

CLINICAL CANCER RESEARCH

The Journal of Clinical and Translational Research



Editor-in-Chief

Keith T. Flaherty

Executive Editor

Marlowe S. Tessmer

Deputy Editors

Omar Abdel-Wahab
Jennifer R. Grandis
Susan G. Hilsenbeck
Pasi A. Jänne
Jean-Charles Soria
Josep Tabernero
Jedd D. Wolchok

Senior Editors

Julie E. Bauman
Andrew S. Chi
Ezra E.W. Cohen
Ryan B. Corcoran
Matthew S. Davids
Robert C. Doebele
Michael A. Dyer
Richard S. Finn
Daniel J. George
Theodore S. Hong
David M. Hyman
Scott Kopetz
Josep M. Llovet

Jason J. Luke
Michael L. Maitland
Ignacio J. Melero
Constantine S. Mitsiades
Amit M. Oza
Daniel A. Pryma
John H. Sampson
Sabina Signoretti
Alex Sparreboom
Ulrich G. Steidl
Brian A. Van Tine
Amit Verma
Eduardo Vilar
Colin D. Weekes
Douglas Yee
Evan Y. Yu

Statistical Reviewers

Cong Chen
Susan Groshen
Katherine A. Guthrie
Byung-Ho Nam
Megan Othus
Katherine S. Panageas
Yu Shyr
Satoshi Teramukai
Michael C. Wu

Editorial Staff

Managing Editor

Kim Mackey

Assistant Managing Editor

William J. Siegmann

Special Content Manager

Chris Vesci

Assistant Director, Production

David Livewell

Editorial Staff

Kate Knab
Nina Lispi
Brendan Maher

CLINICAL CANCER RESEARCH

Editorial Board

James L. Abbruzzese
Joseph A. Aisner
Jaffer Ajani
Kenneth D. Aldape
Francis Ali-Osman
Jennifer Amengual
Carey Anders
David E. Avigan
Rebecca G. Bagley
Surinder Batra
James Berenson
Ray Bergan
Joseph R. Bertino
Kapil N. Bhalla
Ronald G. Blasberg
Renier J. Brentjens
Ronald M. Bukowski
Daniel P. Cahill
George A. Calin
Kevin Camphausen
Michael A. Carducci
William Carroll
William E. Carson
Paul B. Chapman
Dharminder Chauhan
Cong Chen
Zhen Cheng
Paul Chiao
Fortunato Ciardiello
Robert Clarke
Barbara A. Conley
Roisin M. Connolly
Joseph Contessa
Rajvir Dahiya
William L. Dahut
Michael A. Davies
Johann S. de Bono
Sandra Demaria

Adam P. Dicker
Catherine Diefenbach
Federica Di Nicolantonio
Colin P. Dinney
Ronny Drapkin
Raymond N. DuBois
Steven DuBois
Robert P. Edwards
Adel K. El-Naggar
Wael El-Rifai
Jeffrey Engelman
Alan L. Epstein
Francisco J. Esteva
Robert L. Ferris
Soldano Ferrone
William D. Figg
Barbara Fingleton
Michelangelo Fiorentino
David A. Frank
Paul Frankel
Simone Fulda
Varsha V. Gandhi
Stanton L. Gerson
Michele Ghilmini
Irene Ghobrial
Giuseppe Giaccone
Francis Giles
Bonnie S. Glisson
Lucy Godley
Ajay Goel
William E. Gooding
Steven D. Gore
James S. Goydos
Steven Grant
Tim F. Greten
William E. Grizzle
Susan Groshen
Katherine A. Guthrie

Stephen M. Hahn
Roy S. Herbst
James G. Herman
Fred R. Hirsch
Walter N. Hittelman
Robert M. Hoffman
Patrick Hwu
Rakesh K. Jain
Jin Jen
John M. Jessup
Faye M. Johnson
Dejan Juric
Pawel Kalinski
Michael Kalos
Judith E. Karp
Scott H. Kaufmann
Edward Kim
John M. Kirkwood
E. Anders Kolb
Murray Korc
Jason A. Koutcher
Rakesh Kumar
Marc Ladanyi
Heinz-Josef D. Lenz
Ross L. Levine
Min Li
Jonathan D. Licht
Sagar Lonial
Patricia LoRusso
Nupam Mahajan
Robert G. Maki
Sami Malek
Sridhar Mani
David A. Mankoff
H. Charles Manning
Maurie Markman
Katherine K. Matthay
Andrew P. Mazar

