VOLUME 5

AUGUST 1990

NUMBER 2

# 

An international journal for empirical and theoretical research

EDITOR

KATHERINE V. FITE UNIVERSITY OF MASSACHUSETTS, AMHERST

CAMBRIDGE UNIVERSITY PRESS

# V I S U A L Neuroscience

(ISSN 0952-5238)

### EDITOR

KATHERINE V. FITE University of Massachusetts at Amherst

## **EDITORIAL BOARD**

Paola Bagnoli, University of Pisa, Italy Helga Kolb (Associate Editor), University of Utah Denis Baylor, Stanford University Peter Lennie, University of Rochester Mark Berkley, Florida State University James Mcllwain (Associate Editor), Brown University Frederick Miles, National Eye Institute Joseph Besharse, University of Kansas Nicholas Brecha, University of California, Los Angeles Ranney Mize, University of Tennessee, Memphis Vivien Casagrande, Vanderbilt University Ralph Nelson, National Institutes of Health Leo Chalupa, University of California, Davis William Newsome, Stanford University Max S. Cynader (Associate Editor), University of British Columbia Leo Peichl, Max Planck Institut, Frankfurt, Federal Republic Robert Desimone, National Institute of Mental Health of Germany Bodgan Dreher, University of Sydney, Australia John Robson (Associate Editor), University of Cambridge Stephen Easter, Jr., University of Michigan Andre Roucoux, University of Louvain, Brussels, Belgium Ralph Freeman, University of California, Berkeley Robert Shapley (Associate Editor), New York University Barrie Frost, Queen's University, Ontario, Canada Carla Shatz, Stanford University Roland Giolli, University of California, Irvine Peter Spear, University of Wisconsin James Gordon, Hunter College, New York Peter Sterling, University of Pennsylvania Shaul Hochstein, Hebrew University, Jerusalem, Israel Mriganka Sur, Massachusetts Institute of Technology William Hodos (Associate Editor), University of Maryland Tadaharu Tsumoto, Osaka University Medical School, Japan Klaus Peter Hoffman, Ruhr-Universitaet Bochum Leslie Ungerleider, National Institute of Mental Health Harvey Karten (Associate Editor), University of California, Jonathan Victor, Cornell University Medical School San Diego Rudiger Von Der Heydt, University Hospital, Zurich, Switzerland Bruce Knight (Associate Editor), Rockefeller University Stephen Yazulla, State University of New York, Stony Brook

Visual Neuroscience brings together in one journal a broad range of studies reflecting both the diversity and orginality of contemporary research and theory in basic visual neuroscience. Primary emphasis is placed upon studies which address the retinal and brain mechanisms that underlie visually-guided behaviors and visual perception. *Visual Neuroscience* publishes original papers utilizing neuroanatomical, neurophysiological, neurochemical, neuroimmunological, and behavioral methodologies as well as those involving computational models and computer-assisted theoretical formulations. Contributions involving molecular, cellular, local-circuit, and systems-level analyses in both vertebrate and invertebrate species will be presented. Appropriate research topics include: photoreception and transduction; retinal anatomy, physiology, and neurochemistry; developmental processes and patterns; subcortical visual pathways; oculomotor and visuomotor pathways and circuits; comparative visual system organization; thalamo-cortical pathways, visual cortex, and preceptual mechanisms. Manuscripts based exclusively upon psychophysical or behavioral data will be considered only if presented within the context of visual neural processes and/or mechanisms.

Visual Neuroscience is indexed in Current Contents/Life Sciences; Science Citation Index; Ocular Resources Review; and in the SCISEARCH and ISI/BIOMED databases.

Editorial Office: Katherine V. Fite, Editor, *Visual Neuroscience*, Neuroscience and Behavior Program, Department of Psychology, Tobin Hall, University of Massachusetts, Amherst, MA 01003, USA. Telephone (413) 545-1503. Electronic mail: KAYFITE @ UMASS.

Publishing, Subscription and Advertising Offices: Cambridge University Press, 40 West 20th Street, New York, NY 10011, USA; and (outside the US and Canada) Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, England.

**Published Monthly.** Annual institutional subscription rates: US \$280.00 in the US and Canada; UK £182.00 elsewhere. Individual rates: US \$120.00 in the US and Canada; UK £84.00 elsewhere. Special rates for students (with certification of status): US \$80.00 in the US and Canada; UK £58.00 elsewhere. Prices include postage and insurance.

### Copyright © 1990 Cambridge University Press

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying or otherwise, without permission in writing from Cambridge University Press. *Photocopying information for users in the U.S.A.:* The Item-Fee Code for this publication (0952-5238/90 \$5.00 + .00) indicates that copying for internal or personal use beyond that permitted by Sec. 107 or 108 of the U.S. Copyright Law is authorized for users duly registered with the Copyright Clearance Center (CCC) Transaction Reporting Service, provided that the appropriate remittance of \$5.00 per article is paid directly to: CCC, 27 Congress Street, Salem, MA 01970. Specific written permission must be obtained for all other copying.

Application to mail at second-class rates pending at New York, NY and additional mailing offices. Postmaster: send address changes in the US and Canada to: *Visual Neuroscience*, Journals Department, Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573.