

EDITORIAL

- 1019 Research Integrity in China
Wei Yang
 >> *News story p. 1035*

NEWS OF THE WEEK

- 1024 A roundup of the week's top stories

NEWS & ANALYSIS

- 1026 Chinese Mission Ushers in New Era of Lunar Exploration
- 1027 Clues to Supertyphoon's Ferocity Found in the Western Pacific
- 1028 Cholesterol Forges Link Between Obesity and Breast Cancer
 >> *Report p. 1094*
- 1029 DARPA Aims to Rebuild Brains
- 1030 New Head of Advocacy Group Plans to 'Fight the Good Fight'
- 1031 Tense Vigil in China as Nasty Flu Virus Stirs Back to Life

NEWS FOCUS

- 1032 The Life Force
 >> *Report p. 1098*
- 1035 China's Publication Bazaar: An Aura of Legitimacy
 >> *Editorial p. 1019; Science Podcast*

LETTERS

- 1041 The More Parasites, the Better?
C. J. Carlson et al.
- Open Data: Crediting a Culture of Cooperation
B. Bolukbasi et al.
- Open Data: A Sustainable Model
J.-W. Li
- Ethics Tests for Trials
D. B. Khattry

BOOKS ET AL.

- 1043 Some Suggestions from 2013—The SB&F Prizes Finalists
 >> *Science Podcast*
- 1046 From the UK—Finalists for the Royal Society's Young People's Book Prize
- 1048 Browsers

POLICY FORUM

- 1049 International Cooperation on Human Lunar Heritage
H. R. Hertzfeld and S. N. Pace

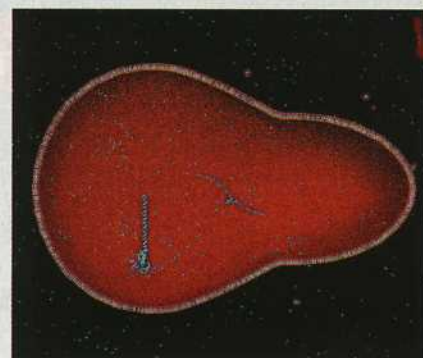
PERSPECTIVES

- 1051 Calibrating Asteroid Impact
C. R. Chapman
 >> *Research Article p. 1069*
- 1052 Protein Expression Under Pressure
C. Vogel
 >> *Report p. 1100*
- 1054 Abundant Metals Give Precious Hydrogenation Performance
R. M. Bullock
 >> *Reports pp. 1073, 1076, and 1080*
- 1055 Devices for Low-Resource Health Care
R. Richards-Kortum and M. Oden
- 1057 Genomes from Metagenomics
I. Sharon and J. F. Banfield
- 1059 Retrospective: Fred Sherman (1932–2013)
S. W. Liebman and J. E. Haber

SCIENCE PRIZE ESSAY

- 1060 Exploring the Evolution of Human Mate Preference
V. Foster

CONTENTS continued >>



pages 1032 & 1098



page 1043

ON THE WEB THIS WEEK

>> Science Podcast

Listen to stories on the top children's books of 2013, what newlyweds know about their prospects for happiness, authorship for sale in China, and more.

>> Find More Online

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



COVER

Color-enhanced scanning electron micrograph of rust (iron oxide) on painted sheet metal (width of image field: 41.3 micrometers). When activated by a thin carbon layer doped with nitrogen atoms, iron oxide proves to be an efficient catalyst for selective hydrogenation of nitroarenes to anilines, a process that previously required noble metals. See pages 1054 and 1073.

Image: *Eye of Science/Science Source*

DEPARTMENTS

- 1018 This Week in *Science*
- 1020 Editors' Choice
- 1022 *Science* Staff
- 1062 AAAS News & Notes
- 1121 New Products
- 1122 *Science Careers*

RESEARCH ARTICLES

- 1068 **The Innate Growth Bistability and Fitness Landscapes of Antibiotic-Resistant Bacteria**
J. B. Deris et al.

Identical bacteria can have low-level resistance to low concentrations of drugs that can flip subpopulations into dormancy.
Research Article Summary; for full text:
<http://dx.doi.org/10.1126/science.1237435>

- 1069 **Chelyabinsk Airburst, Damage Assessment, Meteorite Recovery, and Characterization**
O. P. Popova et al.

A detailed study of a recent asteroid impact provides an opportunity to calibrate the damage caused by these rare events.
>> *Perspective p. 1051*

REPORTS

- 1073 **Nanoscale Fe₂O₃-Based Catalysts for Selective Hydrogenation of Nitroarenes to Anilines**

R. V. Jagadeesh et al.
An iron oxide catalyst selects nitro groups for reduction in the presence of many other sensitive chemical substituents.

