Cancer Research

OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

Editor
Peter N. Magee

Managing Editor
Margaret Foti

Assistant Managing Editor
Mary Anne Menzite

Senior Staff Editor
Heidi M. Pusztay

Staff Editors
Ellen M. McDonald
Mark G. Hall

Editorial Assistants
Martha Michael
Joseph Heim

Administrative Secretary
Margaret A. Pickels

Editorial Secretaries
Sandra E. Pettie
Theresa A. Griffith
Mary Ellen Pirring

American Association for Cancer Research, Inc.

Executive Director
Margaret Foti

Executive Assistant
Adam D. Blitstein

Executive Secretaries
Ruth E. Fortson
Elizabeth A. Moore

Secretary for Member Services
Robin E. Felder

Associate Editors
Stuart A. Aaronson
Samuel Abraham
William M. Baird
Allan Balmain
Mariano Barbacid
J. Carl Barrett
Stephen B. Baylin
John M. Bennett
Michael Bennett
Bijoy K. Bhuyan
June L. Biedler
Peter M. Blumberg
G. Tim Bowden
Luther W. Brady
Norman Breslow
Edward Brennick
Garrett M. Brodeur
Sam C. Brooks
Ronald N. Buick
C. Patrick Burns
Ed Cadman
Stephen K. Carter
Judith K. Christman
Samuel M. Cohen
David Colcher
Allan H. Conney
Geoffrey M. Cooper
Joseph G. Cory
Eugene R. DeSombre
T. Michael Dexter
Ralph E. Durand
Alan Eastman
Gertrude B. Elion
M. Essex
Nelson Fausto
Issaih J. Fidler
Kenneth A. Foong
Joseph F. Fraumeni, Jr.
Philip Frost
Eugene W. Gerner
Leo E. Gerweck
David M. Goldenberg
Sidney H. Golub
Saxon Graham
Joel S. Greenberger
J. W. Grisham
Daniel P. Griswold
Arthur P. Grodman
F. Peter Guengerich
Sen-itiroh Hakomori
Uli Hammerling
Philip C. Hanawalt
Nabil Hanna
Curis C. Harris
John C. Harshbarger
Stephen S. Hecht
Ingegerd Hellstrom
Brian E. Henderson
Gloria H. Heppner
Ronald B. Herberman
Russell Hilf
Vincent P. Holland
John T. Isaacs
Mark A. Israel
Rakesh K. Jain
Peter A. Jones
V. Craig Jordan
R. L. Juliano
Robert F. Kallman
David G. Kaufman
Ann R. Kennedy
Robert S. Kerbel
Young S. Kim
Alfred G. Knudson, Jr.
Kurt W. Kohn
Laurence N. Kolonel
Hilary Kopolowski
Donald W. Kufe
John S. Lazo
Brigid G. Leventhal
Jay A. Levy
Shutsung Liao
Victor Ling
Martin Lipkin
Gerald Litwack
Kenneth O. Lloyd
Dan L. Longo
Diana M. Lopez
Reuben Lotan
James W. Lown
David B. Ludwig
Tak W. Mak
Laurence J. Marton
Michael J. Mastrangelo
Kenneth B. McCormick
Myron R. Melamed
John Mendelsohn
Thomas C. Merigan
Christopher J. Michejda
John D. Minna
Malcolm S. Mitchell
John A. Montgomery
Harold L. Moses
Franco M. Muggia
Paul Nettleship
Garth L. Nicolosi
Theresa G. O'Brien
Peter J. O'Dwyer
Gilbert S. Omenn
C. Kent Osborne
Robert F. Ozols
Michael A. Pappadino, Jr.
Peter L. Pedersen
Anthony E. Pegg
Angel Pellicer
Sidney Pestka
W. J. Pledger
I. Bernard Weinstein
Charles W. Wclaff
Gerald N. Wogan
Sheldon Wolff
Sandra R. Wolman
Charles W. Young
Stuart H. Yuasa
Harald zur Hausen

