New Visual Neurosciences* is an indispensable reference for students, teachers, researchers, clinicians, and anyone interested in contemporary neuroscience.

Associate Editors Marie Burns, Joy Geng, Mark Goldman, James Handa, Andrew Ishida, George R. Mangun, Kimberley McAllister, Bruno Olshausen, Gregg Recanzone, Mandyam Srinivasan, W. Martin Usrey, Michael Webster, David Whitney

Sections
Retinal Mechanisms and Processes
Organization of Visual Pathways
Subcortical Processing
Processing in Primary Visual Cortex
Brightness and Color
Pattern, Surface, and Shape
Objects and Scenes
Time, Motion, and Depth
Eye Movements
Cortical Mechanisms of Attention, Cognition, and Multimodal Integration
Invertebrate Vision
Theoretical Perspectives
Molecular and Developmental Processes
Translational Visual Neuroscience

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The New Visual Neurosciences (MIT Press) From The MIT Press Bibliography

- Sales Rank: #1414052 in Books
- Published on: 2013-10-25
- Original language: English
- Number of items: 1
- Dimensions: 10.88" h x 2.13" w x 8.50" l, 7.82 pounds
- Binding: Hardcover
- 1696 pages

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Editorial Review

Review

Of all our senses, vision is the most human. For those interested in how vision has evolved, how it develops, and how it works under normal and pathological conditions, this comprehensive volume is a must.

(Pasko Rakic, Duberg Professor of Neurobiology and Neurology, Yale University School of Medicine)

This cornucopia of visual delights contains an extraordinarily rich and authoritative review of the current state of knowledge of the most remarkable and most thoroughly researched of our senses. Werner and Chalupa have gathered together contributions from leading experts in every field, from the molecular biology of phototransduction to the neural computations that underpin our perception of the visual world. This huge book should and will grace the shelves of every serious student of vision.

(Colin Blakemore, Professor of Neuroscience and Philosophy and Director of the Centre for the Study of the Senses, School of Advanced Study, University of London, and Emeritus Professor of Neuroscience, University of Oxford)

Werner and Chalupa have done it again. This work will stand as a monumental and fundamental reference source for the visual sciences. Look no further for a book on the neuroscience of vision and place this volume in the middle of your desk. If it is not in here, don't worry about it.

(Michael S. Gazzaniga)

About the Author

John S. Werner is Distinguished Professor in the Departments of Ophthalmology and Vision Science and Neurobiology, Physiology, and Behavior at the University of California, Davis.

Leo M. Chalupa is Vice President for Research and Professor of Pharmacology and Physiology at George Washington University.

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