Journal of Cellular Biochemistry

EXECUTIVE EDITORS

In the United States: 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

In Europe: 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 Camplsi
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
Department 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
Chapet 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

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 Robertls
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 Jolla, CA

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

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 Firtel

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

ian Gibbons Kewalo Laboratory Honolulu, HI

David W. Golde
Department of Medicine-Hematology 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

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

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

Edward Kellenber Biozentrum University of Basel Basel, Switzerland

Michael Klagabrun Biological Chemistry and Surgery The Children's Hospital Harvard Medical School Boston, MA

Jane B. Llan
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

Marit Nilsen-Hamilton
Department of Biochemistry/Biophysics
Iowa State University

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

Dale L. Oxender
Department of Biotechnology Warner-Lambert Compar 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

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. Saltiel Pharmaceutical Parke-Davis Ann Arbor, Mi

Eric M. Shooter
Department of Neurobiology
Stanford University School of Medicine
Stanford, CA

Stantoro, co...

Robert H. Singer
Department of Cell Biology

Adaptachusetts Medical School

Gall E. Sonenshein
Department of Biochemistry
Boston University Medical School
Boston, MA

Thomas C. Spelsberg
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

Chartes D. Stitles
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 CNRS - 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 page 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., 41 East 11th Street, New York, NY 10003, a division of John Wiley & Sons, Inc., Subscription Department, 7th Floor, 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

Copyright @ 1991 Wiley-Liss, Inc.