

## EDITORIAL

- 557 Young Brains on Drugs  
*Robert L. DuPont and Jeffrey A. Lieberman*

## NEWS OF THE WEEK

- 562 A roundup of the week's top stories

## NEWS & ANALYSIS

- 566 Fresh Misconduct Charges Hit Dutch Social Psychology
- 567 New Sites Bring the Earliest Americans Out of the Shadows
- 569 'Sea Butterflies' Are a Canary for Ocean Acidification
- 570 'Rejuvenation Factor' in Blood Turns Back the Clock in Old Mice  
*>> Reports pp. 630 and 649*
- 571 Designer Microbes Expand Life's Genetic Alphabet

## NEWS FOCUS

- 572 Maritime Ambitions  
*>> Science Podcast*

## LETTERS

- 577 Breast Cancer and Environmental Research  
*J. G. Brody et al.*
- Copper Limits: Opportunity Costs  
*J. E. Tilton*
- Copper Limits: Recycling Potential  
*G. Lagos*
- Copper Limits: Human Agency  
*A. J. Cavallo*
- 578 TECHNICAL COMMENT ABSTRACTS
- 578 NextGenVOICES

## BOOKS ET AL.

- 579 Beauty, Challenges, Ingenuity, and Horrors

## EDUCATION FORUM

- 583 Convergence Between Science and Environmental Education  
*A. E. J. Wals et al.*

## PERSPECTIVES

- 585 A SWELL Channel Indeed  
*J. A. Mindell*  
*>> Report p. 634*
- 586 Next Steps for Cosmology  
*J. Silk and J. Chluba*
- 588 Host Controls of HIV Neutralizing Antibodies  
*B. F. Haynes and L. Verkoczy*
- 590 Trigger Factor Flexibility  
*M. Gernerding and E. Deuring*  
*>> Research Article p. 597*
- 591 An Internal Cure for Damaged Polymers  
*Z. Zhao and E. M. Arruda*  
*>> Report p. 620*
- 593 Rice, Psychology, and Innovation  
*J. Henrich*  
*>> Research Article p. 603*
- 594 A Price to Pay for Adult Neurogenesis  
*L. A. Mongiat and A. F. Schinder*  
*>> Research Article p. 598*

## REVIEW

- 596 Sound Strategies for Hearing Restoration  
*G. S. G. Géléoc and J. R. Holt*  
*Review Summary; for full text:*  
*<http://dx.doi.org/10.1126/science.1241062>*

CONTENTS continued >>



page 572



page 579

## ON THE WEB THIS WEEK

### >> Science Podcast

On this week's show: marine archaeology digs up political complexities and a roundup of stories 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).



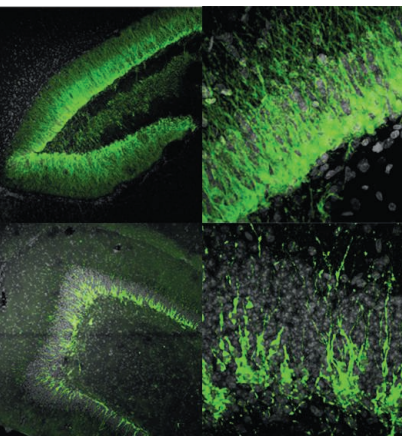
## COVER

Farmers drying grains of rice in the sun in China's Anhui province. New psychological tests suggest that China's history of rice farming has given the south more markers of traditional East Asian culture, such as interdependence, holistic thought style, and low divorce rates. In comparison, people in wheat-growing northern China are more independent. See pages 593 and 603.

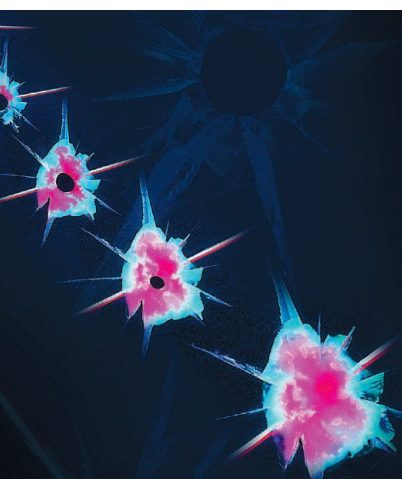
Photo: Getty Images

## DEPARTMENTS

- 555 This Week in *Science*
- 558 Editors' Choice
- 560 *Science* Staff
- 653 New Products
- 654 *Science Careers*



