Journal of Cellular Biochemistry

EXECUTIVE EDITORS

In the United States:

In Europe:

C. Fred Fox · Molecular Biology Institute, University of California, Los Angeles, CA 90024-1570 Gary S. Stein · Department of Cell Biology, University of Massachusetts Medical Center, 55 Lake Avenue North, Worcester, MA 01655 Max M. Burger · Friedrich-Miescher Institut, Postfach 2543, CH-4002 Basel, Switzerland

FIELD EDITORS

Garth L. Nicolson • Department of Tumor Biology (108), MD Anderson Cancer Center, 1515 Holcombe Boulevard, Houston, TX 77030 W. Jackson Pledger • Department of Cell Biology, Vanderbilt University School of Medicine, Nashville, TN 37232 James Watson • Department of Pathology, University of Auckland School of Medicine, Auckland, New Zealand

EDITORIAL BOARD

Richard G.W. Anderson Department of Cell Biology University of Texas Health Science Center Dallas, TX

Mina J. Bissell Department of Cellular and Molecular Biology Lawrence Berkeley Laboratory Berkeley, CA

Judith Campisi Department of Biochemistry Boston University Medical School Boston, MA

Kermit L. Carraway Department of Anatomy and Cell Biology University of Miami School of Medicine Miami, FL

Moses V. Chao Department of Cell Biology and Anatomy Cornell Medical School New York, NY

Richard A. Clark Depart-nert of Dermatology State University of New York at Stony Brook Health Science Center Stony Brook NY

David R. Clemmons Department of Medicine University of North Carolina Chapel Hill, NC

Carl M. Cohen Department of Cellular and Molecular Biology St Elizabeth's Hospital Boston, MA

Dennis D. Cunningham Department of Microbiology University of California Irvine, CA

Michael P. Czech Department of Biochemistry University of Massachusetts Medical Center Worcester, MA

Benoit De Crombrugghe Department of Molecular Genetics University of Texas M.D. Anderson Cancer Center Houston, TX

Pierre De Meyts Hagendorn Research Laboratory Gentofte, Denmark

Edward A. Dennis Department of Chemistry University of California-San Diego La Jolla, CA

Edward M. De RobertIs Department of Biological Chemistry University of California Los Angeles, CA

Rik Derynck Molecular Biology Genentech South San Francisco, CA

John H. Elder Department of Molecular Biology Research Foundation of Scripps Clinic La Jolia, CA

Charles H. Evans Tumor Biology Section National Cancer Institute National Institutes of Health Bethesda, MD

MANAGING EDITOR, 1992 ABSTRACT SUPPLEMENT

Ann-Marie Handy, Keystone Symposia, Drawer 1630, Silverthorne, CO 80498

Gerald D. Fasman Graduate Department of Biochemistry Brandeis University Waltham, MA Carl M. Feldherr Department of Anatomy and Cell Biology University of Florida College of Medicine Gainesville, FL

John H. Fessler Department of Biology University of California Los Angeles, CA

Richard Fittel Department of Biology Center for Molecular Genetics University of California-San Diego La Jolla, CA

Donald A. Fischman Department of Cell Biology and Anatomy Cornell University Medical College New York, NY lan Gibbons Kewalo Laboratory Honolulu, HI

David W. Golde Department of Medicine-Hernatology and Oncology University of California Los Angeles, CA

Ira D. Goldfine Diabetes and Endocrine Research Mt. Zion Hospital and Medical Center San Francisco, CA

Eugene Goldwasser Department of Biochemistry, University of Chicago Chicago, IL

Curtis C. Harris Laboratory of Human Carcinogenesis National Cancer Institute National Institutes of Health Bethesda, MD

Mark R. Haussler Department of Biochemistry University of Arizona College of Medicine Tucson, AZ

Norman B. Hecht Department of Biology Tufts University Medford, MA Brian Herman Department of Anatomy and Cell Biology University of North Carolina Chapel Hill, NC

Harvey Herschman Laboratory of Biomedical and Environmental Sciences University of California Los Angeles, CA

Richard A. Houghten Torrey Pines Institute for Molecular Studies San Diego, CA

R. Colin Hughes Medical Research Council National Institute for Medical Research London, United Kingdom

Tony Hunter Molecular Biology and Virology Lab Salk Institute San Diego, CA Gary R. Jacobson Department of Biology Boston University Boston, MA

Gary L. Johnson Department of Pediatrics and Basic Science National Jewish Medical Center Denver, CO Edward Kellenberger Biozentrum

Biozentrum University of Basel Basel, Switzerland Michael Klagsbrun Biological Chemistry and Surgery The Children's Hospital Harvard Medical School

Boston MA Jane B. Lian Department of Cell Biology University of Massachusetts Medical Center Worcester, MA

Marc E. Lippman Lombardi Cancer Center Georgetown University Washington, DC

Bruce E. Magun School of Medicine Department of Cell Biology and Anatomy Oregon Health Science University Portland, OR

