

MOLECULAR CANCER THERAPEUTICS

The Journal of Cancer Drug Discovery & Preclinical Development

AN OFFICIAL JOURNAL OF THE **AACR** American Association
for Cancer Research



Editor-in-Chief

Beverly A. Teicher

Deputy Editors

Yubin Kang
Akash Patnaik
Puja Sapra
Paul Workman

Senior Editors

Timothy P. Cripe
Susan M. Galbraith
Iqbal S. Grewal
Peter J. Houghton
Candace S. Johnson
Ricky W. Johnstone
Razelle Kurzrock
David G. Kirsch
John S. Lazo
Joel Morris
Brion W. Murray
Dario Neri
Seth M. Pollack
Martine F. Roussel
Marco Ruella
Peter Senter
Louis F. Stancato

Editorial Staff

Managing Editor

Gregory Pavlovcak

Associate Editor

Richard W. Davis IV

Associate Journal Manager

Crystal Cheepudom

Editorial Staff

Nageena Laing
Meredith A. Kahn

Special Content Manager

Chris Vesci

Senior Production Editor

Jennifer L. Harper

Editorial Board

Robert T. Abraham
Rajesh Agarwal
Adriana Albini
Kari Alitalo
Suresh V. Ambudkar
Paul A. Andrews
Avi Ashkenazi
James E. Audia
André S. Bachmann
Raffaele Baffa
Rebecca G. Bagley

Albert S. Baldwin, Jr.
David Bearss
Darell D. Bigner
Michael L. Bittner
Thomas F. Bumol
Robert M. Campbell
David A. Cheresh
James G. Christensen
Steve R. Coats
Barbara A. Conley
Robert A. Copeland
Sayed S. Daoud
Marcia I. Dawson
William A. Denny
Paul Dent
Channing J. Der
Vishva M. Dixit
Ethan Dmitrovsky
Suzanne A. Eccles
Heinz-Herbert Fiebig
William D. Figg, Sr.
Paul B. Fisher
Antonio Fojo
Arthur E. Frankel
Lori Friedman
Stephen V. Frye
Simone Fulda
Ram N. Ganapathi
Michelle D. Garrett

(continued on next page)

Editorial Office: *Molecular Cancer Therapeutics* [ISSN: 1535-7163 (Print); ISSN: 1538-8514 (Online)] is published monthly, one volume per year, by the American Association for Cancer Research, Inc.; 615 Chestnut Street, 17th Floor, Philadelphia, PA 19106-4404. Periodicals postage paid at Philadelphia, PA, and additional mailing offices. POSTMASTER: Send address changes to *Molecular Cancer Therapeutics*, Member Services, AACR, 615 Chestnut St., 17th Floor, Philadelphia, PA 19106-4404 or E-mail: membership@aacr.org. Copyright 2020 by the American Association for Cancer Research, Inc. © The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

MOLECULAR CANCER THERAPEUTICS

Editorial Board (Continued)

Kathy Gately
Andreas J. Gescher
David A. Gewirtz
Amato J. Giaccia
William H. Gmeiner
I. David Goldman
Michael M. Gottesman
Lorraine J. Gudas
Yusuf A. Hannun
Stephen B. Howell
Donna Hurny
Rakesh K. Jain
Peter A. Jones
Craig T. Jordan
Juliane M. Jürgensmeier
Robert S. Kerbel
Andrew S. Kraft
Donald W. Kufe
Michihiko Kuwano
Zihai Li

Mary M. Mader
Daruka Mahadevan
Sanjay V. Malhotra
Sridhar Mani
Lawrence D. Mayer
David J. McConkey
Frank McCormick
Giovanni Melillo
Ira Mellman
Paul S. Mischel
Brett P. Monia
Nouri Neamati
Robert A. Newman
Barry R. O'Keefe
Pier Paolo Pandolfi
Ira Pastan
Steven R. Patierno
Maurizio Pellecchia
Gail D. Lewis Phillips

Andrew Phillips
Yves Pommier
C. Patrick Reynolds
Edward A. Sausville
Jeffrey Settleman
Shivendra V. Singh
David B. Solit
Michael B. Sporn
Pavel Strop
Bin Tean Teh
Carter Van Waes
Kristiina Vuori
Shaomeng Wang
David J. Waxman
Tai Wai Wong
Amy E. Wright
Jingwu Xie
Leigh S. Zawel
Yuesheng Zhang

Trusted and Timely Publication of Scientific Discoveries

AACR'S ESTEEMED JOURNAL COLLECTION

| | | | |
|---|--|--|---|
| CANCER DISCOVERY The essential information source to serve the diverse professional community in cancer science and medicine. Impact Factor: 26.370 | Cancer Epidemiology, Biomarkers & Prevention Translating science to populations Impact Factor: 5.057 | Cancer Immunology Research Illuminating the interplay of cancer and the immune system Impact Factor: 8.619 | Cancer Prevention Research The forefront of prevention science Impact Factor: 3.866 |
| Cancer Research The foundational cancer journal driving transformative science Impact Factor: 8.378 | Clinical Cancer Research The journal of clinical and translational research Impact Factor: 8.911 | Molecular Cancer Research Defining the molecular basis of malignancy and progression Impact Factor: 4.484 | Molecular Cancer Therapeutics The journal of cancer drug discovery & preclinical development Impact Factor: 4.856 |

