Molecular Cancer Research

Defining the Molecular Basis of Malignancy and Progression



AN OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

Editor-in-Chief Karen E. Knudsen

Deputy Editors for Reviews

Eric R. Fearon Cheryl L. Walker

Senior Editors

Cell Cycle and Senescence

J. Alan Diehl Julien Sage

Cell Death and Survival

James J. Manfredi

Chromatin, Epigenetics, and RNA Regulation

Jason S. Carroll W. Lee Kraus

DNA Damage and Repair

Robert Bristow Toshiyasu Taniguchi

Genomics

Elaine R. Mardis Mark A. Rubin

Metabolism

Massimo F. Loda

Oncogenes and Tumor

Suppressors Steven B. McMahon Jean Y.J. Wang

Jean 1.5. Wang

Signal Transduction Heide L. Ford William C. Hahn

Editorial Board

Andrew E. Aplin

Steven E. Artandi

Rene Bernards

Lawrence H. Boise

Carlos Caldas

George A. Calin

Junjie Chen

Edwin Cheung

James A. DeCaprio
James V. DeGregori

Yali Dou

Giulio F. Draetta

Donald L. Durden

Editorial Staff

Jen Zimmerman

Associate Editor

Clay Comstock

Editorial Staff Stephanie Seymour

Gregory Cosby

Assistant Managing Editor

Senior Production Editor

Martin Eilers

Christine M. Eischen

Alessandro Fatatis

Felix Y. Feng

Elsa R. Flores

Serge Y. Fuchs

Frank B. Furnari

Todd R. Golub

Joe W. Gray

H. Leighton Grimes

Thomas Helleday

Elizabeth P. Henske

Mien-Chie Hung

Jos Jonkers

Scott H. Kaufmann

Khandan Keyomarsi

Joseph L. Kissil

Ralf Kittler

Natasha Kyprianou

Xiaole Shirley Liu

Gregory D. Longmore

David Macpherson

Christopher A. Maher

Maureen E. Murphy

Senthil K. Muthuswamy

Michael Ohh

Joseph T. Opferman

Renata Pasqualini

Charles W.M. Roberts

Martine F. Roussel

William P. Schiemann

Chi Wai Eric So

Makoto Mark Taketo

Andrew Thorburn

Axel Ullrich

Sooryanarayana Varambally

Karen H. Vousden

Geoffrey M. Wahl

Qianben Wang

Stephen J. Weiss

Editorial Office: Molecular Cancer Research [ISSN: 1541-7786 (Print); 1557-3125 (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 Research, Member Services, AACR, 615 Chestnut Street, 17th Floor, Philadelphia, PA 19106-4404 or E-mail: membership@aacr.org. Copyright 2017 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).



Print ISSN: 1541-7786 • Online ISSN: 1557-3125

AACR Officers

Michael A. Caligiuri, President Elizabeth M. Jaffee, President-Elect Nancy E. Davidson, Past President William N. Hait, Treasurer Margaret Foti, Chief Executive Officer

Publications Committee

Mary Helen Barcellos-Hoff
Alberto Bardelli
Dafna Bar-Sagi
Michael E. Berens
René Bernards
John D. Carpten
Frederic J. de Sauvage
Sanjiv Sam Gambhir
Maura L. Gillison
Elizabeth M. Jaffee
Pasi A. Jänne
Roy A. Jensen
Jonathan D. Licht
Steffi Oesterreich
William Pao
Helen M. Piwnica-Worms
Charles W.M. Roberts
Lillian L. Siu
David B. Solit
Saraswati V. Sukumar
Toshikazu Ushijima
Victor E. Velculescu, Chairperson

Publishing Staff

Publisher

Christine B. Rullo

Director, Journal Operations and Systems Daniel S. Evanko

Director, Journal Sales and Marketing

Director, Digital Publishing

Associate Director, Production Charlene Squibb

Charlene Squibb

Assistant Director,
Institutional Sales &

Outreach Karola Rac

Marketing and Creative Services

Senior Director Paul Driscoll Design Staff

Scope

Molecular Cancer Research publishes articles describing novel basic cancer research discoveries of broad interest to the field. Studies must be of demonstrated significance, and the Journal prioritizes analyses performed at the molecular and cellular level that reveal novel mechanistic insight into pathways and processes linked to cancer risk, development, and/or progression. Areas of emphasis include all cancer-associated pathways (including cell-cycle regulation; cell death; chromatin regulation; DNA damage and repair; gene and RNA regulation; genomics; metabolism; oncogenes and tumor suppressors; and signal transduction), in addition to studies describing new molecular mechanisms and interactions that support cancer phenotypes.

Molecular Cancer Research 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://mcr.msubmit.net. Before submitting a manuscript, please read the Instructions for Authors, which is available from the Journal's home page at http://mcr.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://mcr.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 License

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

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 Research is protected by copyright. Authors who wish to publish material in Molecular Cancer Research 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.