John Mendelsohn
Thomas C. Merigan
Christopher J. Michejda
John D. Minna
Malcolm S. Mitchell
John A. Montgomery
Harold L. Moses
Franco M. Muggia
Paul Nettleship
Garth L. Nicolosi
Theresa G. O'Brien
Peter J. O'Dwyer
Gilbert S. Omenn
C. Kent Osborne
Robert F. Ozols
Michael A. Pappadino, Jr.
Peter L. Pedersen
Anthony E. Pegg
Angel Pellicer
Sidney Pestka
W. J. Pledger
I. Bernard Weinstein
Charles W. Wclaff
Gerald N. Wogan
Sheldon Wolff
Sandra R. Wolman
Charles W. Young
Stuart H. Yuasa
Harald zur Hausen

Cancer Research is sponsored by the American Association for Cancer Research, Inc. and receives major support from the American Cancer Society, Inc. Publication costs are also met by a grant from the Elan U. Pardee Foundation.

Subscription Information
Cancer Research is published twice a month, one volume per year, by the American Association for Cancer Research, Inc. Subscriptions include the Proceedings of the American Association for Cancer Research, issued in March of each year. Except for members of the American Association for Cancer Research, all subscriptions are payable in advance to Waverly Press, Inc., 428 E. Preston Street, Baltimore, Maryland 21202, to which all business communications, remittances (in United States currency or its equivalent), and subscription orders should be sent. In Japan, send orders and inquiries to (sole agent): USACO Corporation, Tsutsumi Bldg., 13-12, 1-chome, Shimbashi, Minato-ku, Tokyo 105, Japan; Tel. (03) 502-6471. Nonmembers of the American Association for Cancer Research within the United States may subscribe to the journal Cancer Research at the rate of $250.00 (individual nonmembers) or $280.00 (institutional nonmembers) per annual volume, including postage. Institutional and individual nonmembers outside of the United States should add $55.00 to their respective rates to offset second-class postage costs. Air mail and other means of delivery are available at extra charge; contact Waverly Press for information. Waverly Press should be notified of changes of address 60 days in advance; subscribers should give both their old and new addresses. Copies of the journal which are undeliverable because of address changes will be destroyed.
Notice to Members of the American Association for Cancer Research
Officers for 1988–1989
President: Lawrence A. Loeb, University of Washington, Seattle, WA 98195
President-Elect: Harris Busch, Baylor College of Medicine, Houston, TX 77030
Treasurer: Thomas J. King, Georgetown University Medical Center, Washington, DC 20007
Executive Director: Margaret Foti, AACR, 530 Walnut Street, 10th floor, Philadelphia, PA 19106.

Annual Dues
The annual dues of active members of the American Association for Cancer Research are $100.00 and they include a subscription to the journal Cancer Research. The regular subscription price of Cancer Research for members of the Association is $65.00 per annual volume. Corresponding members of the Association should add $55.00 to this rate to offset postage costs. Payment of dues and changes of address of members of the Association should be sent promptly to Margaret Foti, Executive Director, American Association for Cancer Research, 530 Walnut Street, 10th floor, Philadelphia, PA 19106 (215) 440-9300.

Back Issues and Single Copy Sales of the Journal
Copies of back stock of the journal Cancer Research may be ordered from Waverly Press, Inc. As long as supplies permit, single copies of Cancer Research will be sold by this company at $22.00 per copy for regular issues and $22.00 per copy for Supplement issues which contain material from conferences on topics related to cancer. The annual Proceedings of the American Association for Cancer Research is available at $20.00 per copy. Orders outside the U. S. and Canada add $2.00/copy to offset postage costs.

Advertisements in Cancer Research
Advertisement insertion orders and copy must be received 60 days prior to the date of issue in which the advertisement is to be published. The journal is mailed approximately 7 days preceding the date of issue. Inquiries about advertising should be directed to: Gary A. Walchli, Williams and Wilkins, 428 E. Preston Street, Baltimore, Maryland 21202. Telephone: 301-528-4280.

Historical Cover Themes
Readers are invited to submit themes (events, persons, institutions) for consideration for the illustrated covers of Cancer Research. Correspondence regarding suggested cover themes, or other matters regarding covers, should be addressed to the Cover Editor, Cancer Research Editorial Office.

