

Cancer Epidemiology Biomarkers & Prevention

September/October 1992
Volume One • Number Six
Pages 427-524
ISSN 1055-9965



A Publication of the
American Association for Cancer Research
Cosponsored by the
American Society of Preventive Oncology

AACR SPECIAL CONFERENCE IN CANCER RESEARCH

CHEMICALS, MUTATIONS, AND CANCER

Co-Sponsored by the National Cancer Institute of Canada



December 7-12, 1992
Banff Springs Hotel, Banff, Alberta, Canada

CONFERENCE CHAIRPERSON

Lawrence A. Loeb / Seattle, WA

SCIENTIFIC PROGRAM

Keynote Address

Lawrence A. Loeb / Seattle, WA

Lesion Structure

John M. Essigmann / Cambridge, MA
Kenneth Breslau / Piscataway, NJ
Paul Hopkins / Seattle, WA
Dinshaw J. Patel / New York, NY

The Biochemistry of Mutagenesis

G. Peter Beardsley / Cambridge, MA
Douglas E. Brash / New Haven, CT
Leonard C. Erickson / Maywood, IL
Arthur P. Grollman / Stony Brook, NY
B. Singer / Berkeley, CA

DNA Damage and Mutations by Oxygen Free Radicals

Robert A. Floyd / Oklahoma City, OK
Max Costa / Tuxedo, NY
Shosuke Kawanishi / Kyoto, Japan
Lawrence J. Marnett / Nashville, TN
Susumu Nishimura / Tsukuba, Japan

Replication and Transcription

Philip C. Hanawalt / Stanford, CA
Harrison Echols / Berkeley, CA
Myron F. Goodman / Los Angeles, CA
Thomas A. Kunkel / Research Triangle Park, NC
Daniel Reines / Atlanta, GA

DNA Repair Diseases

Veronica M. Maher / East Lansing, MI
R. Stephen Lloyd / Nashville, TN
Roger A. Schultz / Baltimore, MD
Christine A. Weber / Livermore, CA
Malcolm C. Paterson / Edmonton, Canada

Endogenous Mutagenesis

Leona D. Samson / Boston, MA
Mark Meuth / Salt Lake City, UT
Jeffrey H. Miller / Los Angeles, CA
Roeland M. Schaaper / Research Triangle Park, NC
Mutsuo Sekiguchi / Fukuoka, Japan

Genomic Instability

Thea D. Tlsty / Chapel Hill, NC
Frederick W. Alt / New York, NY
Curtis C. Harris / Bethesda, MD
Bernard S. Strauss / Chicago, IL
Ted Weinert / Tucson, AZ

Genetic Homeostasis

Robert H. Haynes / Toronto, Canada
Bruce Demple / Boston, MA
Carol A. Gross / Madison, WI
Peter Herrlich / Karlsruhe, Germany
Miroslav Radman / Paris, France

Information and Application Forms

American Association for Cancer Research
Public Ledger Building
620 Chestnut Street, Suite 816
Philadelphia, PA 19106-3483

(215) 440-9300

(215) 440-9313 (FAX)

Application Deadline: October 26, 1992

Cancer Epidemiology Biomarkers & Prevention

A Publication of the American Association for Cancer Research ■ Cosponsored by the American Society of Preventive Oncology

American Association for Cancer Research, Inc.

**Executive Director and
Director of Publications**
Margaret Foti

Publications Staff

**Associate Director
of Publications**
Mary Anne Mennite
Manager, Editorial Services
Heide M. Pusztay

Staff Editor
Linda Pote Musumeci

Editorial Assistants
Angela Barry
James D. Tang
Susan L. Arns

Supervisor, Manuscript Processing
Margaret A. Pickels

**Assistant Supervisor, Manuscript
Processing**
Theresa A. Griffith

Editorial Secretaries
Mary Ellen Purring
June A. Holloway
Valerie L. Taylor
Luz M. Torres

Administrative Staff

**Associate Director of
Administration**
Adam D. Blistein

Senior Accountant
Anthony P. Blengino

Financial Assistant
George L. Moore

**Meetings and Development
Coordinator**
Jeffrey M. Ruben

Public Information Coordinator
Jenny-Anne Martz

Executive Assistant for Programs
Ruth E. Fortson

Administrative Assistant
Robin E. Felder

Editorial Secretary
Diana F. Certo

Office of the Editor-in-Chief

Editorial Secretary
Cheryl C. Carter

Editor-in-Chief
Pelayo Correa

Associate Editors
Webster K. Cavenee
Joseph F. Fraumeni, Jr.
Ellen R. Gritz
Curtis C. Harris
Frederick P. Li
W. Thomas London
Thomas E. Moon
James A. Swenberg
Steven R. Tannenbaum
Alice S. Whittemore
Mimi C. Yu

Assistant Editor
Elizabeth T. H. Fontham

Editorial Advisory Board

David B. Abrams
Bruce K. Armstrong
Helmut Bartsch
Valerie Beral
John S. Bertram
Joan R. Bloom
William J. Blot
John D. Boice, Jr.
George E. Bonney
Ricardo R. Brentani
W. Robert Bruce
Eva Buiatti
Neil E. Caporaso
Lan Bo Chen
Philip Cole
K. Michael Cummings
Susan J. Curry
Eduardo DeStefani

