

AMERICAN JOURNAL OF RESPIRATORY CELL AND MOLECULAR BIOLOGY®

EDITOR

ANDREW J. HALAYKO, PH.D.
University of Manitoba

DEPUTY EDITORS

LOUISE DONNELLY, PH.D.
Imperial College

MICHAEL B. FESSLER, M.D.
Duke University School of Medicine (Adjunct)

VICTOR J. THANNICKAL, M.D.
Tulane University

ASSOCIATE EDITORS

STEVEN AN, PH.D., A.T.S.F.
Rutgers University

MEGAN BALLINGER, PH.D., A.T.S.F.
The Ohio State University
Wexner Medical Center

ELIE EL AGHA, PH.D.
Justus Liebig Universität Giessen

ELENA GONCHAROVA, PH.D., A.T.S.F.
University of California Davis

ILONA JASPERS, PH.D.
University of North Carolina, Pediatrics

GANG LIU, PH.D.
University of Alabama at Birmingham

RAMA K. MALLAMPALLI, M.D.
The Ohio State University
Wexner Medical Center

ALEXANDRA NOEL, PH.D., M.Sc., B.Sc.
Louisiana State University

ANNIE PARDO, PH.D.
Universidad Nacional Autónoma de México

ANNE-KARINA PERL, PH.D.
Cincinnati Children's Hospital Medical Center

BENJAMIN D. SINGER, M.D.
Northwestern University Feinberg
School of Medicine

NOBERT WEISSMANN, PH.D.
University of Giessen

ASSOCIATE EDITOR—VIDEO AND PODCAST

ERIC DOUGLAS MORRELL, M.A., M.D.
University of Washington

EDITOR APPRENTICES

ALEKSANDRA BABICHEVA, PH.D.
NIYATI A. BORKAR, B.PHARM,
M.PHARM, PH.D.
JAZMIN CALYECA, PH.D.

DONGSHI CHEN, PH.D.
MARIJA GREĐIĆ, PH.D.
SARAH HOLTON, M.D., PH.D.
ANDREW R. MOORE, M.D.
ERICA ORSINI, M.D.
LENNY POMMEROLLE, PH.D.
TOMEKA L. SUBER, M.D., PH.D.
SHREYA SANGAM, PHARM.D., PH.D.
MEREENA USHAKUMARY, PH.D.
ALAN WAICH, M.D.
FENG YUAN, PH.D.
CHANGFU YAO, PH.D.

ATS DOCUMENTS EDITOR

KEVIN C. WILSON, M.D.
Boston, MA

EDITORIAL PRODUCTION OFFICE

American Thoracic Society
25 Broadway, 4th Floor
New York, NY 10004
Tel: (212) 315-6440; Fax: (212) 315-6455
Internet: <http://www.thoracic.org>

CHIEF, JOURNALS

DIANE GERN

Director, Technical Peer Review

FAY LING

Director, Peer Review

MARC BENDIAN

Peer Review Supervisor

RACHEL HOROWITZ-BENOIT

Senior Manager, Editorial

ERIC GUMPURT

Assistant Production Editor

LIBBY FELLBAUM

Cover Art Design

DORCAS GELABERT

BUSINESS AND FINANCE

NEIL KERLEY

SUBSCRIPTIONS

MURICIA ALEXANDER

ADVERTISING REPRESENTATIVE

Cunningham Associates
180 Old Tappan Road
Old Tappan, NJ 07675
Tel: (201) 767-4170
Fax: (201) 767-8065
E-mail: kdunn@cunnasso.com

