

EDITORIAL

- 1015 **After 5 Years at *Science***
Bruce Alberts
>> *News story p. 1032; Policy Podcast*

NEWS OF THE WEEK

- 1024 A roundup of the week's top stories

NEWS & ANALYSIS

- 1026 **Review of Cloning Paper Prompts Questions**
- 1027 **Visa Reform Advances in Senate as House Offers STEM Ideas**
- 1028 **Italian Parliament Orders €3 Million Trial of Disputed Therapy**
- 1029 **Divided Loyalties Land Scientists in Hot Water**
- 1031 **Radiation Will Make Astronauts' Trip to Mars Even Riskier**
>> *Report p. 1080*

NEWS FOCUS

- 1032 **Science for All**
A Role for Science in Poverty Alleviation?
>> *Editorial p. 1015; Science Podcast*
- 1037 **The Numbers Game**

LETTERS

- 1041 **Education Guidelines Fail to Inspire**
J. M. Pasachoff
- Self-Medication: A Learning Process?**
B. D. Moore et al.
- Response**
J. C. de Rooze et al.
- 1042 **CORRECTIONS AND CLARIFICATIONS**

BOOKS ET AL.

- 1044 **Giving Kids a Fair Chance**
J. J. Heckman et al.,
reviewed by S. Bowles
- 1045 **Paleofantasy**
M. Zuk, reviewed by C. Woods

POLICY FORUM

- 1047 **Ethics and Genomic Incidental Findings**
A. L. McGuire et al.
- 1049 **Patient Autonomy and Incidental Findings in Clinical Genomics**
S. M. Wolf et al.

PERSPECTIVES

- 1051 **Vitamin Currency in a Lipid Exchange Market**
B. Mesmin and B. Antony
>> *Report p. 1106*
- 1052 **A New Twist on Cooperative Catalysis**
C. S. Schindler and E. N. Jacobsen
>> *Research Article p. 1065*
- 1053 **What Are Climate Models Missing?**
B. Stevens and S. Bony
- 1055 **Pebbles on Mars**
D. J. Jerolmack
>> *Research Article p. 1068*
- 1056 **GATORs Take a Bite Out of mTOR**
R. J. Shaw
>> *Report p. 1100; Science Signaling Research Article by N. Panchaud et al.*
- 1058 **Neuronal Birth to Cortical Circuitry**
S. Anderson and D. Coulter
- 1059 **Structural MS Pulls Its Weight**
M. Sharon

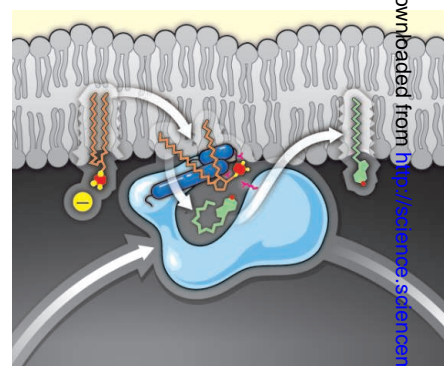
SCIENCE PRIZE ESSAY

- 1061 **Students as Collaborators in Systems Biology Research**
S. McClatchy et al.

CONTENTS continued >>



page 1037



pages 1051 & 1106

Downloaded from <http://science.sciencemag.org/> on October 15, 2019

ON THE WEB THIS WEEK

>> Policy Podcast

Listen to an interview with outgoing Science Editor-in-Chief Bruce Alberts.

>> Find More Online

Check out *Science Express*, our podcast, videos, daily news, our research journals, and *Science Careers* at www.sciencemag.org.



COVER

Can science do more to help the world's poor? India is a test bed for innovative approaches to poverty reduction. India's wheat crop is critical to the nation's food security. Farmers across the country now use their cell phones to send pest sightings and growing conditions to the Directorate of Wheat Research in Karnal, headed by Indu Sharma (pictured). See the Editorial on page 1015 and the News story on page 1032.

Photo: Pallava Bagla

DEPARTMENTS

- 1013 *This Week in Science*
- 1016 *Editors' Choice*
- 1022 *Science Staff*
- 1063 *AAAS News & Notes*
- 1122 *New Products*
- 1123 *Science Careers*

REVIEW

- 1064 Accelerating Next-Generation Vaccine Development for Global Disease Prevention
W. C. Koff et al.

