American Journal of Physiology-Renal Physiology®

Editor-in-Chief: P. Darwin Bell
Deputy Editor-in-Chief: Anita Layton

Associate Editors:
Warren G. Hill
Robert Hoover
Thu H. Le
Janos Peti-Padai
Rick G. Schnellmann
Jennifer C. Sullivan
Wenhui Wang

Editorial Reviews Board:
Anupam Agarwal, Chris Baylis, Pam Carmines, Jane Reckelhoff, Eleanor Lederer, Carol Liedtke, Lee Hamm, Jeff Sands, Jeffrey Garvin, Susan Wall, Kumar Sharma, Moshe Levi United States
Rene Bindels, Florin Lang, Soren Nielsen, Laszló Rosiavill, Olivier Staub, Francois Verrey, Europe
Phil Poronnik, Australia
Masaomi Nangaku, Japan

Editorial Board:
Takashi Abe
Rosalyn Adam
Barbara Alexander
Todd Alexander
Diego Alvarez de la Rosa
Gerard Apodaca
Shubha Bagga
Matthew Balsey
David Basile
Michel Baum
William Beierwaltes
Vivek Bhalla
Anil Bidani
Mitsuo Blount
Erika Boesen
Sylvie Breton
Heddeiw Brooks
Frank Brosius
Leslie Brownman
Michael Butterworth
Hui Cai
Marcelo Carattino
Mattias Carlstrom
Hayo Castrop
Toby Chai
Guangjing Chen
 Jian-Kang Chen
Sheldon Chen
Inyeng Choi
David Cohen
Steven Crowley
Patrick Cunningham
William Dupple
Mark de Caestecker
Kate Denton
Zheng Dong
Heather Drummond
Jeremy Dutfield
Kenneth Dunn
Douglas Eaton
Carolyn Eccles barger
Aurélie Edwards
Dominique Eladari
Roger Evans
Diane Felsen
Robert Fenton
Ben Flegal
Agnes Fogo
Nora Franceschini
Martha Franco
Jorgen Frokiaer
Monika Gooz
Karen Griffin
Michelle Gun
Susan Garley
Volker Haas
Kenneth Hallows
Kirk Hamilton
Pernille Hansen
Chuan-Ming Hao
Lisa Harrison-Bernard
Kathleen Hering-Smith
Marcella Herrera
Ewout Hoorn
Rebecca Hughley
John Imig
Reiko Imagi
Edgar James
Boye Jensen
Pedro Jose
Armijn Just
Yashpal Kamwar
Janet Keast
Gilbert Kinsey
Bellamkonda Kishore
Janet Klein
Benjamin Ko
Donald Kohen
Lawrence Lash
H. T. Lee
Andreas Linckermann
Joshua Lipschutz
Ruihseng Liu
Youhua Liu
John Lorenz
Heiping Ma
Jennie Ma
Christine Marie-Bilkan
James Marts
David Mattson
Fiona McDowall
Mariela Mendez
Jerry Morrisey
John Mullins
Rama Natarajan
Akira Nishiyama
Grazyna Nowak
Paul O'Connor
Pablo Ortiz
Baba Padanilam
Fredrik Palm
Lawrence Palmer
Alan Pao
Kwon Moo Park
Nura Pastor-Soler
Sheetal Padia
David Pearce
E-Bin Peng
Georgi Pekov
Snezana Petrovic
Jennifer Phuzechik
Ole Pochynuk
Aaron Polichnowski
Jennifer Pollock
Heile Pratrous
S. Russ Price
Minella Prieto
Nour-Eddine Rahel
Timo Rieg
Lisa Roberson
Michael Romero
Michael Ruggieri
Paul Sanders
Steven Sansom
Jennifer Sasser
David Sherki-Hamad
Shaolu Sheng
Prableen Singh
Brian Siroky
Alexander Sturashen
Jim Stockland
Arohan Subramanya
Caroline Sussman
Franciska Theilig
Vladimir Todorov
Volker Vallon
Chad Vezina
Margaret Vizzard
Niel-Henrick von Holstein-Rathlou
Carsten Wagner
Darren Wallace
Alan Weinstein
William Welch
Paul Welling
Jan McNeal Williams
Stephen Wright
Motoke Yanagita
Li Yang
Tianxin Yang
Alan Yu
Richard Zager
Roberto Lazz
Aishan Zhang

Publications Committee:
C. D. Sigmond, Chair
H. Raff, Vice Chair
P. A. Insel
A. A. McDonough
L. C. Samuelson
S. M. Wall
L. Wold

Es-Offices:
D. M. Pollock
APS Past President
F. E. Molina
President
J. F. Reckelhoff
President-Elect

M. Frank, Executive Director
R. Scheman
Director of Publications
and Executive Editor
M. L. Goodwin
Editorial Manager
S. Demma
Journal Supervisor

J. Marquez
Copy Editor
G. Ebner
Peer Review Manager
E. Pesanelli
Editorial Art Manager
A. McEver
Editor’s Assistant

The American Journal of Physiology-Renal Physiology (ISSN-1931-857X) is published twice monthly online at ajprenal.org (ISSN-1522-1466). (two volumes a year) by the American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814-3991. Subscription Prices (postpaid): For institutional print and online pricing, please see http://www.the-aps.org/publications/aps/. Nonmember individuals (online only): $400.00. APS members: online is free. Print back issues when available, through December 2011: subscriber, $40 each; nonsubscriber, $75 each. Subscriptions from outside the United States are payable in US currency or full equivalent. Subscriptions are accepted on a calendar-year basis only. Periodicals postage paid at Bethesda, MD and at additional mailing offices.

The American Journal of Physiology-Renal Physiology® is a registered trademark of the American Physiological Society. Copyright © 2015 by the American Physiological Society. Printed in the United States of America by Cadmus Communications—Lancaster Division, Lancaster, PA 17601. The code at the bottom of the first page of an article indicates the copyright owner’s consent that copies of that article may be made beyond that permitted by sections 107 and 108 of the US Copyright Law—unless the copies are for general distribution, for advertising, for creating new works, or for resale—provided the per-copy fee is paid through the Copyright Clearance Center, Inc., 222 Rosewood Dr., Danvers, MA 01923.

Editorial and Business Correspondence: AJP-Renal Physiology, 9650 Rockville Pike, Bethesda, MD 20814-3991.

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