

CAMBRIDGE

E-books  
Available  
for most  
titles!

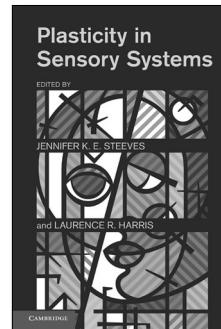
## Neuroscience Titles from Cambridge!

### Plasticity in Sensory Systems

Edited by Jennifer K. E. Steeves and Laurence R. Harris

This broad exploration of research in plasticity in sensory systems focuses on visual and auditory systems. Topics include visual and visuomotor learning, sensory adaptations as a result of visual loss in childhood, plasticity in the adult visual system, plasticity across the senses, and new techniques in vision recovery, rehabilitation, and sensory substitution.

\$120.00: Hardback: 978-1-107-02262-1: 304 pp.



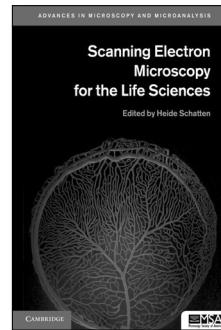
### Scanning Electron Microscopy for the Life Sciences

Edited by Heide Schatten

*Advances in Microscopy and Microanalysis*

A guide to modern scanning electron microscopy instrumentation, methodology and techniques, highlighting novel applications to cell and molecular biology.

\$120.00: Hardback: 978-0-521-19599-7: 274 pp.



### Understanding Autobiographical Memory

Theories and Approaches

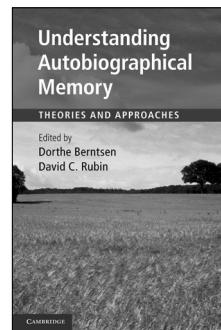
Edited by Dorthe Berntsen and David C. Rubin

"This collection of essays on autobiographical memory is superb, presenting both historical perspectives and cutting-edge research. The volume is essential reading for cognitive psychologists and would make a fine set of readings for a seminar on autobiographical memory."

*-Henry L. Roediger, III, James S. McDonnell Distinguished University Professor, Washington University, St. Louis*

\$99.00: Hardback: 978-1-107-00730-7: 381 pp.

\$38.99: Paperback: 978-0-521-18933-0



Prices subject to change.

[www.cambridge.org/us/computerscience](http://www.cambridge.org/us/computerscience)

800.872.7423

 @cambUP\_maths



CAMBRIDGE  
UNIVERSITY PRESS

CAMBRIDGE

E-books  
Available  
for most  
titles!

## Neuroscience Titles from Cambridge!

### Divided Brains

**The Biology and Behaviour of Brain Asymmetries**

Lesley J. Rogers, Giorgio Vallortigara, and  
Richard J. Andrew

"In the last 30 years it has become clearer and clearer that there are functional differences between the two sides of the brain in vertebrates and even in invertebrates, and that these differences sometimes reveal deep phylogenetic trends. It is unlikely that any other group of authors could have done such a remarkable synthesis of the current state of evidence on this topic."

*-Peter F. MacNeilage, University of Texas at Austin*

"This fascinating book has been written by three experts in the field. The different roles played by the two sides of the brain were thought to be a uniquely human characteristic, but the authors show that such lateralisation has ancient origins in biological evolution. They have written a superb book which I shall use as an invaluable source for years to come."

*-Sir Patrick Bateson, University of Cambridge*

\$125.00: Hardback: 978-1-107-00535-8: 240 pp.

\$58.00: Paperback: 978-0-521-18304-8

### Divided Brains

*The Biology and Behaviour of  
Brain Asymmetries*

Lesley J. Rogers  
Giorgio Vallortigara  
Richard J. Andrew



### Structural Information Theory

**The Simplicity of Visual Form**

Emanuel Leeuwenberg and  
Peter A. van der Helm

"Leeuwenberg and van der Helm have assembled the definitive statement on their influential theory of the coding of visual forms. SIT is the most thorough system available for capturing the essence of a structure's simplicity, so this volume will be required reading for those interested in this far-reaching and quintessentially Gestalt concept."

*-James Pomerantz, Rice University*

\$110.00: Hardback: 978-1-107-02960-6: 333 pp.



**Structural  
Information  
Theory**

*The Simplicity of Visual Form*

Emanuel Leeuwenberg  
and Peter A. van der Helm

*Prices subject to change.*

[www.cambridge.org/us/lifesciences](http://www.cambridge.org/us/lifesciences)

800.872.7423

 @cambUP\_lifesci



**CAMBRIDGE**  
UNIVERSITY PRESS

## DETAILED INFORMATION FOR CONTRIBUTORS

**AIMS AND SCOPE.** *Visual Neuroscience* is an international journal devoted to the publication of experimental and theoretical research on biological mechanisms of vision. A major goal of publication is to bring together in one journal a broad range of studies that reflect the diversity and originality of all aspects of neuroscience research relating to the visual system. Contributions may address molecular, cellular or systems-level processes in either vertebrate or invertebrate species. The journal publishes work based on a wide range of technical approaches, including molecular genetics, anatomy, physiology, psychophysics and imaging, and utilizing comparative, developmental, theoretical or computational approaches to understand the biology of vision and visuo-motor control. The journal also publishes research seeking to understand disorders of the visual system and strategies for restoring vision. Studies based exclusively on clinical, psychophysiological or behavioral data are welcomed, provided that they address questions concerning neural mechanisms of vision or provide insight into visual dysfunction.