Subscribe Today!
PubSales@AACR.org
Learn more at AACRJournals.org

AACR American Association
for Cancer Research®
FINDING CURES TOGETHER

MOLECULAR CANCER THERAPEUTICS

Publishing Information

AN OFFICIAL JOURNAL OF THE **AACR** American Association for Cancer Research

AACR Officers

Elaine R. Mardis, President
Antoni Ribas, President-Elect
Elizabeth M. Jaffee, Past President
William N. Hait, Treasurer
Margaret Foti, Chief Executive Officer

Publications Committee

Victor E. Velculescu, Chairperson
Dafna Bar-Sagi
Mary Helen Barcellos-Hoff
Michael E. Berens
John D. Carpten
Maura L. Gillison
Rakesh K. Jain
Pasi A. Jänne
Gerrit A. Meijer
Gordon B. Mills
Steffi Oesterreich
William Pao
Gloria M. Peterson
David R. Piwnica-Worms
Charles W.M. Roberts
Alice T. Shaw
Lillian L. Siu
Saraswati V. Sukumar
Toshikazu Ushijima

Publishing Staff

Publisher

Christine Battle

Director, Journal

Operations and Systems

Daniel S. Evanko

Director, Journal Sales and Marketing

Nicola L. Hill

Director, Digital Publishing

Mark Jacobson

Associate Director, Production

Production

Charlene Squibb

Assistant Director, Production

David Livewell

Assistant Director, Journal Marketing

Marketing

Joanna Arnold

Assistant Director, Institutional Sales & Outreach

Institutional Sales & Outreach

Karola Rac

Marketing and Creative Services

Senior Director

Paul Driscoll

Design Staff

Susan Moore

Scope

Molecular Cancer Therapeutics strives to be the top choice for publishing the best science in the discovery and preclinical development of novel therapeutic agents for oncology, preclinical studies of approved therapeutics, mechanisms of drug action, mechanisms of drug resistance, biomarkers of drug response, novel models and technologies, and occasional drug toxicity mechanisms. While the Journal's main focus is on small molecule and protein drugs, other molecular entities may be considered.

Molecular Cancer Therapeutics is abstracted and/or indexed in Current Contents/Clinical Medicine, MEDLINE, Science Citation Index, Scopus, and Web of Science.

Submission of Manuscripts

Online manuscript submission is welcomed at <http://mct.msubmit.net>. Before submitting a manuscript, please read the Instructions for Authors, which is available from the Journal's home page at <http://mct.aacrjournals.org>.

Publication Charges

Beginning with manuscripts submitted January 1, 2016 or after, articles will be published with the understanding that the author(s) will pay both a publication fee plus a color figure handling fee. Please see the Instructions for Authors, which are available from the Journal's home page at <http://mct.aacrjournals.org>.

Subscription Information

Nonmember Individuals

Subscriptions include print version with online access. Contacts listed below are for nonmember individual subscriptions.

USA and Rest of World (excluding Japan)

American Association for Cancer Research, 615 Chestnut Street, Philadelphia, PA 19106; 1-855-744-4667; pubsales@aacr.org

Japan

e-support@maruzen.co.jp;
journal@kinokuniya.co.jp; usaco@usaco.co.jp

International print subscriptions include cost of surface mail. Expedited mailing is available. Contact the American Association for Cancer Research for rates.

Site Licenses

For information about institutional site licenses, contact pubsales@aacr.org.

AACR Members

AACR members may opt to receive either a print subscription with online access to content or an online-only subscription. Contact membership@aacr.org or visit the membership page at www.aacr.org for more information.

Single Issue Sales

Subject to their availability, single or back issues may be purchased for \$60 (U.S.) or \$65 (outside the U.S.) each. The cost must be prepaid. Contact pubsales@aacr.org.

Claims

One-time claims for missing issues made within 120 days of the issue's publication will be honored, subject to availability. No credit or refund will be given if an issue is out of print at the time of claim.

AACR Members

membership@aacr.org

Nonmembers and Institutions

pubsales@aacr.org

Advertising Information

For information about advertising in AACR journals, contact Pharmaceutical Media Inc., 30 East 33rd St., 4th Floor, New York, NY 10016; 212-904-0360; Dsimone@pminy.com

Copyright and Permissions

Content printed in or disseminated by *Molecular Cancer Therapeutics* is protected by copyright. Authors who wish to publish material in *Molecular Cancer Therapeutics* must formally transfer copyright to the AACR. All authors must sign copyright transfer forms before the AACR can proceed with publication.

To read the complete AACR Copyright and Permissions Policy, visit <http://aacrjournals.org/content/authors/copyright-permissions-and-access>.