Cancer Research
The Official Organ of the American Association for Cancer Research, Inc.

Associate Editors

Stuart A. Aaronson
Samuel Abraham
Richard H. Adamson
Vincent G. Altrey
J. Carl Barrett
Claudio Basilico
Stephen B. Baylin
L. Lee Bennett, Jr.
Michael Bennett
Alexander Bloch
Clara D. Bloomfield
Peter M. Blumberg
Gerald P. Bodey
Dans P. Bolognesi
Edward Bresnick
R. Wallace Brockman
Sam C. Brooks
Ronald N. Buck
Ed Cadman
Paul P. Carbone
Stephen K. Carter
Judith K. Christman
Samuel M. Cohen
Philip Cole
Allan H. Conney
Geoffrey M. Cooper
Edward M. Copeland, III
Thomas L. Dao
Etienne de Harven
Eugene R. Desombre
Vincent T. DeVita, Jr.
Leila Diamond
Benjamin Drewinko
Howard J. Eisen
Gertrude B. Elion
Mortimer E. Kirkland
Rose Ruth Ellison
M. Essex
Nelson Fausto
Isaija J. Feider
Joseph F. Fraumeni, Jr.
Emil J Frei, Jr.
Charlotte Friend
John J. Furth
Harry V. Gelboin
Leo E. Gerweck
John H. Glick
Mary Catherine Glick
David M. Goldenberg
Stanley Goldfarb
James H. Goldie
Joel S. Greenberger
J. W. Grisham
Daniel P. Griswold
Arthur P. Grollman
F. Peter Guengerich
DuPont Guerry, IV
Uli Hammertime
Philip C. Hanawalt
Robert E. Handschumacher
M. G. Hanna, Jr.
Gordon C. Hard
Curtis C. Harris
William A. Haseltine
Stephen S. Hecht
Ingegerd Hellstrom
Brian E. Henderson
Gloria H. Happe
Russell Hif
Vincent P. Hollander
Eleizer Huberman
Robert B. Hurtbert
Robert C. Jackson
Mary Ellen Jones
Peter A. Jones
R. L. Juliano
David G. Kaufman
Charles M. King
Alfred G. Knudson, Jr.
Kurt W. Kohn
Hilary Koprowski
Margaret L. Kripke
John Laszlo
Lloyd W. Lew
Peter Langley
Jay A. Levy
Shutsung Liao
Michael W. Lieberman
William Ljinsky
Lance A. Ljotta
Martin Lipkin
John B. Little
Gerald Litwack
Kenneth O. Lloyd
Lawrence A. Loeb
Daniel S. Longnecker
James W. Lown
David B. Ludlum
Veronica M. Maher
Clement L. Markert
Michael J. Mastrangelo
Alvin M. Mauer
Charles F. McKann
Daniel Medina
Mortimer L. Mendelsohn
Enricho Minh
John D. Minna
Malcolm S. Mitchell
John A. Montgomery
Harold L. Moses
Franco M. Muggia
Paul Nettesheim
A. Munro Neville
Garth L. Nicolson
Peter C. Novell
Thomas G. O'Brien
Albert H. Owens, Jr.
Anthony E. Pegg
Carl Peraino
Morton D. Prager
David M. Prescott
Janardan K. Reddy
Ralph A. Reiffeld
Dante G. Scarpelli
Jeffrey Schlo
James K. Sekirik
Robert Silber
Beatrice Singer
Francois M. Sirotnak
Thomas J. Slaga
Arthur A. Specter
Bernard S. Strauss
Louise C. Strong
Ian F. Tannock
E. Brad Thompson
George J. Todaro
Yale J. Topper
Paul O. T'so
Barbara J. Vierti
Jennifer Vonderhaar
Daniel D. Von Hoff
Lee W. Wattenberg
George Weber
Sidney Weinhouse
Arthur Weissbach
Gordon F. Whitmore
Sheklor Wolff
Charles W. Young
Stuart H. Yuspa

Subscription Information
Cancer Research is published monthly, one volume per year, by 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 agents): USACO Corporation, Tsutsumi Bldg., 13-12, 1-chome, Shibashi, Minato-ku, Tokyo 105, Japan; Tel. (03) 502-6471. Nonmembers of the American Association for Cancer Research within the United States and Canada may subscribe to the journal Cancer Research at the rate of $100.00 (individual nonmembers) or $175.00 (institutional nonmembers) per annual volume, including postage. Institutional and individual nonmembers outside of the United States and Canada should add $30.00 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 1984–1985

President: Isaiah J. Fidler, M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, P. O. Box HMB-173, Houston, Texas 77030

Vice President: Arthur B. Pardee, Dana-Farber Cancer Institute, 44 Binney Street, Boston, Mass. 02115.

Secretary-Treasurer: Robert E. Handschumacher, Yale University School of Medicine, 333 Cedar Street, New Haven, Connecticut 06510

Executive Director: Margaret Foti, Temple University School of Medicine, West Building, Room 301, Philadelphia, Pa. 19140

Annual Dues

The annual dues of active members of the American Association for Cancer Research are $75.00 and they include a subscription to the journal Cancer Research. The regular subscription price of Cancer Research for members of the Association is $50.00 per annual volume. Corresponding members of the Association should add $20.00 to the regular subscription price. Payment of dues and changes of address of members of the Association should be sent promptly to the office of the American Association for Cancer Research, c/o Margaret Foti, Executive Director, American Association for Cancer Research, Temple University School of Medicine, West Building, Room 301, Philadelphia, Pa. 19140 (215-221-4565).

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 $20.00 per copy for regular issues and $20.00 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.

Advertisements in Cancer Research

Advertisement insertion orders and copy must be received 60 days prior to the month of issue in which the advertisement is to be published. The journal is mailed on or about the 20th of the month preceding the month of issue. Inquiries about advertising should be directed to: Donald H. Nichols, Vice President, Journal Sales, Waverly Press, Inc., 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

Papers submitted for publication in Cancer Research and all other communications for the attention of the Editor should be sent to: Dr. Peter N. Magee, Editor, Cancer Research, Fels Research Institute, Temple University School of Medicine, Philadelphia, Pennsylvania 19140. Telephone: 215/221-4720. Cancer Research publishes original studies, including case reports, epidemiological studies, reviews, and short communications in the fields of cancer research, radiation biology; chemotherapy; immunology; molecular biology; virology; endocrinology; epidemiology and biostatistics; molecular biology; preclinical pharmacology and experimental therapeutics; radiobiology; virology; clinical investigations; and clinical trials. Papers are published in a separate section from papers in the basic sciences. Authors should consult the detailed "Instructions for Authors" printed in the January issue of the journal, copies of which 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. An invoice is sent to the author upon receipt of the manuscript. Review to determine acceptability will not be delayed pending payment of this fee.

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. Therefore, all authors who wish to publish in Cancer Research must formally transfer copyright to the proprietor of the journal, Cancer Research, Inc. It is understood by this transfer that the authors relinquish all exclusive rights of copyright ownership, including the rights of reproduction, derivation, distribution, sale, and display.

Authors who prepared their articles as part of their official duties as employees of the U. S. Federal Government are not required to transfer copyright to 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 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 Cancer Research 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., 21 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 Cancer Research, Inc., 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 monthly for $50 per year (for members of the American Association for Cancer Research) or $100 and $175 per year (for nonmembers) by 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 1985 by Cancer Research, Inc.