The Journal of Pharmacology and Experimental Therapeutics
A Publication of the American Society for Pharmacology and Experimental Therapeutics
Founded by John J. Abel - 1908

Rick G. Schnellmann, Editor
Craig C. Beeson, Assistant Editor

ASSOCIATE EDITORS

Darrell R. Abernethy  
Ian Adcock  
Jerry J. Buccafusco  
Philip S. Burton  
Salvatore Cuzzocrea  
Paul Ernsberger  
Mitchell P. Fink  
Alan R. Gintzler  
Ronald N. Hines  
Myron K. Jacobson  
Michael F. Jarvis  
Norbert E. Kaminiski  
Raouf A. Khalil  
Daniel R. Knapp  
Lawrence H. Lash  
Roberto Levi  
Louis M. Luttrell  
David S. Miller  
Richard A. Morrisett  
A. Leslie Morrow  
Michael J. O’Neill  
Bryan L. Roth  
Robert A. Roth  
Roland Seifert  
Kenneth D. Tew  
Stephanie W. Watts  
Alice M. Young

EDITORIAL ADVISORY BOARD

Geoffrey W. Abbott  
Thomas J. Abbruscato  
Peter Abel  
Edson X. Albuquerque  
Bradley Andresen  
Thomas M. Argentiere  
Reto Asmis  
Bork Balkan  
Amy Banes-Berceli  
William A. Banks  
Reina Bendayan  
Jack Bergman  
Daniel C. Bertrand  
Italo Biaggioni  
Mark A. Birrell  
Floyd E. Bloom  
Jean-Marie Boynaems  
Franco Borsini  
Robert Brock  
Marco Broto  
Nancy Brown  
John Charpie  
Qin Chen  
Kanchan Chitate  
Jill Filler  
Brian M. Cox  
Yuichi Hattori  
J. Paul Hieble  
K. Roger Hornbrook  
Susanna Hourani  
Leonard L. Howell  
Dale G. Hoyt  
John Imai  
Harry Ischiropoulos  
Edwin K. Jackson  
Douglas Johns  
Kenneth M. Johnson  
William J. Jusko  
Peter W. Kulwas  
Lauren S. Kaminiski  
Mark R. Kelley  
Lewis B. Kinter  
Thomas Kocarek  
Wouter Koek  
George F. Koob  
Suk-Hee Lee  
Richard Lock  
Benedict R. Lucchesi  
Joseph J. Lynch  
Rosalinde Masereeuw  
Philip R. Mayeux  
Donald E. McMillan  
Gary W. Miller  
Virginia Miller  
Hitoshi Morikawa  
Hasan Mukhtar  
Stanley Nattel  
S. Stevens Negus III  
Kim A. Neve  
Yasuuyki Nomura  
James S. Norris  
Grazyna Nowak  
James M. O’Donnell  
Patricia Nollett  
Michael F. O’Neill  
Mark Osinski  
Nazareno Paolocci  
Achilles J. Pappano  
B. Kevin Park  
Sandra Pfister  
Russell O. Pieper  
John B. Pritchard  
Russell A. Prough  
Raymond M. Quock  
Fabio Recchia  
J. Larry Renfro  
Richard Rothman  
Michael C. Sanguinetti  
Jonathan G. Scammell  
Michal Laniado  
Schwartzman  
Federico Sesti  
Shivendra D. Shukla  
David R. Sibley  
Theodore A. Slotkin  
Mark Smith  
Philip C. Smith  
Nikolai M. Soldatov  
Edward E. Soltis  
Patricia K. Sonsalla  
Michael D. Southall  
Roger D. Spealman  
Francis G. Spina  
John L. Staudinger  
Douglas Sweet  
Istvan Szelenyi  
Milt Teitter  
Paul F. Terranova  
Alvin V. Terry  
Myron L. Toews  
George J. Trachte  
Hiroshi Ueda  
Sandra P. Welch  
Daniel Wierda  
Michael Williams  
Raymond J. Winquist  
Jeffrey M. Witkin  
Bryan K. Yamamoto

BOARD OF PUBLICATIONS TRUSTEES

James E. Barrett, Chair; P. Jeffrey Conn, Ross Feldman, Lorraine J. Gudas, Eric F. Johnson, John S. Lazo, Edward T. Morgan, Richard R. Neubig, Rick G. Schnellmann, Darryle D. Schoepf, and Mary Vore

ASPET EXECUTIVE OFFICER: Christine K. Carrico
Managing Editor: Jill Filler Senior Editorial Coordinator: David D. Williams

Journal and ASPET office: 9650 Rockville Pike, Bethesda, MD 20814-3995; telephone: 301-634-7060; fax: 301-634-7061; email: info@aspet.org; web site: www.aspet.org; journal web site: jpet.aspetjournals.org.

Editorial matters should be addressed to Dr. Rick Schnellmann, Editor, The Journal of Pharmacology and Experimental Therapeutics, at the above address.

Official version: The online version of The Journal of Pharmacology and Experimental Therapeutics contains all of the information and material contained in the print version plus additional material that may not appear in print such as videos and large data sets. The online version may be current than the print version. Where noted, the online version has been corrected in derivative from the print version. The online version of The Journal of Pharmacology and Experimental Therapeutics data published by the American Society for Pharmacology and Experimental Therapeutics is the definitive version and to the extent any difference exists, will prevail over the print version.

Instructions to Authors: See jpet.aspetjournals.org for the Instructions to Authors and the ASPET Authorship Responsibility, Financial Disclosure, and Copyright Transfer form.

Subscriptions: Contact the ASPET Subscriptions Dept., 9650 Rockville Pike, Bethesda, MD 20814-3995; telephone: 301-634-7782; fax: 301-634-7061; email: subscriptions@aspet.org. For multi-site and consortial sales in Europe contact: David Charles, elicensing, r 92 avenue du General de Gaulle, 78600, Maisons-Laffitte, France; telephone: +33-1-39-12-29-29; fax: +33-1-39-12-47-45; email: dc.elicensing@orangen.fr.

Change of address: ASPET must be notified 60 days in advance. Copies undeliverable because of incorrect address will be destroyed. Duplicate copies may be obtained, if available, from ASPET at the single copy price. Send address changes to the ASPET office.

Issue replacement policy: Domestic subscribers—Claims for nondelivery of issues must be made within three (3) months of issue mail date. Foreign subscribers—Claims for nondelivery of issues must be made within six (6) months of issue mail date. Missing Issues (domestic and foreign)—ASPET will not honor refunds or replacement requests made outside of the claim time period. Up to two (2) issues will be replaced free of charge per subscription year.

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 or use material electronically 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: 978-750-4400. Photocopying of articles beyond that permitted by Sections 107 and 108 of the U.S. Copyright Law is allowed, provided that the $20.00-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. Write to the ASPET office at the above address. Requests should include a statement of intended use as well as explicit specifications of the materials to be reproduced.

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 © 2009 by the American Society for Pharmacology and Experimental Therapeutics. All rights reserved. Printed in the U.S.A.