

RNA

A PUBLICATION OF THE RNA SOCIETY

ISSN 1355-8382



ASSOCIATE EDITORS

Christine Guthrie
University of California, San Francisco

Daniel Kolakofsky
University of Geneva

Reinhard Lührmann
Max Planck Institute for Biophysical Chemistry, Göttingen

Rob Singer
Albert Einstein School of Medicine

DEPUTY EDITORS

David R. Engelke
University of Michigan

Eric Westhof
CNRS, Strasbourg

Marvin Wickens
University of Wisconsin, Madison

Joan A. Steitz
Yale University

Robert Zimmermann
University of Massachusetts

EDITORIAL BOARD

John N. Abelson
California Institute of Technology

Sidney Altman
Yale University

Manuel Ares
University of California, Santa Cruz

David P. Bartel
Massachusetts Institute of Technology

Brenda L. Bass
University of Utah

Philip C. Bevilacqua
Pennsylvania State University

Douglas L. Black
University of California, Los Angeles

Thomas Blumenthal
University of Colorado

Ronald R. Breaker
Yale University

Chris Burge
Massachusetts Institute of Technology

James E. Dahlberg
University of Wisconsin, Madison

Martha J. Fedor
The Scripps Research Institute

Witold Filipowicz
Friedrich Miescher Institute

Mariano A. Garcia-Blanco
Duke University

Brenton R. Graveley
University of Connecticut Health Center

Rachel Green
Johns Hopkins University

Matthias W. Hentze
EMBL, Heidelberg

Daniel Herschlag
Stanford University

Elisa Izaurralde
Max Planck Institute for Developmental Biology, Tuebingen

Allan Jacobson
University of Massachusetts

Walter Keller
University of Basel

Adrian R. Krainer
Cold Spring Harbor Laboratory

Alan M. Lambowitz
University of Texas at Austin

David M.J. Lilley
University of Dundee

Thomas Maniatis
Harvard University

James Manley
Columbia University

Lynne E. Maquat
University of Rochester

Iain W. Mattaj
EMBL, Heidelberg

William McClain
University of Wisconsin, Madison

Andrew Newman
MRC Laboratory of Molecular Biology

Harry F. Noller
University of California, Santa Cruz

Norman R. Pace
University of Colorado

Roy Parker
University of Arizona

Marina V. Rodnina
Universität Witten/Herdecke

Michael Rosbash
Brandeis University

Phillip A. Sharp
Massachusetts Institute of Technology

Scott Strobel
Yale University

David Tollervey
University of Edinburgh

Thomas Tuschl
The Rockefeller University

Olke C. Uhlenbeck
Northwestern University

Juan Valcárcel
ICREA and Centre de Regulació Genòmica

Alan M. Weiner
University of Washington

Sandra L. Wolin
Yale University

James R. Williamson
The Scripps Research Institute

Sarah A. Woodson
Johns Hopkins University

PRODUCTION MANAGER

Linda Sussman
Cold Spring Harbor Laboratory Press

PRODUCTION EDITOR

Kathleen MacDonald
Cold Spring Harbor Laboratory Press

PRODUCTION ASSISTANT

Mary Mulligan
Cold Spring Harbor Laboratory Press

EDITORIAL ASSISTANT

Ann Marie Micenmacher
Case Western Reserve University

Editorial Office: RNA, Center for RNA Molecular Biology, Room W127, School of Medicine, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, OH 44106-4973, USA. Telephone: 216-368-1852; fax: 216-368-2010; e-mail: rnajournal@case.edu.

Publishing and Advertising Offices: Cold Spring Harbor Laboratory Press, 1 Bungtown Road, Cold Spring Harbor, New York 11724-2203. For advertising rates and data, contact Marcie Siconolfi, Advertising Manager, at 516-422-4010 (telephone) or 516-422-4092 (fax).

Instructions for Authors: Instructions for authors are published in each issue of RNA and are available on the World Wide Web (<http://www.rnajournal.org>).

Books for Review: Publications should be sent to Timothy Nilsen, Center for RNA Molecular Biology, Room W127, School of Medicine, Case Western Reserve University, Cleveland, OH 44106-4973, USA. Readers are encouraged to draw to his attention publications that may be of interest to other readers of RNA.

