

RNA

A PUBLICATION OF THE RNA SOCIETY



EDITOR IN CHIEF

Timothy W. Nilsen
Case Western Reserve University

REVIEWS EDITOR ISSN 1355-8382

Thomas R. Cech
Howard Hughes Medical Institute

EDITORS

Javier F. Caceres
MRC Human Genetics Unit

Kathleen Collins
University of California, Berkeley

Elena Conti
Max Planck Institute of Biochemistry,
Martinsried

Adrian R. Ferré-D'Amaré
National Heart, Lung and Blood Institute

Brenton R. Graveley
University of Connecticut Health Center

Elisa Izaurralde

Max Planck Institute for Developmental Biology, Tuebingen

Daniel Kolakofsky
University of Geneva

Eric Phizicky
University of Rochester School of Medicine and Dentistry

Marina V. Rodnina
Max Planck Institute for Biophysical Chemistry

Rob Singer
Albert Einstein School of Medicine

Erik Sontheimer
University of Massachusetts Medical School

Peter F. Stadler
Leipzig University

Gisela Storz
National Institute of Child Health and
Human Development

Eric Westhof
CNRS, Strasbourg

John Woolford
Carnegie Mellon University

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

David R. Engelke
University of Michigan

Martha J. Fedor
The Scripps Research Institute

Witold Filipowicz
Friedrich Miescher Institute

Mariano A. Garcia-Blanco
Duke University

Christine Guthrie
University of California, San Francisco

Matthias W. Hentze
EMBL, Heidelberg

Daniel Herschlag
Stanford University

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

Reinhard Lührmann
Max Planck Institute for Biophysical
Chemistry, Göttingen

Thomas Maniatis
Harvard University

James Manley
Columbia University

Lynne E. Maquat
University of Rochester

Iain W. Mattaj
EMBL, Heidelberg

William H. 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

Richard A. Padgett
Lerner Research Institute, Cleveland Clinic

Roy Parker
University of Colorado, Boulder

Marina V. Rodnina
Universität Witten/Herdecke

Michael Rosbash
Brandeis University

Phillip A. Sharp
Massachusetts Institute of Technology

Joan A. Steitz
Yale University

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

Marvin Wickens
University of Wisconsin, Madison

James R. Williamson
The Scripps Research Institute

Sandra L. Wolin
Yale University

Sarah A. Woodson
Johns Hopkins University

Robert Zimmermann
University of Massachusetts

**DIRECTOR OF
PUBLICATION SERVICES**
Linda Sussman
Cold Spring Harbor
Laboratory Press

PRODUCTION MANAGER
Denise Weiss
Cold Spring Harbor
Laboratory Press

PRODUCTION EDITOR
Marie Cotter
Cold Spring Harbor
Laboratory Press

**ASSOCIATE PRODUCTION
EDITOR**
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 online (<http://www.majournal.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 2016 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: \$255; Print + Online: U.S. \$320, Canada and Mexico \$412, R.O.W. \$444. 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: rna@faseb.org.

COPYRIGHT INFORMATION: Authors of articles published in RNA retain copyright of the articles (except US Government employees) but grant Cold Spring Harbor Laboratory Press exclusive right to publish the articles for a period of 12 months following full-issue publication. This includes the rights to publish, reproduce, distribute, display, and store the article in all formats; to translate the article into other languages; to create adaptations, summaries, extracts, or derivations of the article; and to license others to do any or all of the above. Authors can reuse their articles in their work as long as RNA is credited as the place of original publication. Twelve months following publication, these articles are made available under a CC-BY-NC 4.0 Creative Commons license. Articles that carry the Open Access designation are available immediately under a CC-BY 4.0 or CC-BY-NC 4.0 Creative Commons license. Detailed copyright terms are online at <http://rnajournal.cshlp.org/site/misc/terms.xhtml>. Permission information is online at http://rnajournal.cshlp.org/site/misc/permissions_landing.xhtml.

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.

FORTHCOMING PAPERS

Review

Mechanistic insight into eukaryotic 60S ribosomal subunit biogenesis by cryo-electron microscopy
Basil J. Greber

Bioinformatics

Integrated network analysis reveals distinct regulatory roles of transcription factors and microRNAs
Yu Guo, Katherine Alexander, Andrew G. Clark, Andrew Grimson, and Haiyuan Yu

Articles

Heterogeneous structures formed by conserved RNA sequences within the HIV reverse transcription initiation site
Aaron Coey, Kevin Larsen, Joseph D. Puglisi, and Elisabetta Viani Puglisi

TUT7 catalyzes the uridylation of the 3' end for rapid degradation of histone mRNA
Patrick E. Lackey, Joshua D. Welch, and William F. Marzluff

Codon optimality controls differential mRNA translation during amino acid starvation
Mridusmita Saikia, Xiaoyun Wang, Yuanhui Mao, Ji Wan, Tao Pan, and Shu-Bing Qian

Bacterial type B RNase P: functional characterization of the L5.1-L15.1 tertiary contact and antisense inhibition
Dennis Walczyk, Dagmar K. Willkomm, and Roland K. Hartmann

Methods

tRNA base methylation identification and quantification via high-throughput sequencing
Wesley C. Clark, Molly Evans, Dan Dominissini, Guanqun Zheng, and Tao Pan

ARiBo pull-down for riboproteomic studies based on label-free quantitative mass spectrometry
Geneviève Di Tomasso, Lisa M. Miller Jenkins, and Pascale Legault