Harold L. Moses Department of Cell Biology Vanderbilt University School of Medicine Nashville, TN

Mart Nilsen-Hamilton Department of Biochemistry/Biophysics Iowa State University Ames, IA

Anthony W. Norman Division of Biomedical Sciences University of California Riverside, CA Dale L. Oxender

Department of Biotechnology Warner-Lambert Company Ann Arbor, MI

Richard G. Painter Department of Biochemistry University of Texas Health Center Tyler, TX

Roger Patient King's College Division of Biomolecular Sciences London, United Kingdom

Sheldon Penman Department of Biology Massachusetts Institute of Technology Cambridge, MA

Paul F. Pilch Department of Biochemistry Boston University School of Medicine Boston, MA Archie W. Prestayko Ethical Pharmaceutical Division

Liphomed Rosemont, IL

Phillips W. Robbins Department of Biochemistry Center for Cancer Research Massachusetts Institute of Technology Cambridge, MA

Gideon A. Rodan Bone Biology and Osteoporosis Research Merck Sharp & Dohme Research Labs West Point, PA

Russell Ross Department of Pathology University of Washington, Seattle, WA Milton H. Saler Department of Biology University of California-San Diego La Jolla, CA Alan R. Sattiel Pharmaceutical Research Division Parke-Davis Ann Arbor, Mi Eric M. Shooter Department of Neurobiology Stanford University School of Medicine Stanford, CA Robert H. Singer Department of Cell Biology University of Massachusetts Medical School Worcester, MA Gail E. Sonenshein Department of Biochemistry Boston University Medical School Boston, MA Thomas C. Speisberg Department of Biochemistry and Molecular Biology Mayo Clinic and Graduate School of Medicine Rochester, MN Eric J. Stanbridge Department of Microbiology and Molecular Genetics University of California-Irvine College of Medicine Irvine, CA E. Richard Stanley Department of Microbiology and Immunology Albert Einstein College of Medicine Bronx, NY Donald F. Steiner Howard Hughes Medical Institute University of Chicago Chicago, IL Charles D. Stiles Department of Microbiology and Molecular Genetics Harvard Medical School Boston, MA Marvin L. Tanzer Department of Biostructure and Function University of Connecticut Health Center Farmington, CT Jean Paul Thiery Laboratoire de Physiopathologie du Développement ONRS - ENS Paris, France George Todaro Oncogen Seattle, WA Milan R. Uskokovi'c Natural Products Chemistry Hoffman-La Roche Inc Nutley, NJ Klaus Von Der Mark MPG Gruppe Rheumatologie/Bindegewebsforschung Erlangen, Germany D. Martin Watterson Department of Pharmacology Howard Hughes Medical Institute Vanderbilt University Nashville, TN Sherman Weissman Department of Human Genetics Yale University School of Medicine New Haven, CT Karel W.A. Wirtz Department of Biochemistry State University of Utrecht Utrecht, Netherlands

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Wiley-Liss, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$00.50 per copy, plus \$00.25 per pate is paid directly to CCC, 27 Congress Street, Salem, MA 01970, 0730-2312/91 \$00.50 +.25.

Journal of Cellular Biochemistry (ISSN 0730-2312) is published monthly by Wiley-Liss, Inc., a division of John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012. Send subscription

Advertising Inquiries should be addressed to Roberta Frederick, Advertising Sales Manager, Wiley-Liss, Inc., 605 Third Avenue, New York, NY 10158-Subscription Price: Volumes 45, 46, and 47 (12 issues), plus Supplement 15 (8 volumes), 1991: \$855 in US; \$1,035 outside US. All subscriptions outside the U.S. will be sent by air. Payment must be made in US dollars drawn on a US bank. Change of Address: Please forward to the subscriptions address listed above six weeks prior to move; enclose present mailing label with change of address. Claims for Missing Issues: Claims for undelivered copies will be accepted only after the following issue has been received. Please enclose a copy of the mailing label or cite your subscriber reference number in order to expedite handling. Missing copies will be supplied when losses have been sustained in transit and where reserve stock permits. Send claims to John Wiley & Sons, Inc., Customer Service, 605 Third Avenue, New York, NY 10158. If claims are not resolved satisfactorily, please write to Susan Malawski, Director, Subscriptions Fulfillment and Distribution, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158. Cancellations: Subscription cancellations will not be accepted after the first issue has been mailed. Postmaster: Send address changes to Journal of Cellular Biochemistry, Susan Dorato, Subscription Fulfillment and Distribution, John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158.

Indexed by: Current Contents/Life Sciences

Science Citation Index

Scisearch

Chemical Abstracts

Index Medicus

BIOSIS Data Base

Excerpta Medica

Information Retrieval, Ltd.

Cambridge Scientific Abstracts • Institute for Scientific Information-Soviet Union • Current Opinion in Orthopedics • Current Opinion in Pediatrics • Current Opinion in Cell Biology • Current Opinion in Rheumatology • Reference Update.

The paper on which this journal is printed adheres to the requirements for library/archival stability. Printed in the United States of America.