

# MOLECULAR PHARMACOLOGY

A Publication of the American Society for Pharmacology and Experimental Therapeutics

Founded by Avram Goldstein—1965

**P. Jeffrey Conn, Editor**

## ASSOCIATE EDITORS

Randy D. Blakely, Joël Bockaert, H. Alex Brown, Paul Dent, Alfred L. George, Steven Grant, Richard B. Kim, Dianne M. Perez, Gary L. Johnson, *Minireview Editor*

## EDITORIAL AND ADVISORY BOARD

Myles Akabas	Daniel J. Fernandes	Eric F. Johnson	Graeme Milligan	Alvaro Puga
Carmen J. Allegra	Michael Freissmuth	Marcelo Kazanietz	T. J. Murphy	Linda C. Quattrocchi
Yehuda G. Assaraf	Yoshiaki Fujii-Kuriyama	Brian K. Kobilka	Neil M. Nathanson	John J. Reiners, Jr.
Jacques Barhanin	James C. Garrison	Herman Koepsell	Mark T. Nelson	Michael Robinson
Tamas Bartfai	Ulrik Gether	Ping-Yee Law	Eric J. Nestler	Michael A. Rogawski
Jeffrey L. Benovic	Robert I. Glazer	L.M. Fredrik Leeb-Lundberg	Richard R. Neubig	Elliott M. Ross
Nigel J.M. Birdsall	Catherine Godson	Lian Li	Kim A. Neve	Bryan L. Roth
Kendall J. Blumer	Frank J. Gonzalez	Stephen B. Liggett	Robert A. Nicholas	Carol A. Rouzer
Gary M. Bokoch	Michael M. Gottesman	Thomas M. Lincoln	Sanjay K. Nigam	Arnold E. Ruoho
Michel Bouvier	Robert M. Graham	Joel Linden	R. Alan North	Elaine Sanders-Bush
Christopher Bradfield	Jennifer R. Grandis	Richard B. Lock	Paul Ortiz De Montellano	Thue W. Schwartz
Thomas P. Burris	Lee M. Graves	Sophie Lotersztajn	Robert E. Oswald	David R. Sibley
William A. Catterall	Heidi Hamm	Robert L. Macdonald	Krzysztof Palczewski	Jill Siegfried
Arthur Christopoulos	R. Adron Harris	Peter MacKenzie	Gavril W. Pasternak	Shivendra V. Singh
Richard B. Clark	John R. Hepler	David Manning	Tarun Patel	Paul C. Sternweis
Jonathan B. Cohen	John Hickman	Richard Marais	Gary Perdew	Stephen F. Traynelis
John W. Daly	Susan Band Horwitz	Donald H. Maurice	Jean-Philippe Pin	David J. Waxman
Erik De Clercq	Peter J. Houghton	Andrew McCammon	Lorenz Poellinger	David S. Weiss
Phillip A. Dennis	Robin Irvine	James O. McNamara	Yves G. Pommier	Jurgen Wess
David L. Dewitt	Karl H. Jakobs	Kathryn E. Meier	Garth Powis	Michael M. White
George Dubyak	Jonathan Javitch	Martin Michel	Morton Printz	Keith Williams
Ronald S. Duman	Candace Johnson	Laurence Miller		Richard D. Ye

## BOARD OF PUBLICATIONS TRUSTEES

Brian M. Cox, *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. Schoepp, and Mary Vore

**ASPET EXECUTIVE OFFICER:** Christine K. Carrico

*Journals Director:* Richard Dodenhoff

*Managing Editor:* Jill Filler

*Senior Editorial Coordinator:* Dan Collinge

**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.

**Correspondence regarding editorial matters** should be addressed to Dr. Paul A. Insel, Editor, *Molecular Pharmacology*, at the above address.

**Official version:** The online version of *Molecular Pharmacology* 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 more current than the print version. Where noted, the online version has been corrected in departure from the print version. The online version of *Molecular Pharmacology* officially 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 <http://molpharm.aspetjournals.org> for the Instructions to Authors and the ASPET Authorship Responsibility, Financial Disclosure, and Copyright Transfer form.

**Correspondence concerning subscriptions:** Nonmember individual and institutional subscriptions: ASPET Subscriptions Dept., Rm. L-2310, 9650 Rockville Pike, Bethesda, MD 20814-3998; telephone: 301-634-7029; fax: 301-634-7099; email: staff@dues.faseb.org. ASPET Members: contact the ASPET office. For European site licenses and consortia, contact: David Charles, Institutional Sales & Licensing, 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: dlcharles@wanadoo.fr.

**Change of address:** ASPET must be notified 60 days in advance. Journals 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 of individual articles** are available from the authors and from Infotrieve at [www.infotrieve.com](http://www.infotrieve.com); otherwise call 800-422-4633, fax 310-208-5971, or email [orders@infotrieve.com](mailto:orders@infotrieve.com). Please send as much citation information as possible such as journal title, volume issue, page number, year, authors, article title, etc.

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

**Copyright Information:** *Molecular Pharmacology* is copyrighted by The American Society for Pharmacology and Experimental Therapeutics. 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 Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. 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 *Molecular Pharmacology* 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 of safety. The American Society for Pharmacology and Experimental Therapeutics disclaims responsibility for any injury to persons or property resulting from any ideas of products referred to in the articles or advertisement.