

Lynn W. Enquist, *Editor in Chief* (2007)
Princeton University

James C. Carrington, *Editor* (2007)
Oregon State University

Irvin S. Y. Chen, *Editor* (2007)
UCLA School of Medicine

Ronald C. Desrosiers, *Editor* (2003)
Harvard Medical School

Daniel C. DiMaio, *Editor* (2006)
Yale University School of Medicine

Mary K. Estes, *Editor* (2003)
Baylor College of Medicine

Hung Y. Fan, *Editor* (2007)
University of California, Irvine

Donald E. Ganem, *Minireview Editor* (2007)
University of California, San Francisco

Diane E. Griffin, *Editor* (2004)
The Johns Hopkins University School of Hygiene
and Public Health

Gary J. Nabel, *Editor* (2005)
National Institute of Allergy and Infectious Diseases

Jay A. Nelson, *Editor* (2007)
Oregon Health Sciences University

Julie Overbaugh, *Editor* (2005)
Fred Hutchinson Cancer Research Center

Peter M. Palese, *Editor* (2005)
Mount Sinai School of Medicine

Nancy Raab-Traub, *Editor* (2006)
University of North Carolina

Rozanne M. Sandri-Goldin, *Editor* (2005)
University of California, Irvine

Bert L. Semler, *Editor* (2007)
University of California, Irvine

Ronald Swanstrom, *Editor* (2004)
University of North Carolina School of Medicine

Raymond M. Welsh, *Editor* (2007)
University of Massachusetts Medical Center

EDITORIAL BOARD

Paul Ahlquist ('05)
David Anders ('05)
Raul Andino ('05)
Elliot J. Androphy ('05)
Carl C. Baker ('03)
Eric Barklis ('05)
Ralf Bartenschlager ('05)
Paul Bates ('03)
Paul Bieniasz ('05)
John Blaho ('04)
Gary Blissard ('04)
James Borowiec ('05)
Michael Botchan ('03)
John Brady ('03)
Michel Brahic ('03)
Philip Branton ('05)
William Britt ('03)
Michael Buchmeier ('03)
Dennis R. Burton ('04)
Frederic D. Bushman ('03)
Carol Carter ('04)
Michael Carter ('05)
Roberto Cattaneo ('03)
Bruce W. Chesebro ('03)
Francis Chisari ('03)
Barklie Clements ('04)
Janice Clements ('03)
Gary H. Cohen ('03)
Teresa Compton ('03)
Richard C. Condit ('04)
Susan Cotmore ('04)
Matthew Cotten ('04)
Clyde Crumpacker ('04)
James Cunningham ('05)
David Curiel ('03)
Richard D'Aquila ('05)
William O. Dawson ('04)
Neal DeLuca ('03)
C. Michael Deom ('04)
Terence Dermody ('05)
Peter Doherty ('04)
Valerian Dolja ('05)
Esteban Domingo ('03)
Robert Doms ('04)
Theo Dreher ('05)
Maribeth Eiden ('03)

Roselyn J. Eisenberg ('03)
John H. Elder ('05)
Emilio Emini ('03)
Francis Ennis ('05)
Ellen Fanning ('04)
J. Bert Flanagan ('04)
Jane Flint ('05)
Genoveffa Franchini ('03)
Eric Freed ('05)
Paul D. Friesen ('03)
Robert Fujinami ('05)
Dana H. Gabuzda ('05)
Thomas Gallagher ('05)
Robert Garcea ('03)
J. Victor Garcia-Martinez ('04)
Adolfo Garcia-Sastre ('04)
Richard Gaynor ('03)
Don Gilden ('05)
Steven Goff ('03)
Francisco Gonzalez-Scarano ('05)
Heinrich Göttinger ('05)
Kim Green ('04)
Patrick Green ('04)
Harry B. Greenberg ('04)
David Gretch ('05)
Charles Grose ('03)
Linda Guarino ('03)
Beatrice H. Hahn ('03)
Nancy Haigwood ('03)
Linda Hanley-Bowdoin ('04)
J. Marie Hardwick ('05)
S. Diane Hayward ('04)
Patrick Hearing ('03)
John Herrmann ('03)
James E. K. Hildreth ('04)
Vanessa Hirsch ('03)
James M. Hogle ('03)
Thomas Hohn ('05)
Fred Homa ('03)
Edward A. Hoover ('03)
Thomas Hope ('03)
Marshall Horwitz ('04)
Peter M. Howley ('05)
Jim Hoxie ('03)
Lindsey Huttt-Fletcher ('05)
Michael J. Imperiale ('04)

