

THE JOURNAL OF GENERAL PHYSIOLOGY

FOUNDED BY JACQUES LOEB

Editor

PAUL F. CRANFIELD

Associate Editors

OLAF S. ANDERSEN DAVID C. GADSBY
ROBERT SHAPLEY

Editorial Board

| | |
|---------------------|---------------------|
| QAIS AL AWQATI | MICHAEL L. JENNINGS |
| CLAY M. ARMSTRONG | JONATHAN C. KENTISH |
| BRUCE P. BEAN | PHILIP A. KNAUF |
| MICHAEL D. CAHALAN | EDWARD MOCZYDLOWSKI |
| PETER M. CALA | RICHARD L. MOSS |
| W. KNOX CHANDLER | GERRY S. OXFORD |
| DAVID E. CLAPHAM | JOHN C. PARKER |
| FREDRIC S. COHEN | EDWARD N. PUGH, JR. |
| DAVID C. DAWSON | LUIS REUSS |
| PAUL DE WEER | JOHN M. RUSSELL |
| ROBERT S. EISENBERG | JAMES A. SCHAFER |
| ALEXANDRE FABIATO | MARTIN F. SCHNEIDER |
| MARION FRANK | PHILIP R. STEINMETZ |
| SERGIO GRINSTEIN | ROGER C. THOMAS |
| BERTIL HILLE | DANIEL TRANCHINA |

Honorary Editors

| | |
|--------------------|------------------|
| L. R. BLINKS | VINCENT ALLFREY |
| A. K. SOLOMON | C. M. CONNELLY |
| FRANCIS D. CARLSON | LORIN J. MULLINS |

THE JOURNAL OF GENERAL PHYSIOLOGY IS THE OFFICIAL ORGAN OF THE SOCIETY
OF GENERAL PHYSIOLOGISTS AND IS EDITED IN COOPERATION WITH THE SOCIETY

Jeanne Hess *Copyediting and Production*

The appearance of the code at the bottom of the first page of an article in this journal indicates that the Publisher gives consent for individual copies of the article to be made for personal or internal use. This consent is given on the condition, however, that—for copying beyond the limited quantities permitted under Section 107 or 108 of the U.S. Copyright Law—the copier pays the stated per-copy fee, for this journal \$2.00 per article, through the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, a nonprofit organization. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

The Journal of General Physiology (ISSN 0022-1295) is published monthly for \$155 per year (postal surcharge Europe only, \$28) by The Rockefeller University Press, 222 E. 70th St., New York, NY 10021. Second-class postage paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to *The Journal of General Physiology*, Order Service, The Rockefeller University Press, 222 E. 70th St., New York, NY 10021. Copyright © 1990 by The Rockefeller University Press, 222 E. 70th St., New York, NY 10021. *Made in the United States of America*