>> *Review Summary*; for full text:
<http://dx.doi.org/10.1126/science.1232910>

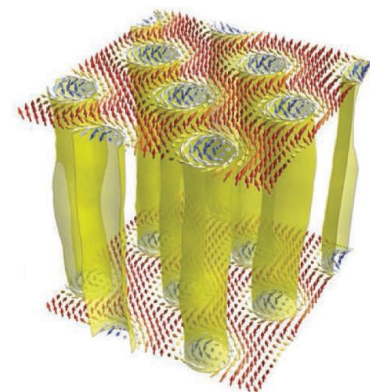
RESEARCH ARTICLES

- 1065 Enantio- and Diastereodivergent Dual Catalysis: α -Allylation of Branched Aldehydes
S. Krautwald et al.
Two catalysts independently set the chiral sense of adjacent stereocenters in a carbon-carbon bond-forming reaction.
>> *Perspective p. 1052*
- 1068 Martian Fluvial Conglomerates at Gale Crater
R. M. E. Williams et al.
Observations from the Curiosity rover of rounded pebbles in sedimentary rocks confirm ancient water flows on Mars.
>> *Perspective p. 1055*

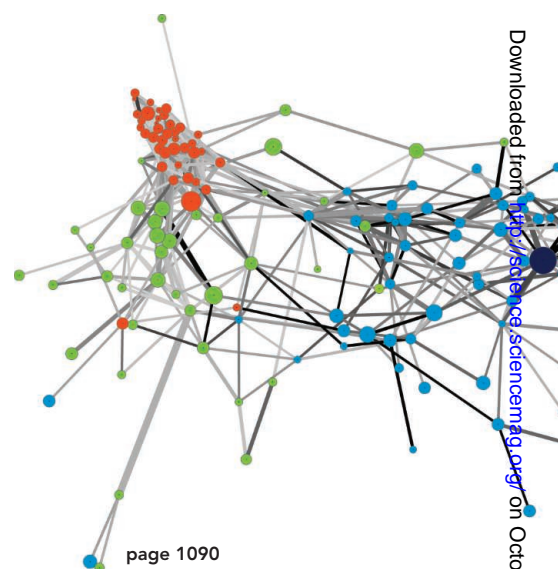
REPORTS

- 1073 High-Strength Chemical-Vapor-Deposited Graphene and Grain Boundaries
G.-H. Lee et al.
Unless subjected to chemical attack, the grain boundaries in chemical-vapor-deposited graphene do not weaken the material.
>> *Science Podcast*
- 1076 Unwinding of a Skyrmion Lattice by Magnetic Monopoles
P. Milde et al.
Magnetic force microscopy and Monte Carlo simulations elucidate the destruction of the skyrmion lattice in $\text{Fe}_{0.5}\text{Co}_{0.5}\text{Si}$.
- 1080 Measurements of Energetic Particle Radiation in Transit to Mars on the Mars Science Laboratory
C. Zeitlin et al.
The radiation dose on a round-trip to Mars could represent a large fraction of the accepted lifetime limit for astronauts.
>> *News story p. 1031*; *Science Podcast*
- 1084 An Adaptive Response to Uncertainty Generates Positive and Negative Contrast Effects
J. M. McNamara et al.
Contrast effects, in which current behavior depends on past conditions, may be an adaptive response to uncertainty.

- 1086 Functional Extinction of Birds Drives Rapid Evolutionary Changes in Seed Size
M. Galetti et al.
Local extinction of large fruit-eating birds selects for reduction of seed size in a tropical forest palm.
- 1090 Tracking Individuals Shows Spatial Fidelity Is a Key Regulator of Ant Social Organization
D. P. Mersch et al.
Monitoring of individually tagged worker ants revealed three distinct groups that greatly differ in behavior.
- 1094 Mechanisms of Age-Dependent Response to Winter Temperature in Perennial Flowering of *Arabis alpina*
S. Bergonzi et al.
- 1097 Molecular Basis of Age-Dependent Vernalization in *Cardamine flexuosa*
C.-M. Zhou et al.
MicroRNAs regulate perennial flowering.
- 1100 A Tumor Suppressor Complex with GAP Activity for the Rag GTPases That Signal Amino Acid Sufficiency to mTORC1
L. Bar-Peled et al.
A protein complex identified as a negative regulator of the mTORC1 protein kinase complex has tumor suppressor functions.
>> *Perspective p. 1056*
- 1106 Impaired α -TTP-PIPs Interaction Underlies Familial Vitamin E Deficiency
N. Kono et al.
Phosphatidylinositol phosphates may play a role in lipid-transfer protein-mediated vitamin E efflux from hepatocytes.
>> *Perspective p. 1051*
- 1110 A Conserved Mechanism for Centromeric Nucleosome Recognition by Centromere Protein CENP-C
H. Kato et al.
The structural links between the chromosomal centromere protein CenH3 and the kinetochore protein CENP-C are determined.
- 1113 Structure of RSV Fusion Glycoprotein Trimer Bound to a Prefusion-Specific Neutralizing Antibody
J. S. McLellan et al.
The prefusion conformation of respiratory syncytial virus protein F has been trapped by a neutralizing antibody.



page 1076



page 1090

Downloaded from <http://dx.doi.org/10.1126/science.1232910> on October 15, 2019

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): \$149 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$990; 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

340 (6136)

Science **340** (6136), 1013-1122.

ARTICLE TOOLS

<http://science.sciencemag.org/content/340/6136>

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 © 2013 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.