

The Journal of Pharmacology and Experimental Therapeutics

A Publication of the American Society for Pharmacology and Experimental Therapeutics

Founded by John J. Abel - 1908

Michael F. Jarvis, Editor

Scott Mittelstadt, Assistant Editor

Joe Blumer, Minireviews Editor

Darrell R. Abernethy
Shripad Bhagwat
Brendan Canning
Arthur Christopoulos
Salvatore Cuzzocrea
David A. Gewirtz

Beverly Greenwood-
Van Meerveld
Yuichi Hattori
Ronald N. Hines
Ravi Iyengar
Raouf A. Khalil

ASSOCIATE EDITORS

Lawrence H. Lash
Roberto Levi
Donald E. Mager
Gerard Marek
Philip R. Mayeux
Kathryn E. Meier

David S. Miller
Richard A. Morrisett
Timothy Ness
James M. O'Donnell
Robert A. Roth
Roland Seifert

Domenico Spina
Jeffrey C. Stevens
Kenneth D. Tew
Ellen Walker
David Weinschenker
Raymond J. Winquist

EDITORIAL ADVISORY BOARD

Geoffrey W. Abbott
Thomas J. Abbruscato
Peter Abel
Edson X. Albuquerque
Bradley Andresen
Thomas M. Argentieri
Reto Asmis
John Auchampach
Bork Balkan
William A. Banks
Bjoern Bauer
Reina Bendayan
Jack Bergman
Daniel C. Bertrand
Anton Y. Bespalov
Anindya Bhattacharya
Italo Biaggioni
Floyd E. Bloom
Jean-Marie Boeynaems
Robert Brock
Nancy Brown
Qin Chen
Lucio G. Costa
Brian M. Cox

Bryan F. Cox
Brian Cummings
Ann Daly
M. Imad Damaj
William C. deGroat
Patrick Dougherty
Grant Drummond
Andrea Eckhart
Frederick J. Ehler
Alessandro Fatatis
Steven J. Feinmark
Stephen F. Flaim
Ryan Fryer
Hiroyuki Fukui
Vadivel Ganapathy
Patricia E. Ganey
Gary Gintant
Keith Glaser
John R. Glowa
Steven M. Grassl
Perry V. Halushka
Gyorgy Hasko
Lisa A. Hazelwood

Paul Heerd
Susanna Hourani
Leonard L. Howell
Dale G. Hoyt
John Imig
Edwin K. Jackson
Douglas Johns
Kenneth M. Johnson
William J. Jusko
Peter W. Kalivas
Mark R. Kelley
Lewis B. Kinter
Thomas Kocarek
Wouter Koek
George F. Koob
Suk-Hee Lee
Richard Lock
Joseph J. Lynch
Lee Ann
MacMillan-Crow
Rosalinde Masereeuw
Mark J. Millan
Virginia Miller

Giorgio Minotti
Hitoshi Morikawa
Harvey J. Motulsky
Hasan Mukhtar
S. Jamal Mustafa
Michael Nader
S. Stevens Negus III
Kim A. Neve
Yasuyuki Nomura
Grazyna Nowak
Nazareno Paolucci
Andreas Papapetropoulos
Achilles J. Pappano
B. Kevin Park
Sandra Pfister
Russell O. Pieper
Jesus Pintor
Russell A. Prough
Raymond M. Quock
Fabio Recchia
J. Larry Renfro
Richard Rothman
Uwe Rudolf

Jonathan G. Scammell
Michal Laniado Schwartzman
Federico Sesti
Patrick Sexton
Shivendra D. Shukla
Theodore A. Slotkin
Philip C. Smith
Nikolai M. Soldatov
Patricia K. Sonsalla
Roger D. Speelman
Francis G. Spinale
Douglas Sweet
Milt Teitler
Alvin V. Terry
Robin Thurmond
Myron L. Toews
Zaijie Jim Wang
Sandra P. Welch
Daniel Wierda
Jeffrey M. Witkin
Bryan K. Yamamoto
Xiao-Feng Yang
Chunxiang Zhang

