



pages 1177 & 1190



page 1206



## EDITORIAL

- 1177** Time for New Schizophrenia Rx  
*Steven E. Hyman*  
>> *News story p. 1190*

## NEWS OF THE WEEK

- 1182** A roundup of the week's top stories

## NEWS & ANALYSIS

- 1185** Ukraine's Science Reformers Seize the Moment
- 1186** The Future Is Flat in White House's 2015 Spending Request  
Budget Lows, Highs, and Dreams
- 1188** Cancer Genes Help HIV Persist, Complicating Cure Efforts
- 1189** How Earth Can Cool Without Plunging Into a Deep Freeze  
>> *Science Express Report by K. Maher and C. P. Chamberlain*

## NEWS FOCUS

- 1190** Talking Back to Madness  
>> *Editorial p. 1177*
- 1194** Water's Tough Skin  
>> *Video*

## LETTERS

- 1199** Conserving Carnivores: More than Numbers  
*K. A. Alexander and C. E. Sanderson*
- Conserving Carnivores: Politics in Play  
*G. Chapron and J. V. López-Bao*
- Obscuring Gender Bias with "Choice"  
*A. L. Conner et al.*
- Response  
*B. L. Benderly*

## BOOKS ET AL.

- 1201** Girls Coming to Tech!  
*A. S. Bix, reviewed by M. Klawe*
- 1202** Celestial Sleuth  
*D. W. Olson, reviewed by E. L. Altschuler*

## POLICY FORUM

- 1203** The Parable of Google Flu: Traps in Big Data Analysis  
*D. Lazer et al.*  
>> *Science Podcast*

## PERSPECTIVES

- 1206** Simplicity amid Complexity  
*I. Held*
- 1207** Internal mRNA Methylation Finally Finds Functions  
*T. W. Nilsen*
- 1208** Stirring the Simmering "Designer Baby" Pot  
*T. H. Murray*
- 1210** Where Do Batteries End and Supercapacitors Begin?  
*P. Simon et al.*
- 1212** Getting Rid of a Persistent Troublemaker to Cure Hepatitis  
*A. Shlomai and C. M. Rice*  
>> *Research Article p. 1221*
- 1213** Society, Where None Intrudes  
*H. C. J. Godfray*  
>> *Report p. 1240*

## ON THE WEB THIS WEEK

### >> Science Podcast

On this week's show: avoiding big data traps and a roundup of shorts from our daily news site.

### >> Find More Online

Check out *Science Express*, the weekly podcast, videos, daily news, our research journals, and *Science Careers* at [www.sciencemag.org](http://www.sciencemag.org).

## COVER

Surface tension supports a water strider. At small scales, the influence of surface tension can exceed that of gravity, affecting everything from how small animals urinate to how water ferns stay buoyant and how pathogens spread from a sneeze or cough. *Science* explores the small world of surface tension in a News Focus on page 1194.

*Photo: © Hideta Nagai/National Geographic Society/Corbis*

## DEPARTMENTS

- 1175** This Week in *Science*
- 1178** Editors' Choice
- 1180** *Science* Staff
- 1270** New Products
- 1271** *Science* Careers

## RESEARCH ARTICLES

- 1215** Structures of Cas9 Endonucleases Reveal RNA-Mediated Conformational Activation  
*M. Jinek et al.*

Binding of a guide RNA triggers structural changes in a set of DNA-cleaving enzymes.  
*Research Article Summary; for full text:*

<http://dx.doi.org/10.1126/science.1247997>

- 1216** Ligand-Controlled C(sp<sup>3</sup>)-H Arylation and Olefination in Synthesis of Unnatural Chiral  $\alpha$ -Amino Acids  
*J. He et al.*

Two different ligands can be used in succession to tune the reactivity of a palladium catalyst.

- 1221** Specific and Nonhepatotoxic Degradation of Nuclear Hepatitis B Virus cccDNA  
*J. Lucifora et al.*

Cytokine induction renders viral DNA vulnerable and eliminates infection.

