

# diabetes®

**EDITOR IN CHIEF**

K. Sreekumaran Nair, MD, PhD

**ASSOCIATE EDITORS**

E. Dale Abel, MD, PhD  
Sharon G. Adler, MD  
Peter J. Dyck, MD  
Thomas W. Gardner, MD, MS  
Kathryn M. Haskins, PhD  
Gökhan Hotamisligil, MD, PhD

Michael D. Jensen, MD, PhD  
Anna Krook, PhD  
Lawrence J. Mandarino, PhD  
Braxton Mitchell, PhD  
Jeffrey E. Pessin, PhD  
James R. Sowers, MD

Lori Sussel, PhD  
Adrian Vella, MD, FRCP  
Nick Wareham, MBBS, PhD, FRCP, FFFPHM  
Fredric E. Wondisford, MD

**SCIENTIFIC EDITOR**  
Helaine E. Resnick, PhD, MPH

**CONSULTING EDITORS**

Reza Abdi, MD  
Nada A. Abumrad, PhD  
Rocco Barazzoni, MD, PhD  
Timothy J. Bartness, PhD  
Dwaipayan Bharadwaj, PhD, FNASc  
Andrew A. Butler, PhD  
Wenhong Cao, MD  
Andre Carpentier, MD, FRCP  
Deborah J. Clegg, RD, PhD  
Claudio Cobelli, PhD  
Anne Cooke, DPhil, FMedSci  
Gregory Cooney, PhD  
John A. Corbett, PhD  
Daniel J. Drucker, MD  
Josephine M. Egan, MD,  
MRCPI, FRCPI  
Gian Paolo Fadini, MD, PhD  
Mark Febbraio, PhD  
Brian N. Finck, PhD  
Simon J. Fisher, MD, PhD  
Alessia Fornoni, MD, PhD  
Maureen Gannon, PhD  
Richard E. Gilbert, MBBS, PhD, FRCPC  
Benjamin Glaser, MD

Laurie J. Goodyear, PhD  
Struan F.A. Grant, PhD  
Eric Hajduch, PhD  
Christian Herder, PhD, MSc  
Michael Horowitz, MBBS, PhD, FRACP  
Patrick B. Ingedjian, MD  
Anton M. Jetten, PhD  
Weiping Jia, MD, PhD  
James D. Johnson, PhD  
Fredrik Karpe, PhD, FRCP  
Mark T. Kearney, MD, FRCP  
Richard G. Kibbey, MD, PhD  
Jae Bum Kim, PhD  
Jason K. Kim, PhD  
Jeonga Kim, PhD  
James L. Kirkland, MD, PhD  
Amira Klip, PhD  
Yogish C. Kudva, MD  
Tony K.T. Lam, PhD  
Ian R. Lanza, PhD  
Chih-Hao Lee, PhD  
Sheldon E. Litwin, MD  
Carey N. Lumeng, MD, PhD  
Patrick E. MacDonald, PhD

L. Charles Murtaugh, PhD  
Nicolas Musi, MD  
Erik Näslund, PhD  
Inga Prokopenko, PhD  
Jerry Radziuk, PhD, MD, CM  
Jun Ren, MD, PhD, FAHA  
Erik A. Richter, MD, DMSci  
Michael Roden, MD  
Leslie S. Satin, PhD  
Gary J. Schwartz, PhD  
Masakazu Shiota, DVM, PhD  
Kevin R. Short, PhD  
Bart Staels, PhD  
John M. Stafford, MD, PhD  
Scott A. Summers, PhD  
Farook Thameem, PhD  
Michael I. Trenell, PhD  
Antonio Vidal-Puig, MD, PhD  
Matthias von Herrath, MD  
Jianping Weng, MD, PhD  
Adam Whaley-Connell, DO, MSPH  
Jianping Ye, MD  
Lori M. Zeltser, PhD

**AMERICAN DIABETES ASSOCIATION OFFICERS**

**CHAIR OF THE BOARD**  
Janel L. Wright, JD  
**PRESIDENT, MEDICINE & SCIENCE**  
Samuel Dagogo-Jack, MD, FRCP  
**PRESIDENT, HEALTH CARE & EDUCATION**  
David G. Marrero, PhD  
**SECRETARY/TREASURER**  
Richard Farber, MBA  
**CHAIR OF THE BOARD-ELECT**  
Robin J. Richardson

**PRESIDENT-ELECT, MEDICINE & SCIENCE**  
Desmond Schatz, MD  
**PRESIDENT-ELECT, HEALTH CARE & EDUCATION**  
Margaret Powers, PhD, RD, CDE  
**SECRETARY/TREASURER-ELECT**  
Lorrie Welker Liang  
**INTERIM CHIEF EXECUTIVE OFFICER**  
Suzanne Berry, MBA, CAE  
**CHIEF SCIENTIFIC & MEDICAL OFFICER**  
Robert E. Ratner, MD, FACP, FACE