**ORIGINALITY AND COPYRIGHT.** To be considered for publication in *Visual Neuroscience* a manuscript cannot have been published previously, nor can it be under review for publication elsewhere. Papers with multiple authors are reviewed with the assumption that all authors have approved the submitted manuscript and concur in its submission to *Visual Neuroscience*. A Transfer of Copyright Agreement must be executed before an article can be published. Government authors whose articles were created in the course of their employment must so certify in lieu of copyright transfer. Authors are responsible for obtaining written permission from the copyright owners to reprint any previously published material included in their article.

### MANUSCRIPT SUBMISSION AND REVIEW.

#### VISUAL NEUROSCIENCE ONLINE SUBMISSION

All submissions to *Visual Neuroscience* should proceed online:  
<http://mc.manuscriptcentral.com/cup/vns>

For information on the new online submission and review system, please read the Tutorial for Authors or the Tutorial for Reviewers

<http://mcv3help.manuscriptcentral.com/tutorials>

For questions on the submission and reviewing process please contact the Editor or Associate Editors

#### Editor

Benjamin E. Reese  
Neuroscience Research Institute, University of California  
Santa Barbara, CA 93106-5060, USA  
E-mail: vns@lifesci.ucsb.edu

#### Associate Editors

Lynne Kiorpes  
Center for Neural Science, New York University  
New York, NY 10003 USA  
E-mail: lynne@cns.nyu.edu

Peter D. Lukasiewicz  
Department of Ophthalmology  
Washington University School of Medicine  
Saint Louis, MO 63110 USA  
E-mail: lukasiewicz@vision.wustl.edu

Paul R. Martin  
Sydney Eye Hospital and  
Department of Ophthalmology  
University of Sydney  
Sydney, NSW 2001 Australia  
E-mail: prmartin@physiol.usyd.edu.au

David S. Williams  
Jules Stein Eye Institute, UCLA School of Medicine  
Los Angeles, CA 90095 USA  
E-mail: dswilliams@ucla.edu

Subsequent correspondence should refer to the Manuscript Reference Number, which will appear on the Acknowledgment sent to the corresponding author. Each manuscript will normally be reviewed by at least two referees with relevant scientific experience. Authors may suggest appropriate reviewers, but final selection of referees will be made by the Editor. Reviewers are asked to evaluate manuscripts for their scientific merit and clarity of presentation and to voice any concerns related to the

welfare of animal and human subjects. Every effort will be made to notify authors of the reviewers' recommendations within 4 weeks of receipt of a manuscript.

**MANUSCRIPT LENGTH AND EXCESS PAGE CHARGES.** Concisely written papers are more likely to receive favorable review than those judged to be excessively long, but page charges are not levied for any articles. Manuscripts submitted as Brief Communications should normally occupy no more than 4 published pages, figures included (approximately 13 manuscript pages).

**MANUSCRIPT PREPARATION AND STYLE.** Manuscripts must be in English and typed double-spaced. Allow margins of about 1" (20 mm), using a 5-space paragraph indent. Do not hyphenate words at the end of lines and do not justify right margins. Numbers should be spelled out when they occur at the beginning of a sentence; use Arabic numerals elsewhere. Abbreviations should be used sparingly and nonstandard abbreviations should be defined at their first occurrence. Metric system (SI) units should be used. Manuscripts that do not conform to the style of *Visual Neuroscience* may be returned to the corresponding author without review. Authors of accepted manuscripts will be required to follow the instructions to authors for Online Submission.

**MANUSCRIPT ELEMENTS AND ORDER.** Unless there are obvious and compelling reasons for variation (e.g. Review Articles, Brief Communications), manuscripts should be organized as follows:

**Title page.** The title should be concise, informative, and free of abbreviations, chemical formulae, technical jargon, and esoteric terms. This page should include (a) the full title of the article, (b) names and affiliations of all authors, (c) the name, mailing address, telephone and fax numbers, and E-mail address for editorial correspondence, (d) the address for correspondence if different from the foregoing address, (e) a short title of 50 characters or less, and (f) a list of the number of manuscript pages, number of tables, and number of figures.

**Abstract and keywords page.** The second page of the manuscript should include (a) the article's full title, (b) an abstract of no more than 300 words, and (c) up to 5 keywords associated with the content and major thrust of the article. The abstract should give a succinct account of the objective, methods, results, and significance of the research.

**Introduction.** This section begins on page 3 and should clearly state the objective of the research in the context of previous work bearing directly on the subject.

