

An international journal devoted to basic research into the origins, development, and function of plants from the molecular to the whole organism and their interactions within the biotic and abiotic environment.

Editor-in-Chief

Michael R. Blatt
Glasgow, UK

Associate Editors

Julian Hibbered Cambridge, UK
Gerhard Thiel Darmstadt, Germany
Alice Cheung Amherst, MA, USA
Hong Ma Shanghai, China
Jiming Jiang Madison, WI, USA
Graham Farquhar Canberra, Australia
Anna Amtmann Glasgow, UK
Teun Munnik Amsterdam, The Netherlands
Yair Shachar-Hill East Lansing, MI, USA
Dr. Julia Bailey-Serres Riverside, CA, USA

Research Area and Sections

Biochemistry and Metabolism
 Breakthrough Technologies
 Cell Biology
 Genes, Development, and Evolution

 Ecophysiology and Sustainability
 Membranes, Transport, and Biophysics
 Signaling and Response
 Systems and Synthetic Biology
 Reviews

International Board of Monitoring Editors

Lisa Ainsworth Urbana-Champaign, IL, USA	Anja Geitmann Montréal, Canada	Ron Mittler Denton, TX, USA	Neelima Sinha Davis, CA, USA
Anthony Bacic Parkville, VIC, Australia	Thomas Girke Riverside, CA, USA	Ferenc Nagy Szeged, Hungary	Alison Smith Cambridge, UK
Diane C. Bassham Ames, IA, USA	Zhizhong Gong Beijing, China	Jennifer Nemhauser Seattle, WA, USA	Laurie Smith La Jolla, CA, USA
Carl Bernacchi Urbana, IL, USA	Kim Hammond-Kosack Rothamsted, UK	Graham Noctor Paris, France	Julie M. Stone Lincoln, NE, USA
Joerg Bohlmann Vancouver, Canada	Matthew Hannah Brussels, Belgium	Ralph Panstruga Aachen, Germany	Dan Szymanski West Lafayette, IN, USA
François Chaumont Louvain, Belgium	Stacey Harmer Davis, CA, USA	Eran Pichersky Ann Arbor, MI, USA	Keiko U. Torii Seattle, WA, USA
Tzyy-Jen Chiou Taipei, Taiwan	Klaus Harter Tuebingen, Germany	Ronald Pierik Utrecht, The Netherlands	Yi-Fang Tsay Taipei, Taiwan
John Christie Glasgow, UK	Gregg A. Howe East Lansing, MI, USA	Sue Rhee Stanford, CA, USA	Doris Wagner Philadelphia, PA, USA
Vitaly Citovsky Stony Brook, NY, USA	Ning Jiang East Lansing, MI, USA	Silke Robatzek Norwich, UK	Elsbeth Walker Amherst, MA, USA
Hervé Cochard Clermont-Ferrand, France	Elizabeth Kellogg St. Louis, MO, USA	Jocelyn K.C. Rose Ithaca, NY, USA	Guo-Liang Wang Columbus, OH, USA
Karl-Josef Dietz Bielefeld, Germany	Anthony Kinney Wilmington, DE, USA	Alexander Ruban London, UK	Astrid Wingler London, UK
José Dinneny Stanford, CA, USA	Leon Kochian Ithaca, NY, USA	Wataru Sakamoto Okayama, Japan	Eleanore T. Wurtzel Bronx, NY, USA
Jeffrey J. Doyle Ithaca, NY, USA	Joachim Kopka Golm, Germany	Eric Schaller Hanover, NH, USA	Hong-Wei Xue Shanghai, China
Robert Edwards Durham, UK	Cris Kuhlemeier Bern, Switzerland	Ron R. Sederoff Raleigh, NC, USA	Shaul Yalovsky Tel Aviv, Israel
John R. Evans Canberra, ACT, Australia	Frans Maathuis York, UK	Motoaki Seki Yokohama, Japan	Jürgen Zeier Duesseldorf, Germany
Peter Geigenberger Munich, Germany	Tony Miller Norwich, UK	Shin-Han Shiu East Lansing, MI, USA	

Publisher

American Society of Plant Biologists,
Crispin Taylor, Executive Director;
ctaylor@aspb.org

Publications Director

Nancy A. Winchester; nancyw@aspb.org

Managing Editor

Patti Lockhart; plochhart@aspb.org

PA to Editor-in-Chief

Claire Osborne; Claire.Osborne@glasgow.ac.uk

Science Writer

Peter V. Minorsky; peminorsky@aspb.org

Production Manager

Jon Munn; jmunn@aspb.org

Manuscript Manager

Ashton Wolf; awolf@aspb.org



Plant Physiology[®] (ISSN 0032-0889, online 1532-2548) is published monthly, in three volumes per year, by the American Society of Plant Biologists, 15501 Monona Drive, Rockville, MD 20855-2768, USA, and is produced by Dartmouth Journal Services, Waterbury, VT. The institutional price for the print and online versions is based on type of institution; contact institution@aspb.org. A subscription includes both *The Plant Cell* and *Plant Physiology*[®]; Single copies may be purchased for \$40 each, plus \$10 shipping (U.S.) or \$12 (outside U.S.). Members of the American Society of Plant Biologists may subscribe to *Plant Physiology*[®] for \$265. Nonmember individuals may subscribe for \$525. Students may subscribe for \$190. For matters regarding subscriptions, contact Suzanne Cholwek, 15501 Monona Drive, Rockville, MD 20855-2768; telephone 301-296-0926; fax 301-251-6740; e-mail scholwek@aspb.org. Notify ASPB within 3 months (domestic) or 6 months (foreign) of issue date, and defective copies or copies lost in the mail will be replaced. Send all inquiries regarding display advertising to: FASEB AdNet, 9650 Rockville Pike, Bethesda, MD 20814-3998; telephone 301-634-7791; fax 301-634-7153; e-mail adnet@faseb.org. Periodicals postage paid at Rockville, MD 20850, and at additional mailing offices. **Postmaster:** Send address changes to *Plant Physiology*[®], American Society of Plant Biologists, 15501 Monona Drive, Rockville, MD 20855-2768. The online version of *Plant Physiology*[®] is available at www.plantphysiol.org. **Permission to Reprint:** Permission to make digital or hard copies of part or all of a work published in *Plant Physiology*[®] is granted without fee for personal or classroom use provided that copies are not made or distributed for profit or commercial advantage and that copies bear the full citation and the following notice on the first page: "Copyright American Society of Plant Biologists." For all other kinds of copying, request permission in writing from Nancy A. Winchester, Publications Director, ASPB headquarters.

© 2014 American Society of Plant Biologists. All rights reserved. Printed on acid-free paper. Printed in the USA.