*The mission of the American Diabetes Association  
is to prevent and cure diabetes and to improve  
the lives of all people affected by diabetes.*

# diabetes®

## Mission Statement for *Diabetes*

*Diabetes* publishes original research about the physiology and pathophysiology of diabetes mellitus. Submitted manuscripts can report any aspect of laboratory, animal, or human research. Emphasis is on investigative reports focusing on areas such as the pathogenesis of diabetes and its complications, normal and pathological pancreatic islet function and intermediary metabolism, pharmacological mechanisms of drug and hormone action, and biochemical and molecular aspects of normal and abnormal biological processes. Studies in the areas of diabetes education or the application of accepted therapeutic and diagnostic approaches to patients with diabetes are not published. More information about the journal can be found online at [diabetes.diabetesjournals.org](http://diabetes.diabetesjournals.org).

**SUBMISSIONS:** *Diabetes* (print ISSN 0012-1797, online ISSN 1939-327X) is owned, controlled, and published monthly by the American Diabetes Association, Inc., 1701 North Beauregard St., Alexandria, VA 22311. *Diabetes* is a registered trademark of the American Diabetes Association.

**PERMISSIONS:** Copyright © 2015 by the American Diabetes Association, Inc. All rights reserved. Printed in the USA. Requests for permission to reuse content should be sent to Copyright Clearance Center at [www.copyright.com](http://www.copyright.com) or 222 Rosewood Dr., Danvers, MA 01923; phone: (978) 750-8400; fax: (978) 646-8600. Requests for permission to translate should be sent to Permissions Editor, American Diabetes Association, at [permissions@diabetes.org](mailto:permissions@diabetes.org).

The American Diabetes Association reserves the right to reject any advertisement for any reason, which need not be disclosed to the party submitting the advertisement.

Commercial reprint orders should be directed to Sheridan Content Services, (800) 635-7181, ext. 8065.

**SUBSCRIPTIONS:** Single issues of *Diabetes* can be ordered by calling toll-free (800) 232-3472, 8:30 A.M. to 5:00 P.M. EST, Monday through Friday. Outside the United States, call (703) 549-1500. Rates: \$75 in the United States, \$95 in Canada and Mexico, and \$125 for all other countries.

*Diabetes* is available online at [diabetes.diabetesjournals.org](http://diabetes.diabetesjournals.org). Please call the numbers listed above, e-mail [membership@diabetes.org](mailto:membership@diabetes.org), or visit the online journal for more information about submitting manuscripts, publication charges, ordering reprints, subscribing to the journal, becoming an ADA member, advertising, permission to reuse content, and the journal's publication policies.

Periodicals postage paid at Alexandria, VA, and additional mailing offices.

PRINT ISSN 0012-1797  
ONLINE ISSN 1939-327X  
PRINTED IN THE USA

**POSTMASTER:** Send address changes to *Diabetes*, American Diabetes Association, Inc., Journal Subscriptions, 1701 North Beauregard St., Alexandria, VA 22311. Claims for missing issues should be made within 6 months of publication. The publisher expects to supply missing issues free of charge only when losses have been sustained in transit and when the reserve stock permits.

---

## AMERICAN DIABETES ASSOCIATION PERSONNEL AND CONTACTS

**EDITORIAL OFFICE DIRECTOR**  
Lyn Reynolds

**PEER REVIEW MANAGER**  
Jane Castner

**EDITORIAL OFFICE SECRETARIES**  
Raquel Castillo  
Joan Garrett

**MANAGING DIRECTOR,  
SCHOLARLY JOURNAL PUBLISHING**  
Christian S. Kohler

**DIRECTOR, SCHOLARLY JOURNAL  
PUBLISHING**  
Heather Norton Blackburn

**PRODUCTION MANAGER**  
Amy S. Gavin

**EDITORIAL MANAGERS**  
Nancy C. Baldino  
Valentina Such

**TECHNICAL EDITOR**  
Oedipa Rice

**VICE PRESIDENT, CORPORATE ALLIANCES**  
Nancy Stinson Harris

**ADVERTISING MANAGER**  
Julie DeVoss Graff  
[jdevoss@diabetes.org](mailto:jdevoss@diabetes.org)  
(703) 299-5511

**MANAGING DIRECTOR, MEDIA SALES**  
Clare Liberis  
[cliberis@diabetes.org](mailto:cliberis@diabetes.org)  
(212) 725-4925, ext. 3448

**ASSOCIATE DIRECTOR, BILLING  
& COLLECTIONS**  
Laurie Ann Hall

**DIRECTOR, MEMBERSHIP/  
SUBSCRIPTION SERVICES**  
Donald Crowl

**ADVERTISING REPRESENTATIVES**  
The Jackson-Gaeta Group, Inc.  
B. Joseph Jackson  
[bartjack@aol.com](mailto:bartjack@aol.com)  
Paul Nalbandian  
[pnalbandian4ada@aol.com](mailto:pnalbandian4ada@aol.com)  
(973) 403-7677