Submission of Manuscripts
Manuscripts should be sent to the attention of: Dr. Peter N. Magee, Editor, Cancer Research Editorial Office, American Association for Cancer Research, 530 Walnut Street, 10th floor, Philadelphia, PA 19106 (215) 440-9300. If accepted, they will be listed under one of ten categories in the Table of Contents. Please specify in a covering letter which category applies to your submission: Basic Sciences section—biochemistry and biophysics, carcinogenesis, endocrinology, immunology, molecular biology and genetics, preclinical pharmacology and experimental therapeutics, tumor biology, virology; Clinical Investigations section—clinical studies, epidemiological studies. (Final categorization in the Table of Contents is at the discretion of the Editor.) Consult the "Instructions for Authors" printed in the January issue of the journal for other submission requirements. Reprints of the "Instructions" are available upon request.

Manuscript Processing Fee
Journal policy requires that a manuscript processing fee of $75.00 be assessed for each paper to defray the expenses incurred in the editorial review process. Each manuscript submitted for publication should be accompanied by a check (drawn on a U.S. bank) or purchase order for $75.00. Submission of a manuscript for review prepayment by Cancer Research at the above address. Note: If an author resubmits a manuscript that our Editors previously found unacceptable for publication, it is journal policy to consider it a new submission, assign it a new manuscript number, and charge the author another $75.00 handling fee to cover the cost of review.

Page Charges
Accepted manuscripts will be published with the understanding that the author(s) will pay a charge of $55.00 per printed page. Under exceptional circumstances, when no source of grant or other support exists, the author(s) may apply to Dr. Peter N. Magee, Editor, at the time of submission, for a waiver of the page charges. All such applications must be countersigned by an appropriate institutional official stating that no funds are available for the payment of page charges.

Copyright and Copyright Clearance Center
The Copyright Revision Act (PL 94-553), which became effective January 1, 1978, states that the copyright of a work is vested in the author from the moment of creation. So all authors who wish to publish in Cancer Research must formally transfer copyright to the proprietor of the journal, the American Association for Cancer Research, Inc., since these articles are considered to be in the public domain. However, it is necessary for these authors to sign the appropriate section of the transfer form. In the case of articles supported by federal grants or contracts, copyright transfer to the American Association for Cancer Research, Inc., is required. The federal government may retain a nonexclusive license to publish or republish such material.

The duly authorized agent of a commercial firm or commissioning organization must sign the transfer form if the author prepared the article as part of his or her official duties as an employee.

Appropriate forms for transfer of copyright will be sent routinely with acknowledgment of receipt of manuscripts for review. They may also be requested from the Cancer Research Editorial Office. The journal will not publish a paper unless the form is properly completed and signed.

Copies of articles for which the American Association for Cancer Research, Inc., owns the copyright may be made for personal or internal use, provided that the copier pay the per-copy fee of $2.00 through the Copyright Clearance Center, Inc. This Center is a nonprofit organization through which individuals and institutions may reimburse a copyright owner for photocopying journal articles beyond what is defined as "fair use" in Sections 107 and 108 of the Copyright Revision Act of 1978.

Those who wish to photocopy Cancer Research articles may report the number of copies they have made, together with the fee code 0008-5472/89 $02.00, to: Copyright Clearance Center, Inc., 27 Congress St., Salem, Mass. 01970. Remittances may be sent to the Center at the time of reporting or the Center will bill the user on a monthly basis. Deposit accounts and prepayment plans may also be arranged.

Between June 1978 and August 1983, a fee code appeared on the first page of all articles for which Cancer Research owned the copyright. For those issues, it is understood that any articles which did not carry this code are in the public domain.

Cancer Research is abstracted or indexed in Biological Abstracts, Chemical Abstracts, Index Medicus, Science Citation Index, and by the International Cancer Research Data Bank.

No responsibility is accepted by the Editors, by the American Association for Cancer Research, Inc., or by Waverly Press, Inc. for the opinions expressed by contributors or for the content of the advertisements.

Cancer Research (ISSN 0008-5472) is published twice a month for $65 per year (for members of the American Association for Cancer Research) or $250 and $280 per year (for nonmembers) by the American Association for Cancer Research, Inc. Second-class postage paid at Baltimore, Md. and additional mailing offices. POSTMASTER: Send address changes to Cancer Research, c/o Waverly Press, Inc., 428 E. Preston Street, Baltimore, Md. 21202.

Copyright 1989 by the American Association for Cancer Research, Inc.