

# DRUG METABOLISM AND DISPOSITION

A Publication of the American Society for Pharmacology and Experimental Therapeutics

Founded by Kenneth C. Leibman—1973

**Jeffrey C. Stevens, Editor**

## ASSOCIATE EDITORS

Wayne L. Backes, Namandje N. Bumpus, Deepak K. Dalvie, Xinxin Ding,  
J. Steven Leeder, R. Scott Obach, Mary Paine, David S. Riddick, John D. Schuetz,  
Bruno Stieger, Donald J. Tweedie, and Aiming Yu

## SCIENTIFIC ADVISORY BOARD

M.W. Anders, Frederick P. Guengerich, James R. Halpert, Magnus Ingelman-Sundberg, Eric F. Johnson,  
Anthony Y. Lu, Bettie Sue Masters, Edward T. Morgan, and Paul R. Ortiz De Montellano

## REVIEWS EDITOR

Nina Isoherranen

## EDITORIAL BOARD MEMBERS

Lauren Aleksunes	Raymond Evers	Amit S. Kalgutkar	Donald Mercante	Ikumi Tamai
Shelby Anderson	Robert S. Foti	Thomas Kocarek	Grover P. Miller	Mitchell E. Taub
Pieter P.J. Annaert	Aleksandra Galetin	Hiroyuki Kusunohara	Swati Nagar	Jan Wahlstrom
Upendra Argikar	Bruno Hagenbuch	Yurong Lai	K. Sandy Pang	Joanne Wang
Thomas Bailie	Robert Hanzlik	Lawrence H. Lash	Allan Rettie	Ronald E. White
Michael Cameron	Ronald N. Hines	Lois D. Lehman-McKeeman	Melissa Runge-Morris	Wen Xie
Matthew A. Cerny	J. Brian Houston	Chuan Li	Emily E. Scott	Shinji Yamazaki
Thomas K.H. Chang	Min Huang	Ge Lin	Michael Sinz	Maciej Zamec-Glisczynski
Cuiping Chen	W. Griffith Humphreys	Xingrong Liu	Jeffrey Staudinger	Su Zeng
Nathan Cherrington	J. Matthew Hutzler	Kazuya Maeda	Raju Subramanian	Donglu Zhang
David D. Christ	Margaret O. James	Don Mager	Craig Svensson	Xiao-bo Zhong
Uwe Christians	Hyunyoung Jeong	Qingcheng Mao	Yun K. Tam	

## BOARD OF PUBLICATIONS TRUSTEES

Mary Vore, *Chair*; Eric L. Barker, Jack Bergman, Lynette Daws, Beverley Greenwood-Van Meerveld, J. Steven Leeder, Kathryn E. Meier, Emily E. Scott, Jeffrey C. Stevens, Kenneth D. Tew, Judith A. Siuciak, *ex officio*; and Joseph Jilik, *Student Representative*

**ASPET EXECUTIVE OFFICER:** Judith A. Siuciak

*Journals Director:* Richard Dodenhoff *Peer Review Manager:* Jacqueline Perry *Senior Peer Review Coordinator:* Mary Blackwood

**Drug Metabolism and Disposition** (ISSN 1521-009X) is published monthly (one volume per year) online only by the American Society for Pharmacology and Experimental Therapeutics, 9650 Rockville Pike, Bethesda, MD 20814-3995. E-mail: [subscriptions@aspet.org](mailto:subscriptions@aspet.org). ASPET web site: [aspet.org](http://aspet.org). Journal web site: [dmd.aspetjournals.org](http://dmd.aspetjournals.org). Subscription rates at [aspetjournals.org/site/subscriptions/index.xhtml](http://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*, *International Pharmaceutical Abstracts*, *Medical Documentation Service®*, *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](mailto:info@aspet.org). ASPET web site: [aspet.org](http://aspet.org). Journal web site: [dmd.aspetjournals.org](http://dmd.aspetjournals.org).

**Editorial matters** should be addressed to Dr. Jeffrey C. Stevens, Editor, *Drug Metabolism and Disposition*, at the above address.

**Instructions to Authors:** See [dmd.aspetjournals.org](http://dmd.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](mailto:subscriptions@aspet.org). See [aspetjournals.org/site/subscriptions/index.xhtml](http://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:** *Drug Metabolism and Disposition* is copyrighted by the American Society for Pharmacology and Experimental Therapeutics. For permission to photocopy entire articles from *Drug Metabolism and Disposition*, see [www.copyright.com](http://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](http://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 \$35.00-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 *Drug Metabolism and Disposition* 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** © 2018 by the American Society for Pharmacology and Experimental Therapeutics. All rights reserved.