Ronald Javier ('04)
David C. Johnson ('05)
R. Paul Johnson ('04)
Robert Johnston ('04)
Paul Jolicoeur ('05)
Jae Jung ('03)
Jane Kabat ('05)
Mari Kannagi ('04)
Andrew Kaplan ('03)
Michael Katze ('05)
Yoshihiro Kawakita ('04)
Elliott Kieff ('05)
Karla Kirkegaard ('05)
Dan Kolakofsky ('05)
Bette Korber ('04)
Robert Kotin ('03)
Richard Koup ('04)
Mark Krystal ('05)
Richard Kuhn ('04)
Laimonis Laimins ('03)
Paul Lambert ('04)
Nathaniel Landau ('03)
Robert E. Lanford ('04)
David Leib ('05)
Jack Lenz ('05)
Laura Levy ('04)
Jeffrey Lifson ('04)
R. Michael Linden ('04)
Richard Lloyd ('03)
Dan Loeb ('04)
Jeremy Luban ('05)
Paul A. Luciw ('04)
Douglas Lyles ('04)
Michael Malim ('03)
Patricia Marion ('04)
David Markovitz ('04)
Malcolm Martin ('05)
William S. Mason ('03)
Paul Masters ('04)
Janet Mertz ('04)
Craig Meyers ('03)
A. Dusty Miller ('03)
Anthony Minson ('03)
Edward S. Mocarski ('05)
David Montefiori ('03)
Ronald C. Montelaro ('05)

John P. Moore ('05)
Patrick Moore ('04)
Elizabeth Moran ('05)
Thomas Moran ('04)
Casey Morrow ('03)
Bernard Moss ('04)
Sue Moyer ('04)
Karl Münger ('03)
Brian R. Murphy ('03)
Nicholas A. Muzyczka ('05)
Glen R. Nemerow ('03)
Max L. Nibert ('05)
Isabel Suarez Novella ('04)
Don Nuss ('03)
David Ornelles ('05)
John Patton ('03)
George N. Pavlakis ('03)
Stanley Perlman ('03)
B. Matija Peterlin ('05)
David J. Pintel ('04)
James M. Pipas ('05)
Paula Pitha-Rowe ('04)
Roger J. Pomerantz ('05)
Chris Preston ('03)
Kathryn Radke ('05)
Glenn Rall ('05)
Lee Ratner ('03)
Alan R. Rein ('05)
Marilyn Resh ('04)
Charles Rice ('03)
Douglas Richman ('03)
Alan Rickinson ('05)
Charles Rinaldo ('05)
Erle Robertson ('04)
Charles Rogler ('04)
George Rohrmann ('04)
Bernard Roizman ('03)
Susan Ross ('04)
Linda J. Saif ('04)
Richard Jude Samulski ('04)
Anthony Sanchez ('04)
Peter Sarnow ('05)
Dorothea L. Sawicki ('03)
Jerome Schaack ('03)
Priscilla A. Schaffer ('05)
Brian Schaffhausen ('03)