>> *Perspective p. 1212*

## REPORTS

- 1228** Free-Standing Single-Atom-Thick Iron Membranes Suspended in Graphene Pores  
*J. Zhao et al.*

The pores in a graphene membrane stabilize the formation of two-dimensional iron sheets.

- 1232** Main-Group Compounds Selectively Oxidize Mixtures of Methane, Ethane, and Propane to Alcohol Esters  
*B. G. Hashiguchi et al.*

Lead and thallium salts are surprisingly selective and efficient oxidants of the constituents of natural gas.

- 1237** Changes in Seismic Anisotropy Shed Light on the Nature of the Gutenberg Discontinuity  
*C. Beghein et al.*

The Gutenberg discontinuity is distinct from the lithosphere-asthenosphere boundary.

- 1240** Lethal Interactions Between Parasites and Prey Increase Niche Diversity in a Tropical Community  
*M. A. Condon et al.*

Incorrect fly-host choice in parasitoid wasps creates multidimensional niches, generating high levels of hidden diversity.

>> *Perspective p. 1213*

- 1244** Structure of Human RNase L Reveals the Basis for Regulated RNA Decay in the IFN Response  
*Y. Han et al.*

The crystal structure of an interferon-induced ribonuclease shows how it selects and shreds its RNA targets.

- 1249** Selective Methylation of Histone H3 Variant H3.1 Regulates Heterochromatin Replication  
*Y. Jacob et al.*

The specificity of a histone methyltransferase for a histone variant maintains heterochromatin through cell division.

- 1253** Vertebrate Limb Bud Formation Is Initiated by Localized Epithelial-to-Mesenchymal Transition  
*J. Gros and C. J. Tabin*

Cell state change, rather than differential proliferation, initiates limb formation during development.

- 1256** The *stum* Gene Is Essential for Mechanical Sensing in Proprioceptive Neurons  
*B. S. Desai et al.*

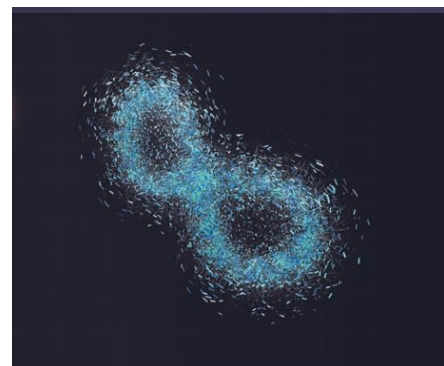
The *stumble* gene in flies is required in neurons that sense joint angles.

- 1260** Complement Is Activated by IgG Hexamers Assembled at the Cell Surface  
*C. A. Diebold et al.*

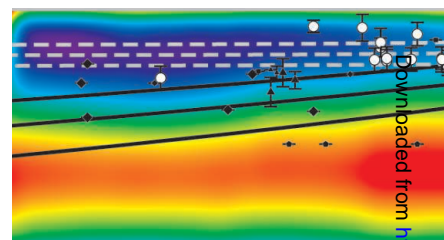
Hexameric platforms of antibodies on the cell surface trigger the complement cascade.

- 1264** Dlk1 Promotes a Fast Motor Neuron Biophysical Signature Required for Peak Force Execution  
*D. Müller et al.*

The fast versus slow profile of motor neurons is controlled by expression of a membrane protein.



pages 1212 & 1221



page 1237

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals Mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2013 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$153 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$1282; Foreign postage extra: Mexico, Caribbean (surface mail) \$55; other countries (air assist delivery) \$85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. Publications Mail Agreement Number 1069624. Printed in the U.S.A.

Change of address: Allow 4 weeks, giving old and new addresses and 8-digit account number. Postmaster: Send change of address to AAAS, P.O. Box 96178, Washington, DC 20090-6178. Single-copy sales: \$10.00 current issue, \$15.00 back issue prepaid includes surface postage; bulk rates on request. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that \$30.00 per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. The identification code for Science is 0036-8075. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.

# Science

**343 (6176)**

*Science* **343** (6176), 1175-1270.

ARTICLE TOOLS

<http://science.sciencemag.org/content/343/6176>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

---

*Science* (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. The title *Science* is a registered trademark of AAAS.

Copyright © 2014 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.