Paul F. Engstrom
Virginia L. Ernster
Yu Tang Gao
E. Robert Greenberg
Raymond S. Greenberg
Peter Greenwald
John D. Groopman
F. Peter Guengerich
Clark W. Heath, Jr.
Stephen S. Hecht
Kari Hemminki
Rolando Herrero
Elizabeth A. Holly
Lars-Erik Holm
Robert N. Hoover
Geoffrey R. Howe
Barbara S. Hulka
Ronald H. Jensen
Fred F. Kadlubar
Mary Claire King
Leo J. Kinlen
Alfred G. Knudson, Jr.
Laurence N. Kolonel
Lance A. Liotta
Martin Lipkin
Richard R. Love
Thomas Mack
Frank L. Meyskens, Jr.
Christopher J. Michejda
John D. Minna
Ruggero Montesano
John J. Mulvihill
Nubia Muñoz
Alfred I. Neugut
Abraham M. Y. Nomura
Gilbert S. Omenn

C. Tracy Orleans
David L. Page
Frederica Perera
Nicholas L. Petrakis
John P. Pierce
Miriam C. Poirier
John D. Potter
Ross Prentice
Barbara Rimer
George C. Roush
Jose Russo
Jonathan M. Samet
Rodolfo Saracci
Mark H. Schiffman
David Schottenfeld
Paul A. Schulte
Roy E. Shore
Margaret R. Spitz
Louise C. Strong
Takashi Sugimura
G. Marie Swanson
Cesar Victora
Jürgen Wahrendorf
Nicholas Wald
Lee W. Wattenberg
I. Bernard Weinstein
John H. Weisburger
Noel S. Weiss
Walter C. Willett
Rodger J. Winn
Gerald N. Wogan
Sandra R. Wolman
Ernst L. Wynder
Witold Zatonski
Harald zur Hausen

Cancer Epidemiology, Biomarkers & Prevention is published bimonthly, one volume per year, by the American Association for Cancer Research, Inc. Except for members of the American Association for Cancer Research, all subscriptions are payable in advance to Waverly Press, Inc., 428 E. Preston St., Baltimore, Maryland 21202-3993, 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, Shimbashi 1-chome, Minato-ku, Tokyo 105, Japan; Tel. (03) 502-6471. Nonmembers of the American Association for Cancer Research within the United States may subscribe to Volume 1 of **Cancer Epidemiology, Biomarkers & Prevention** at the rate of \$85.00 (individual nonmembers) or \$130.00 (institutional nonmembers), including postage. Institutional and individual nonmembers outside of the United States should add \$20.00 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. Changes of address notification should be sent 60 days in advance and include both old and new addresses. Member subscribers should send address changes to: Member Services, American Association for Cancer Research, Inc., Public Ledger Bldg., 620 Chestnut St., Suite 816, Philadelphia, PA 19106-3483. Nonmember subscribers should notify Waverly Press of changes of address. Copies of the journal which are undeliverable because of address changes will be destroyed.

Copyright © 1992 by the American Association for Cancer Research, Inc.

This One



ANGR-96W-JLAQ



Notice to Members of the American Association for Cancer Research

Officers for 1992-1993

President: Lee W. Wattenberg, University of Minnesota, Minneapolis, MN 55455

President-Elect: Margaret L. Kripke, M.D. Anderson Cancer Center, Houston, TX 77030

Treasurer: Thomas J. King, Georgetown University Medical Center, Washington, DC 20007

Executive Director: Margaret Foti, AACR, Public Ledger Building, Suite 816, Philadelphia, PA 19106-3483

Annual Dues

The annual dues of active members of the American Association for Cancer Research are \$125.00 and they include a subscription to one AACR journal. The member rate for each additional journal is \$45.00. Corresponding members of the Association will be charged an appropriate fee to offset second-class 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, Public Ledger Building, 620 Chestnut Street, Suite 816, Philadelphia, PA 19106-3483; Telephone: (215)440-9300; FAX: (215)440-9313.

Back Issues and Single Copy Sales of the Journal

Copies of back stock of the journal may be ordered from Waverly Press, Inc. As long as supplies permit, single copies will be sold by this company at \$12.50 per copy. Orders outside the U.S. add \$1.50/copy to offset postage costs.

Advertisements

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 on approximately the 10th day of the month of issue. Inquiries about advertising should be directed to: Elizabeth Mosko, Williams and Wilkins, 428 E. Preston Street, Baltimore, MD 21202-3993. Telephone: (410)528-4005.

Copyright and Copyright Clearance Center

Authors who wish to publish in *Cancer Epidemiology, Biomarkers & Prevention* must formally transfer copyright to the proprietor of the journal, the American Association for 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 the American Association for Cancer Research, Inc., since these articles are considered to be in the public domain. 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 journal will routinely allow authors (or others with the permission of the authors) to include select parts of a copyrighted article in reviews, books, or subsequent papers, upon written request to the AACR Director of Publications. Requests to reproduce an article in its entirety will be considered on an individual basis and permission may be granted contingent upon payment of an appropriate copyright fee. All reproduction requests must include a brief description of intended use and a

stamped, self-addressed envelope. Third parties should obtain the approval of the authors *before* corresponding with the AACR.

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 articles may report the number of copies they have made, together with the fee code 1055-9965/92 \$02.00, to: Copyright Clearance Center, Inc., 27 Congress St., Salem, MA 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.

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

Cancer Epidemiology, Biomarkers & Prevention is indexed in *Current Contents/CM*[®].

Cancer Epidemiology, Biomarkers & Prevention (ISSN 1055-9965) is published bimonthly for \$85 (individual nonmembers) and \$130 (institutional nonmembers) per year by the American Association for Cancer Research, Inc., 428 East Preston Street, Baltimore, MD 21202-3993. Application to mail at second-class postage rates is pending at Baltimore, MD and additional mailing offices. POSTMASTER: Send address changes to *Cancer Epidemiology, Biomarkers & Prevention*, c/o Waverly Press, Inc., 428 East Preston Street, Baltimore, MD 21202-3993. This journal is printed on acid-free paper.