Subscriptions: Published monthly. Subscribers have a choice of "online only" or "print + online" subscriptions for this journal. For 2010 institutional pricing, visit <http://rnajournal.cshlp.org/site/subscriptions/cost.dtl>. Personal rate (must be paid by check, credit card, or money order): Online only: \$245; Print + Online: U.S. \$320, Canada and Mexico \$385, R.O.W. \$410. Contact Kathleen Cirone, Subscription Manager, Fulfillment Department, 500 Sunnyside Boulevard, Woodbury, New York 11797-2924. Telephone: Continental U.S. and Canada 1-800-843-4388; all other locations 516-422-4100. Fax: 516-422-4097. Claims for missing issues must be received within four months of issue date.

Member Subscriptions: Members of the RNA Society automatically receive RNA as part of their annual membership dues.

The RNA Society: Membership information and application forms may be obtained from: The RNA Society, 9650 Rockville Pike, Bethesda, MD 20814-3998, USA. Telephone: 301-530-7120; fax: 301-530-7049; e-mail: ma@faseb.org.

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying or otherwise, without permission in writing from Cold Spring Harbor Laboratory Press, except when permission is obtained through a bona fide copyright clearinghouse, such as the Copyright Clearance Center (USA) or the Copyright Licensing Agency (UK). The CCC Item-Fee Code for this publication is 1355-8382/10 and is available at www.copyright.com or 978-750-8400. Specific written permission may be obtained for all other copying. **Photocopying for Classroom Use:** Permission to reproduce parts of this publication for course anthologies may be obtained directly from Cold Spring Harbor Laboratory Press or through duly authorized services such as the Academic Permissions Service of the CCC, 222 Rosewood Drive, Danvers, MA 01923 (Telephone 978-750-8400) and the Copyright Permissions Service of the National Association of College Stores, or through any photoduplication service that properly secures permission from Cold Spring Harbor Laboratory Press or the CCC.

RNA (ISSN 1355-8382) is published monthly by Cold Spring Harbor Laboratory Press, 500 Sunnyside Blvd., Woodbury, NY 11797-2924. Periodicals paid at Woodbury, NY, and additional mailing offices. **POSTMASTER:** Send address changes to Cold Spring Harbor Laboratory Press, Journals Fulfillment Dept., 500 Sunnyside Blvd., Woodbury, NY 11797-2924.

Copyright © 2010 The RNA Society

FORTHCOMING PAPERS

Reports

The RNA strands of the plus and minus polarities of peach latent mosaic viroid fold into different structures
Audrey Dubé, Tilman Baumstark, Martin Bisailon, and Jean-Pierre Perreault

Analyzing mRNA expression identifies Smad3 as a microRNA-140 target regulated only at protein level
Helio Pais, Francisco Esteban Nicolas, Surinder M. Soond, Tracey E. Swingler, Ian M. Clark, Andrew Chantry, Vincent Moulton, and Tamas Dalmay

Articles

Predicting loop–helix tertiary structural contacts in RNA pseudoknots
Song Cao, David P. Giedroc, and Shi-Jie Chen

A unique, thermostable dimer linkage structure of RD114 retroviral RNA
Sergei Kharytonchyk and Finn Skou Pedersen

Release of SF3 from the intron branchpoint activates the first step of pre-mRNA splicing
Rea M. Lardelli, James X. Thompson, John R. Yates III, and Scott W. Stevens

Comparison of mitochondrial and nucleolar RNase MRP reveals identical RNA components with distinct enzymatic activities and protein components
Qiaosheng Lu, Sara Wierzbicki, Andrey S. Krasilnikov, and Mark E. Schmitt

Multimerization of Staufen1 in live cells
Catherine Martel, Samuel Dugré-Brisson, Karine Boulay, Billy Breton, Gabriel Lapointe, Sylvain Armando, Véronique Trépanier, Thomas Duchaine, Michel Bouvier, and Luc DesGroseillers

Molecular mechanisms that funnel RNA precursors into endogenous small-interfering RNA and microRNA biogenesis pathways in *Drosophila*
Keita Miyoshi, Tomohiro Miyoshi, Julia Verena Hartig, Haruhiko Siomi, and Mikiko C. Siomi

Structure and activity of putative intronic miRNAs promoters
Alex Mas Monteys, Ryan Spengler, Ji Wan, Luis Tecedor, Kimberly A. Lennox, Yi Xing, and Beverly Davidson

Methods

Whole-mount in situ hybridization detection of mRNAs using short LNA containing DNA oligonucleotide probes
Diana K. Darnell, Stacey Stanislaw, Simran Kaur, and Parker B. Antin

Capture and sequence analysis of RNAs with terminal 2',3'-cyclic phosphates
Kevin Schutz, Jay R. Hesselberth, and Stanley Fields