**Materials and methods.** This section should be brief but provide sufficient information to permit others to replicate the study. Pertinent details of species, apparatus and equipment, procedures and experimental design should be described.

**Data from images.** Methods of data acquisition, image processing, and figure preparation should be specified when images serve as the basis for quantitative data. This refers to optical, confocal, and CCD images as well as to images of gels, immunoblots, histological sections, etc.

*All experiments involving human subjects must be conducted in accordance with principles embodied in the Declaration of Helsinki (Code of Ethics of the World Medical Association). Experiments involving animal subjects must conform to the principles regarding the care and use of animals adopted by the American Physiological Society and the Society for Neuroscience. The editor may refuse papers that provide insufficient evidence of adherence to these principles.*

**Results.** The results should be presented clearly and concisely, using figures and tables to summarize or illustrate the important findings. Quantitative observations are often more effectively displayed in graphs than in tables.

**Discussion.** The discussion should summarize the major findings and explain their significance in terms of the objectives of the study and relationship to previous work. This section should present compact, clearly developed arguments rather than wide-ranging speculation or uncritical collation of earlier reports.

**Acknowledgments.** Use a separate page to recognize the contributions of individuals and supporting institutions.

**References.** *Visual Neuroscience* uses the author-date reference style of the *Journal of Physiology*. In the text, references should be cited as follows:

as shown by Herrick (1948)  
(Gordon et al., 1973)  
(Buhl & Peichl, 1986; Gordon et al., 1987)

The alphabetical list of references begins a new page, and must be typed double-spaced. Each in-text citation must have a corresponding reference and vice versa. List works by different authors who are cited within the same parentheses in chronological order, beginning with the earlier work. Journal titles should not be abbreviated. Only published articles and articles in press should appear in this list. Responsibility for the accuracy of references cited lies with the authors. Brief examples:

*Journal article*  
BUHL, E.H. & PEICHL, L. (1986). Morphology of rabbit retinal ganglion cells projecting to the medial terminal nucleus of the accessory optic system. *Journal of Comparative Neurology* **253**, 163-174.

*Book*  
HERRICK, C.J. (1948). *The Brain of the Tiger Salamander*. Chicago: University of Chicago Press.

*Chapter in an edited book*  
BONDS, A.B. & DEBRUYN, E.J. (1986). Inhibition and spatial selectivity in the visual cortex: The cooperative neuronal network revisited. In *Models of Visual Cortex*, ed. Rose, D. & Dobson, V.G., pp. 292-300. Chichester, England: John Wiley & Sons.

For more than one work by the same author(s) published in the same year, use (Jones, 1986a,b) in text and likewise in the reference section.

**Tables.** Tables should be numbered consecutively with Arabic numerals and each should be typed double-spaced on a separate page. All tables are to be submitted as separate files. A short explanatory title and column headings should make the table intelligible without reference to the text. All tables must be cited and their approximate positions indicated in the text.

**Figures and legends.** The number of figures should be the minimum necessary to make the essential points of the paper. Figures should be composed to occupy a single column (8.3 cm) or two columns (17 cm). Diagrams and illustrations must have a professional appearance and be prepared to permit reduction. To assure legibility, letters, numbers, and symbols on figures should have a minimum height of 1 mm when reduced. Photomicrographs must include a calibration bar; if symbols are used on micrographs, they must contrast sufficiently with the background to be clearly visible when published. Each figure must be cited and its approximate position clearly indicated within the text. Figures must be numbered consecutively and be accompanied by a descriptive caption typed double-spaced on a separate page from the figure. The captions, collected at the end of the manuscript, should concisely describe the figure and identify any symbols and/or calibration bars. Each figure must be submitted electronically as a separate file. Electronic versions of figures should be submitted as TIFF or EPS files at 100% of a suitable final size. Color images should be 300 dpi and prepared in RGB mode; halftone and grayscale figures should be 300 dpi; line artwork should be 1200 dpi. (Please note that each manuscript can have up to 200 MB of uploaded files, and that the LZW compression option in Adobe Illustrator is acceptable as well.)

**COPYEDITING AND ELECTRONIC PDF PROOFS.** The publisher reserves the right to copyedit manuscripts to conform to the style of *Visual Neuroscience*. The corresponding author will receive pdf proofs for final proofreading. No rewriting of the final accepted manuscript is permitted at the proof stage, and substantial changes may be charged to the authors.

**FREE PDF.** The corresponding author will receive a free pdf of their article.

## CONTENTS

### *Introduction*

NANSI JO COLLEY AND JOHN E. DOWLING

- 1** Spotlight on the evolution of vision

### *Perspectives*

DAN-E. NILSSON

- 5** Eye evolution and its functional basis

TIMOTHY H. GOLDSMITH

- 21** Evolutionary tinkering with visual photoreception

### *Review Article*

GERALD H. JACOBS

- 39** Losses of functional opsin genes, short-wavelength cone photopigments, and color vision—A significant trend in the evolution of mammalian vision