John Schiller ('04)
Robert J. Schneider ('03)
Matthias Schnell ('05)
Christopher Seeger ('05)
Ganes Sen ('04)
Stewart Shuman ('04)
Aleem Siddiqui ('03)
Saul J. Silverstein ('03)
Betty Slagle ('03)
James Smiley ('03)
Nahum Sonenberg ('05)
Willy J. M. Spaan ('03)
Pat Spear ('05)
Samuel Speck ('03)
Mario Stevenson ('05)
Victor Stollar ('03)
Jonathan P. Stoye ('05)
Stephen E. Straus ('05)
Bill Sugden ('05)
Wes Sundquist ('05)
Alice Telesnitsky ('05)
Mary J. Tevethia ('05)
Satvir S. Tevethia ('03)
Didier Trono ('05)
Luis V. Villarreal ('03)
Herbert W. Virgin IV ('05)
Peter K. Vogt ('05)
Volker Vogt ('05)
Bruce Walker ('03)
Fred C. Wang ('03)
David Watkins ('05)
Sandra Weller ('05)
Michael Whitt ('05)
J. Lindsay Whitton ('04)
Reed B. Wickner ('03)
Kent Wilcox ('03)
Luc Willems ('05)
James Wilson ('04)
William S. M. Wold ('05)
Otto Yang ('03)
T. S. Benedict Yen ('04)
Jonathan Yewdell ('05)
John Young ('03)
Jerome Zack ('04)
Susan Zolla-Pazner ('03)

Samuel Kaplan, *Chairman, Publications Board*

Judith Nedrow, *Production Editor*

Shawn M. Oberrath, *Assistant Production Editor*

Linda M. Illig, *Director, Journals*

George Lin, *Assistant Production Editor*

The *Journal of Virology* (ISSN 0022-538X), a publication of the American Society for Microbiology (ASM), 1752 N St., N.W., Washington, DC 20036-2904, is devoted to the dissemination of fundamental knowledge concerning viruses of plants and animals. Investigators are invited to submit reports of original research in all areas of basic virology, including biochemistry, biophysics, genetics, immunology, morphology, physiology, and pathogenesis and immunity. Instructions to authors are published in the January issue each year; reprints are available from the editors and the Journals Department. The *Journal* is issued twice monthly, one volume per year. Nonmember print subscription prices (per year) are: \$865, U.S.; \$931, Canada (plus 7% GST, or 7% GST + 8% HST where applicable); \$1030, Europe; \$1084, Latin America; \$1116, rest of world. Member print subscription prices (per year) are: \$129, U.S.; \$193, Canada (plus 7% GST, or 7% GST + 8% HST where applicable); \$290, Europe; \$344, Latin America; \$374, rest of world. Single copies are: \$50, nonmember; \$25, member (Canadians add 7% GST, or 7% GST + 8% HST where applicable). For prices of electronic versions, contact the Subscriptions Unit, ASM. Correspondence relating to subscriptions, defective copies, missing issues, and availability of back issues should be directed to the Subscriptions Unit, ASM; correspondence relating to reprint orders should be directed to the Reprint Order Unit, ASM; and correspondence relating to disposition of submitted manuscripts, proofs, and general editorial matters should be directed to the Journals Department, American Society for Microbiology, 1752 N St., N.W., Washington, DC 20036-2904. Phone: (202) 737-3600.

Claims for missing issues from residents of the United States, Canada, and Mexico must be submitted within 3 months after publication of the issues; residents of all other countries must submit claims within 6 months of publication of the issues. Claims for issues missing because of failure to report an address change or for issues "missing from files" will not be allowed.

Periodicals postage paid at Washington, DC 20036, and at additional mailing offices.

POSTMASTER: Send address changes to *Journal of Virology*, ASM, 1752 N St., N.W., Washington, DC 20036-2904.

Made in the U.S.A. Printed on acid-free paper.

DOI: 10.1128/JVI.77.12.2003

CODEN: JOVIAM

Copyright © 2003, American Society for Microbiology. All Rights Reserved.

The code at the top of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal use or for personal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per-copy fee through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, for copying beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.