- 1076 **Cobalt Precursors for High-Throughput Discovery of Base Metal Asymmetric Alkene Hydrogenation Catalysts**

M. R. Friedfeld et al.
High-throughput screening furnishes surprisingly effective cobalt catalysts from versatile precursors.

- 1080 **Amine(imine)diphosphine Iron Catalysts for Asymmetric Transfer Hydrogenation of Ketones and Imines**

W. Zuo et al.
Ligand design based on mechanistic insight enables highly efficient iron catalysis.
>> *Perspective p. 1054*

- 1084 **Imaging the Absolute Configuration of a Chiral Epoxide in the Gas Phase**
P. Herwig et al.

Ultrafast electron stripping by a carbon foil enables precise elucidation of molecular geometries as the nuclei fly apart.

- 1086 **Regular Patterns in Frictional Resistance of Ice-Stream Beds Seen by Surface Data Inversion**

O. V. Sergienko and R. C. A. Hindmarsh
Shear stress between the ice and the underlying bedrock of Pine Island and Thwaites Glaciers is concentrated into bands.

- 1090 **Hepatitis C Virus E2 Envelope Glycoprotein Core Structure**

L. Kong et al.
The structure of a key viral surface protein provides insight for drug and vaccine development.

- 1094 **27-Hydroxycholesterol Links Hypercholesterolemia and Breast Cancer Pathophysiology**

E. R. Nelson et al.
The activity of a specific metabolite of cholesterol may help explain why obesity is a risk factor for breast cancer.
>> *News story p. 1028*

- 1098 **Nonenzymatic Template-Directed RNA Synthesis Inside Model Protocells**

K. Adamala and J. W. Szostak
Citrate can act as a partial magnesium chelator to facilitate the synthesis of RNA within a protocell-like vesicle.
>> *News story p. 1032*

- 1100 **Primate Transcript and Protein Expression Levels Evolve Under Compensatory Selection Pressures**

Z. Khan et al.
In humans, chimpanzees, and macaques, protein expression levels evolve under stronger evolutionary constraint than messenger RNA levels.
>> *Perspective p. 1052*

- 1104 **Phycobilisomes Supply Excitations to Both Photosystems in a Megacomplex in Cyanobacteria**

H. Liu et al.
The organization of several protein complexes involved in photosynthesis elucidates their energy transfer mechanisms.

- 1107 **Long-Distance Integration of Nuclear ERK Signaling Triggered by Activation of a Few Dendritic Spines**

S. Zhai et al.
Induction of long-term potentiation in a few dendritic spines signals to the nucleus to activate transcription factors.

- 1111 **Neural Activity in Human Hippocampal Formation Reveals the Spatial Context of Retrieved Memories**

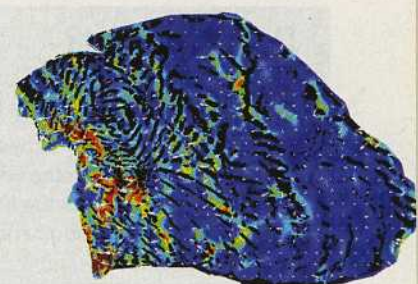
J. F. Miller et al.
Place cells in the human brain that fired at an object's location are reactivated during spontaneous recall.

- 1114 **BTBD3 Controls Dendrite Orientation Toward Active Axons in Mammalian Neocortex**

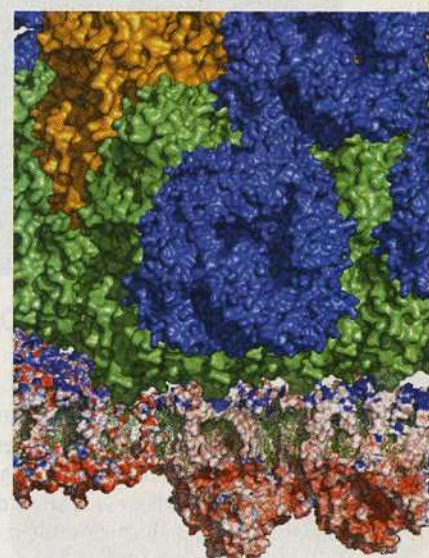
A. Matsui et al.
High-acuity sensory function may be achieved by the tuning of subcellular polarity to sources of high sensory activity.

- 1119 **Though They May Be Unaware, Newlyweds Implicitly Know Whether Their Marriage Will Be Satisfying**

J. K. McNulty et al.
Relationship satisfaction is captured by implicit measures of spousal attitudes.
>> *Science Podcast*



page 1086



page 1104

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 #R1254 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.