CANCER RESEARCH

This journal is sponsored by The American Association for Cancer Research, Inc.; The Anna Fuller Fund; The Jane Coffin Childs Memorial Fund for Medical Research; The Elsa U. Pardee Foundation; and The American Cancer Society.

HAROLD P. RUSCH, Editor-in-Chief
ELIZABETH B. POHLE, Technical Editor

<table>
<thead>
<tr>
<th>Editorial Advisory Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOSEPH C. AUB</td>
</tr>
<tr>
<td>JOHN J. BITTNER</td>
</tr>
<tr>
<td>AUSTIN M. BRUES</td>
</tr>
<tr>
<td>DALE R. COMAN</td>
</tr>
<tr>
<td>E. V. COWDRY</td>
</tr>
<tr>
<td>HUGH J. CREECH</td>
</tr>
<tr>
<td>M. DEMEREC</td>
</tr>
<tr>
<td>F. DURAN-REYNALS</td>
</tr>
<tr>
<td>JACOB FURTH</td>
</tr>
<tr>
<td>W. U. GARDNER</td>
</tr>
<tr>
<td>ALFRED GELLHORN</td>
</tr>
</tbody>
</table>

NOTICE TO MEMBERS OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

Officers for 1953–54

President: STANLEY P. REIMANN, Lunkenau Hospital Research Institute, Philadelphia 11, Pa.
Vice-President: HAROLD P. RUSCH, University of Wisconsin, Madison 6, Wis.

Changes of address of members of the American Association for Cancer Research should be sent promptly to Dr. Creecy for recording in the files of the Association and also to insure receipt of the journal CANCER RESEARCH by active members of the Association.

CANCER RESEARCH is published monthly for Cancer Research, Inc., by the University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. Subscriptions are by volume only and are payable in advance. The subscription price is $12.50 per volume; the price of single issues is $1.25. Orders for less than a full volume will be charged at the single-issue rate. Postage is prepaid by the publishers on all orders from the United States and its possessions. No extra charge is made for countries in the Pan American Postal Union. Postage is charged extra as follows: For Canada and Newfoundland, 50 cents per volume (total $1.50), 5 cents per issue (total $1.50); for all other countries in the Postal Union, $1.00 per volume (total $1.50), 10 cents per issue (total $1.50).

The following is an authorized agent:

For the British Empire, except North America and Australasia:

Cambridge University Press, Bentley House, 200 Euston Road, London, N.W. 1, England. Prices of subscriptions and of single copies may be had on application.

Business communications, remittances (in United States currency or its equivalent), and subscriptions should be addressed to THE UNIVERSITY OF CHICAGO PRESS, 5750 Ellis Avenue, Chicago 37, Illinois. All other communications should be addressed to Harold P. Rusch, M.D., Mc Ardle Memorial Laboratory, University of Wisconsin, Madison 6, Wisconsin.

Claims for missing numbers should be made within the month following the regular month of publication. The publishers expect to supply missing numbers free only when losses have been sustained in transit and when the reserve stock will permit.

No responsibility is accepted by the Editors, by Cancer Research, Inc., or by the publishers of CANCER RESEARCH for opinions expressed by contributors.

Notice to Subscribers: If you change your address, please notify us and your local postmaster immediately.

Entered as second-class matter, February 16, 1949, at the post office at Chicago, Ill., under the Act of March 3, 1879.

Acceptance for mailing at special rate of postage provided for in United States Postal Act of October 3, 1917, Section 1103, amended February 28, 1925, authorized June 1, 1930.

Copyright 1952 by Cancer Research, Inc.
CANCER RESEARCH

VOLUME 12 • JANUARY–DECEMBER 1952

JOSEPH C. AUB
JOHN J. BITTNER
AUSTIN M. BRUES
DALE R. COMAN
E. V. COWDRY
HUGH J. CREECH
M. DEMEREC
F. DURAN-REYNALS
JACOB FURTH
W. U. GARDNER
ALFRED GELLHORN

SAMUEL GRAFF
HARRY S. N. GREENE
JESSE P. GREENSTEIN
ERICH HIRSCHBERG
CHARLES HUGGINS
ARTHUR KIRSCHBAUM
ALBERT L. LEHNINGER
C. C. LITTLE
BALDUIN LUCKÉ
G. BURROUGHS MIDER
JAMES A. MILLER

IRA T. NATHANSON
C. P. RHOADS
A. J. RIKER
MICHAEL B. SHIMKIN
PAUL E. STEINER
C. CHESTER STOCK
ROBERT E. STOWELL
ALBERT TANNENBAUM
SHIELDS WARREN
ARNOLD D. WELCH

THE OFFICIAL ORGAN OF THE
AMERICAN ASSOCIATION FOR CANCER RESEARCH, INC.

Published by THE UNIVERSITY OF CHICAGO PRESS