pages 594 & 598



pages 591 & 620

RESEARCH ARTICLES

- 597 **Structural Basis for Protein Antiaggregation Activity of the Trigger Factor Chaperone**  
*T. Saio et al.*  
Nuclear magnetic resonance data show how molecular chaperones recognize and prevent aggregation and misfolding of unfolded proteins.  
*Research Article Summary; for full text: <http://dx.doi.org/10.1126/science.1250494>*  
>> *Perspective p. 590*
- 598 **Hippocampal Neurogenesis Regulates Forgetting During Adulthood and Infancy**  
*K. G. Akers et al.*  
Addition of new neurons leads to remodeling of hippocampal circuitry and memory degradation.  
>> *Perspective p. 594*
- 603 **Large-Scale Psychological Differences Within China Explained by Rice Versus Wheat Agriculture**  
*T. Talhelm et al.*  
A history of growing rice contributed to an interdependent mode of thought.  
>> *Perspective p. 593*

REPORTS

- 608 **Fermi Surface and Pseudogap Evolution in a Cuprate Superconductor**  
*Y. He et al.*
- 612 **Simultaneous Transitions in Cuprate Momentum-Space Topology and Electronic Symmetry Breaking**  
*K. Fujita et al.*  
Scanning tunneling microscopy is used to provide evidence for a quantum critical point beneath the superconducting dome.
- 616 **Direct, Nonoxidative Conversion of Methane to Ethylene, Aromatics, and Hydrogen**  
*X. Guo et al.*  
Methyl radicals that form at isolated iron sites in a silica matrix form gas-phase products and do not deposit solid carbon.
- 620 **Restoration of Large Damage Volumes in Polymers**  
*S. R. White et al.*  
A sequential set of gelation and polymerization reactions are used for patching large gaps in a polymer sample.  
>> *Perspective p. 591*

- 623 **In Situ TEM Observation of a Microcrucible Mechanism of Nanowire Growth**  
*R. Boston et al.*  
Nanowire growth from a microcrucible catalyst particle at the bottom of the wire is observed in situ.
- 626 **Spatially Distributed Local Fields in the Hippocampus Encode Rat Position**  
*G. Agarwal et al.*  
Electrical fields within the hippocampus can now be decoded to reveal a rat's location.
- 630 **Vascular and Neurogenic Rejuvenation of the Aging Mouse Brain by Young Systemic Factors**  
*L. Katsimpardi et al.*  
A circulating growth factor promotes youthful muscles and brains in aged mice.  
>> *News story p. 570; Report p. 649*
- 634 **Identification of LRRC8 Heteromers as an Essential Component of the Volume-Regulated Anion Channel VRAC**  
*F. K. Voss et al.*  
Components of an elusive swelling-activated anion channel are identified and form a structurally new class of channel.  
>> *Perspective p. 585*
- 638 **Gibberellin Acts Positively Then Negatively to Control Onset of Flower Formation in *Arabidopsis***  
*N. Yamaguchi et al.*  
Inflorescence architecture is shaped by a biphasic signaling network involving the plant hormone gibberellin.
- 641 **Cancer Immunotherapy Based on Mutation-Specific CD4+ T Cells in a Patient with Epithelial Cancer**  
*E. Tran et al.*  
T cells specific for a mutation expressed by tumor cells show antitumor activity in a patient with an epithelial cancer.
- 645 **The Transcription Factor Gata6 Links Tissue Macrophage Phenotype and Proliferative Renewal**  
*M. Rosas et al.*  
The major self-renewing population of peritoneal macrophages is under discrete tissue-selective transcriptional control.
- 649 **Restoring Systemic GDF11 Levels Reverses Age-Related Dysfunction in Mouse Skeletal Muscle**  
*M. Sinha et al.*  
A circulating growth factor promotes youthful muscles and brains in aged mice.  
>> *News story p. 570; Report p. 630*

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 © 2014 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

**344 (6184)**

*Science* **344** (6184), 555-653.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/344/6184>

**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. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.