EDITORIAL BOARD

KENNETH B. ADLER, PH.D.
JOHN F. ALCORN, PH.D.
JEFFREY ATKINSON, M.D.
REBECCA M. BARON, M.D.
ANKIT BHARAT, M.B. B.S.
MICHAEL T. BORCHERS, PH.D.
JANE BOURKE, FThorSoc, A.T.S.F., PH.D.
RODNEY D. BRITT JR., PH.D.
STEVEN L. BRODY, M.D.
G. R. SCOTT BUDINGER, M.D.
JANETTE K. BURGESS, PH.D.
A. BRENT CARTER, M.D.
DAVID M. CENTER, M.D.
STEPHEN CHAN, M.D., PH.D.
PETER CHEN, M.D.
WEI CHEN, PH.D.
JOHN W. CHRISTMAN, M.D.
ANDREW CHURG, M.D.
BRIA COATES, M.D.
IAN C. DAVIS, PH.D.
JESSY S. DESHANE, PH.D.
Y. PETER DI, PH.D.
BURTON F. DICKEY, M.D.
CLAIRE M. DOERSCHUK, M.D.
DAVID J. ERLE, M.D.
SERPIL ERZURUM, M.D.
CHRISTOPHER M. EVANS, PH.D.
STAVROS GARANTZIOTIS, M.D.
ROBERTO GAROFALO, M.D.
MARK W. GERACI, M.D.
ANTHONY N. GERBER, M.D., PH.D.
REINOUD GOSENS, PH.D.
ROBERT GUZY, M.D., PH.D.
ANGELA HACZKU, M.D., PH.D.
ROBERT B. HAMANAKA, PH.D.
KEVIN HARROD, PH.D.
JEREMY HIROTA, PH.D.
WILLIAM J. JANSSEN, M.D.
SAMITHAMBY JEYASEELAN, D.V.M., PH.D.
HARRY KARMOUY-QUINTANA, PH.D.
CARLA KIM, PH.D.
SYLVIA KNAPP, M.D., PH.D.
TETSU KOBAYASHI, M.D., PH.D.
JAY K. KOLLS, M.D.
MELANIE KÖNIGSHOFF, M.D., PH.D.
STELLA KOUREMBANAS, M.D.
VERA KRYMSKAYA, PH.D.
WOLFGANG M. KUEBLER, M.D.
GRAZYNA KWAPISZEWSKA, PH.D.

TIM LAHM, M.D.
PATTY LEE, M.D.
GEORGE D. LEIKAUF, PH.D.
MARK R. LOONEY, M.D.
SATISH MADALA, PH.D.
MARCUS MALL, M.D.
ANNE M. MANICONE, M.D.
LIN L. MANTELL, PH.D.
ULRICH MATT, PH.D.
MICHAEL MATTHAY, M.D.
ALEXANDER V. MISHARIN, M.D., PH.D.
ANA MORA, M.D.
GÖKHAN MUTLU, M.D.
VISWANATHAN NATARAJAN, PH.D.
EVA NOZIK, M.D.
BASTIAN OPITZ, M.D.
MICHAEL O'REILLY, PH.D.
LAWRENCE OSTROWSKI, PH.D.
CAROLINE OWEN, M.D., PH.D.
JIN-AH PARK, PH.D., A.T.S.F.
CHRISTOPHER PASCOE, PH.D.
R. STOKES PEEBLES, JR., M.D.
IRINA PETRACHE, M.D.
SEM H. PHAN, M.D.
BARBARA PORTO, PH.D.
MATTHEW E. POYNTER, PH.D.
IRFAN RAHMAN, PH.D.
SCOTT H. RANDELL, PH.D.
SEKHAR P. REDDY, PH.D.
DAVID W. H. RICHES, PH.D.
YOGESH SAINI, D.V.M., PH.D.
ERIC SCHMIDT, M.D.
PAUL T. SCHUMACKER, PH.D.
LARISSA SHIMODA, PH.D.
NATASCHA SOMMER, PH.D.
KURT R. STENMARK, M.D.
BARRY R. STRIPP, PH.D.
KARTHIK SURESH, M.D.
JACOB I. SZNAJDER, M.D.
YOHANNES TESFAIGZI, PH.D.
ROBERT TIGHE, M.D.
ISTVAN VADASZ, M.D.
ALBERT VAN DER VLIET, PH.D.
ESZTER VLADAR, PH.D.
JUDITH A. VOYNOW, M.D.
STEVEN R. WHITE, M.D.
MARTIN WITZENRATH, PH.D.
JOSEPH ZABNER, M.D.
YUTONG ZHAO, M.D., PH.D.
YONG ZHOU, PH.D.

The *American Journal of Respiratory Cell and Molecular Biology*® (eISSN: 1535-4989; ISSN: 1044-1549) is published by the American Thoracic Society and issued monthly. The *AJRCMB* is an official journal of the American Thoracic Society. A volume includes six issues and begins with the January and July issues. The contents of the *AJRCMB* are included in Current Contents/Life Sciences®, Index Medicus®, Medlars®, and Medline®. This journal is the winner of an award of Merit for editorial production and design from the Society for Technical Communication Publications and Art Competition. Published monthly at 25 Broadway, 4th Floor, New York, NY 10004 by the American Thoracic Society. Copyright © 2025, by the American Thoracic Society. Impact Factor: 5.9