BOARD OF PUBLICATIONS TRUSTEES

Mary Vore, *Chair*; Randy A. Hall, Michael F. Jarvis, Kathryn E. Meier, Edward T. Morgan,
Kim A. Neve, David R. Sibley, Stephen F. Traynelis, Jeffrey M. Witkin, and Judith A. Siuciak, *ex officio*

ASPET EXECUTIVE OFFICER: Judith A. Siuciak

Journals Director: Richard Dodenhoff

Peer Review Manager: Dianne King-McGavin

Senior Peer Review Coordinator: Cassie Wood

The Journal of Pharmacology and Experimental Therapeutics (ISSN 1521-0103) is published monthly online only by the American Society for Pharmacology and Experimental Therapeutics, 9650 Rockville Pike, Bethesda, MD 20814-3995. E-mail: subscriptions@aspet.org. ASPET web site: aspet.org. Journal web site: jpet.aspetjournals.org. Subscription rates at aspetjournals.org/site/subscriptions/index.xhtml. GST Tax Number for Canadian subscribers: BN:13489 2330 RT.

Indexed or abstracted by: *Biochemistry & Biophysics Citation Index®*, *Biological Abstracts*, *BIOSIS Previews Database*, *Bio-Sciences Information Services*, *Current Awareness in Biological Sciences*, *Current Contents®/Life Sciences*, *EMBASE/Excerpta Medica*, *Index Medicus*, *Medical Documentation Service®*, *PsycINFO*, *Reference Update®*, *Research Alerts®*, *Science Citation Index®*, *SciSearch®*, and *SIIC Data Bases*.

Journal and ASPET office: 9650 Rockville Pike, Bethesda, MD 20814-3995. Telephone: 301-634-7060. Fax: 301-634-7061. E-mail: info@aspet.org. ASPET web site: aspet.org. Journal web site: jpet.aspetjournals.org.

Editorial matters should be addressed to Dr. Michael F. Jarvis, Editor, *The Journal of Pharmacology and Experimental Therapeutics*, at the above address.

Instructions to Authors: See jpet.aspetjournals.org for the Instructions to Authors and the ASPET Authorship Responsibility, Financial Disclosure, and Chemical Structure Statement forms.

Subscriptions: Contact the ASPET Subscriptions Dept., 9650 Rockville Pike, Bethesda, MD 20814-3995. Telephone: 301-634-7782. Fax: 301-634-7061. E-mail: subscriptions@aspet.org. See aspetjournals.org/site/subscriptions/index.xhtml for rates.

Change of IP addresses: ASPET will help institutional subscription administrators update IP address ranges as requested. Subscription administrators can make these changes at the journal site using their account user name and password.

Reprints of individual articles are available from the journal web site using the pay-per-view option for nonsubscribers.

Reprints in large quantities for commercial or academic use may be purchased from ASPET. For information and prices, call 301-634-7063.

Copyright information: *The Journal of Pharmacology and Experimental Therapeutics* is copyrighted by the American Society for Pharmacology and Experimental Therapeutics. For permission to photocopy entire articles from *The Journal of Pharmacology and Experimental Therapeutics*, see www.copyright.com or contact the Copyright Clearance Center (CCC), Inc., 222 Rosewood Dr., Danvers, MA 01923. Telephone: 978-750-8400. For permission to reprint portions of articles such as figures and tables or to reprint entire articles in a thesis or dissertation, see www.aspet.org/webforms.aspx?ekfrm=84. Photocopying or printing articles beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law is allowed, provided that the \$25.00-per-copy fee is paid through the CCC. Classroom photocopying is permitted at no fee, provided that students are not charged more than the cost of duplication. This consent does not extend to other kinds of copying. Reproduction of any portion of an article for subsequent republication requires permission of ASPET.

Disclaimer: The statements and opinions contained in the articles of *The Journal of Pharmacology and Experimental Therapeutics* are solely those of the individual authors and contributors and not of the American Society for Pharmacology and Experimental Therapeutics. The appearance of advertisements in the journal is not a warranty, endorsement, or approval of the products or their safety. The American Society for Pharmacology and Experimental Therapeutics disclaims responsibility for any injury to persons or property resulting from any ideas or products referred to in any article or advertisement.

Copyright © 2015 by the American Society for Pharmacology and Experimental Therapeutics. All rights reserved.