David J. McConkey
Janice Mehnert
Alan A. Melcher
Todd W. Miller
John D. Minna
Tetsuya Mitsudomi
Gareth J. Morgan
Hasan Mukhtar
Byung-Ho Nam
William G. Nelson
Shuji Ogino
Frank G. Ondrey
Ruth M. O'Regan
Eileen O'Reilly
Robert Orłowski
Megan Othus
Katherine S. Panageas
Klaus Pantel
William Pao
George Peoples
Roman Perez-Soler
Leonidas Plataniias
Christine A. Pratilas
Pingping Qu
Jerry Radich
Noopur Raje
Ramesh K. Ramanathan
Mark J. Ratain
C. Patrick Reynolds
Jeremy N. Rich
Andrea Richardson
Rafael Rosell
Eric K. Rowinsky
Lawrence V. Rubinstein
David P. Ryan
Stefania Scala
Maurizio Scaltriti

Gary K. Schwartz
Michael V. Seiden
Violeta Serra
Geoffrey Shapiro
Dong M. Shin
Yu Shyr
Susan F. Slovin
Keiran S.M. Smalley
David Solit
Paul Sondel
Joseph Sparano
Vered Stearns
Patricia S. Steeg
Barry Storer
Walter J. Storkus
Mario Sznol
Yu-Tzu Tai
Chris H. Takimoto
James Talmadge
Beverly A. Teicher
Joel E. Tepper
Satoshi Teramukai
Lawrence D. True
Jeffrey W. Tyner
Carter Van Waes
Augusto Villanueva
Emile Voest
Robert H. Vonderheide
Jeffrey S. Weber
Wolfgang A. Weber
Patrick Y. Wen
Theresa L. Whiteside
Ignacio I. Wistuba
Michael C. Wu
Keping Xie
Yun Yen
Bin Zheng

CLINICAL CANCER RESEARCH PUBLISHING INFORMATION

AACR Officers

Lisa M. Coussens, President
Philip D. Greenberg, President-Elect
David A. Tuveson, Past President
William N. Hait, Treasurer
Margaret Foti, Chief Executive Officer

Publications Committee

Victor E. Velculescu, Chairperson
Adriana Albini
Laura Fejerman
Masanori Hatakeyama
Catriona H.M. Jamieson
Jos Jonkers
Virginia G. Kaklamani
Andrew Kung
Jonathan D. Licht
Ira Mellman
Gordon B. Mills
Kunle Odunsi
Kenneth J. Pienta
Joshua D. Rabinowitz
Timothy R. Rebbeck
David L. Rimm
Mack Roach, III
Sheila K. Singh
Sheila A. Stewart
Miguel A. Villalona-Calero
Michael B. Yaffe

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

Director, Editorial

Robert Kruger

Deputy Director, Production

Charlene Squibb

Assistant Director, Production

David Livewell

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

Clinical Cancer Research publishes innovative clinical and translational cancer research studies that bridge the laboratory and the clinic. The Journal is especially interested in clinical trials evaluating new treatments, accompanied by research on pharmacology, and molecular alterations or biomarkers that predict response or resistance to treatment. The Journal also prioritizes laboratory and animal studies of new drugs and molecule-targeted agents with the potential to lead to clinical trials, and studies of targetable mechanisms of oncogenesis, progression of the malignant phenotype, and metastatic disease.

Clinical 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 <https://ccr.msubmit.net>. Before submitting a manuscript, please read the Instructions for Authors, which are available from the Journal's home page at <https://clincancerres.aacrjournals.org>.

Publication Charges

Articles will be published with the understanding that the author(s) will pay both a publication fee plus a display item fee. For more detail, please see the Publication Fees and Reprints page which is available at <https://aacrjournals.org/content/authors/publication-fees-and-reprints>.

Subscription Information

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.

Nonmember Individuals

Subscriptions include online access only. 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

Site Licenses

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

Single Issue Sales

Single or back issues may be purchased for \$75 (U.S.) or \$90 (outside the U.S.) each. The cost must be prepaid. Contact pubsales@aacr.org to order single or back issues.

Claims

Claims are only applicable to member subscriptions. 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. For claims, AACR members should contact membership@aacr.org.

Advertising Information

For information about advertising in AACR journals, contact The Walchli Tauber Group, Inc., 2225 Old Emmorton Road, Suite 201, Bel Air, MD 21015; 443-512-8899; maura.paoletti@wt-group.com.

Copyright and Permissions

Content printed in or disseminated by *Clinical Cancer Research* is protected by copyright. Authors publishing in *Clinical Cancer Research* may either formally transfer copyright to the AACR or may select the Open Access option to publish the article under one of two Creative Commons Attribution Licenses—Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) or Attribution 4.0 International (CC BY 4.0)—depending on funder requirements. Please visit <https://aacrjournals.org/content/authors/copyright-permissions-and-access>.