

Cancer Immunology Research

Illuminating the Interplay of Cancer and the Immune System

AACR

American Association
for Cancer Research

AN OFFICIAL JOURNAL OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH

Editors-in-Chief

Robert D. Schreiber
Philip D. Greenberg

Executive Editor

Linda J. Miller

Deputy Editors

James P. Allison
Glenn Dranoff
Elizabeth M. Jaffee
Robert H. Vonderheide

Senior Editors

Maxim N. Artyomov
Nina Bhardwaj
Vincenzo Bronte
Xuetao Cao
Marco Colonna
Lisa M. Coussens
Sandra Demaria
Charles G. Drake
Olivera J. Finn
Lawrence H. Fong
F. Stephen Hodi
Carl H. June
Lewis L. Lanier
Crystal L. Mackall
Alberto Mantovani
Cornelis J.M. Melief
Evan Newell
Ellen Puré
Padmanee Sharma
Hiroshi Shiku
Mark J. Smyth
Pramod K. Srivastava
Cornelia L. Trimble
Benoît J. Van den Eynde
Louis M. Weiner
E. John Wherry

Biostatistics Editor

Rosemarie Mick

Editorial Board

Jean-Pierre Abastado
Gregory P. Adams
Gosse J. Adema
Steven M. Albelda
Frances R. Balkwill
Robert J. Binder
Renier Brentjens
Joshua Brody
Steven Burakoff
William E. Carson
Vincenzo Cerundolo
Adelheid Cerwenka
Lieping Chen
Mario P. Colombo
George Coukos
Tanja D. de Gruijl
Michele De Palma
I. Jolanda de Vries
Reno Debets
Nora L. Disis
Edgar G. Engleman
Dean W. Felsher
Robert L. Ferris
Soldano Ferrone
Ian H. Frazer
Gordon J. Freeman
Alan B. Frey
Wolf H. Fridman
Yang-Xin Fu

Dmitry I. Gabrilovich
Luca Gattinoni
Eli Gilboa
Sacha Gnjatich
Naoto Hirano
Yuhui Huang
Patrick Hwu
Darrell Irvine
Masahisa Jinushi
Yutaka Kawakami
Khashayarsha Khazaie
Alexander Knuth
Vijay Kuchroo
Peter P. Lee
Haiyan Liu
Ignacio Melero
Miriam Merad
Jeffrey S. Miller
James J. Mulé
David H. Munn
Hiroyoshi Nishikawa
Kunle Odunsi
Pamela S. Ohashi
Suzanne Ostrand-Rosenberg
Karolina Palucka
Drew M. Pardoll
Mikael J. Pittet
Scott K. Pruitt
Gabriel A. Rabinovich

David H. Raulet
Nicholas P. Restifo
Cliona M. Rooney
Alexander Y. Rudensky
Michel Sadelain
Ugur Sahin
Shimon Sakaguchi
John H. Sampson
Noriyuki Sato
Michael Schmitt
Charles L. Sentman
Arlene Sharpe
Michail Sitkovsky
Craig L. Slingluff
Mark X. Sliwkowski
Eduardo M. Sotomayor
Daniel E. Speiser
Melody A. Swartz
Mario Sznol
Hideaki Tahara
Giorgio Trinchieri
Shannon J. Turley
Sjoerd H. van der Burg
Richard G. Vile
Eric Vivier
Irving L. Weissman
Kai W. Wucherpfennig
Cassian Yee
Weiping Zou

Editorial Staff

Associate Editor

Adriana D. Benavides

Assistant Editor

Dan A. Erkes

Associate Managing Editor

Jen Zimmerman

Editorial Associate

Brittany Rubio

Special Content Manager

Chris Vesce

Senior Production Editor

Corinne Mooney

In collaboration with the Cancer Research Institute

Editorial Office: *Cancer Immunology Research* [ISSN: 2326-6066 (Print); ISSN: 2326-6074 (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 *Cancer Immunology Research*, AACR Member Services, 615 Chestnut St., 17th Floor, Philadelphia, PA 19106-4404 or E-mail: membership@aacr.org. Copyright 2019 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).

Cancer Immunology Research

Publishing Information

AACR
American Association
for Cancer Research

Print ISSN: 2326-6066 • Online ISSN: 2326-6074

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
Gloria M. Petersen
David R. Piwnicka-Worms
William Pao
Charles W.M. Roberts
Alice T. Shaw
Lillian L. Siu
Saraswati 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 of Digital

Publishing

Mark Jacobson

Associate Director,

Production

Charlene Squibb

Assistant Director,

Journal Marketing

Joanna Arnold

Assistant Director,

Institutional Sales &

Outreach

Karola Rac

Marketing and Creative

Services

Senior Director

Paul Driscoll

Design Staff

Susan Moore

Scope

Cancer Immunology Research publishes outstanding original articles reporting major advances in cancer immunology that span the discipline from basic investigations in host-tumor interactions to developmental therapeutics in model systems, early translational studies in patients, and late-stage clinical trials. The Journal disseminates knowledge of immunology to the cancer research community, catalyzing cross-disciplinary work that yields a deeper understanding of the host-tumor relationship, more potent cancer treatments, and improved clinical outcomes.

Cancer Immunology 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://cir.msubmit.net>. Before submitting a manuscript, please read the Instructions for Authors, which is available from the Journal's home page at <http://cancerimmunolres.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://cancerimmunolres.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 *Cancer Immunology Research* is protected by copyright. Authors who wish to publish material in *Cancer Immunology 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>.