



## COVER

A bearded, horned terra cotta mask, about 5 centimeters in height, found at Mohenjo Daro, Pakistan. The artifact, which may have been attached to a puppet, offers a rare glimpse into the 5000-year-old Indus civilization. See page 1276.

**Image:** J. M. Kenoyer/Courtesy of the Department of Archaeology and Museums, Government of Pakistan

## DEPARTMENTS

- 1255 Science Online
- 1257 This Week in *Science*
- 1262 Editors' Choice
- 1266 Contact *Science*
- 1267 Random Samples
- 1269 Newsmakers
- 1366 New Products
- 1367 Science Careers

## EDITORIAL

- 1261 Broadband Internet for Africa  
*by Calestous Juma and Elisabeth Moyer*

## NEWS OF THE WEEK

- Russian Academy President Narrowly Wins Reelection 1270
- Breaking With Tradition, France Picks Future Elite Schools 1270
- Seaweed Invader Elicits Angst in India 1271
- Departing U.S. Genome Institute Director Takes Stock of Personalized Medicine 1272
- Runoff Threatens Early Human Site 1273
- SCIENCE SCOPE** 1273
- Read All About It—The First Female Genome! Or Is It? 1274
- Encourage Risk, Help Young Researchers, Panel Advises 1274
- The Andes Popped Up by Losing Their Deep-Seated Rocky Load >> *Review p. 1304* 1275

## NEWS FOCUS

### *Unmasking the Indus*

- Boring No More, a Trade-Savvy Indus Emerges Buddhist Stupa or Indus Temple? 1276
- Indus Collapse: The End or the Beginning of an Asian Culture? 1281
- Trench Warfare: Modern Borders Split the Indus
- Trying to Make Way for the Old 1284
- Pakistani Archaeology Faces Issues Old and New
- >> *Science Podcast*



1276

## LETTERS

- Working Toward Meritocracy in Italy *I. R. Marino* 1289
- The Emerging World of Wikis *J. C. Hu et al.*
- Science 2.0: Not So New? *J. B. Yoder*
- Response *B. Shneiderman*

## CORRECTIONS AND CLARIFICATIONS 1291

## BOOKS ET AL.

- The Cult of Statistical Significance** How the Standard Error Costs Us Jobs, Justice, and Lives 1292
- S. T. Ziliak and D. N. McCloskey; reviewed by T. M. Porter*
- Evolutionary Psychology as Maladapted Psychology** 1293
- R. C. Richardson, reviewed by J. J. Bolhuis*

## POLICY FORUM

- Under-Resourced, Under Threat 1294
- A. J. Richardson and E. S. Poloczanska*
- >> *Science Podcast*

## PERSPECTIVES

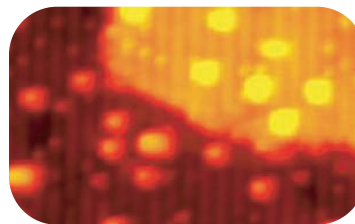
- Putting the Heat on Tropical Animals 1296
- J. J. Tewksbury, R. B. Huey, C. A. Deutsch*
- The Scale of Prediction 1297
- N. S. Baliga*
- >> *Research Article p. 1313*
- An Eccentric Pulsar: Result of a Threesome? 1298
- E. P. J. van den Heuvel*
- >> *Research Article p. 1309*
- Improving Correlations Despite Particle Loss 1300
- J. V. Porto*
- >> *Report p. 1329*
- Refined View of the Ends 1301
- A. Bianchi and D. Shore*
- >> *Report p. 1341*
- Going with (or Against) the Flow 1302
- T. Peacock and E. Bradley*



1302

Downloaded from <http://science.sciencemag.org/> on June 17, 2019

CONTENTS continued >>



## SCIENCE EXPRESS

[www.scienceexpress.org](http://www.scienceexpress.org)

### PSYCHOLOGY

**BREVIA: Serotonin Modulates Behavioral Reactions to Unfairness**  
*M. J. Crockett, L. Clark, G. Tabibnia, M. D. Lieberman, T. W. Robbins*  
 Individuals with low levels of brain serotonin are less likely to accept an unfair offer of money from other players in a laboratory game.

10.1126/science.1155577

### ECOLOGY

**Animal Versus Wind Dispersal and the Robustness of Tree Species to Deforestation**  
*D. Montoya, M. A. Zavala, M. A. Rodríguez, D. W. Purves*  
 In Spanish forests, tree species with seeds that are dispersed by animals are more resilient in a fragmented forest than those with wind-dispersed seeds.

10.1126/science.1158404

### CHEMISTRY

**The Role of Interstitial Sites in the Ti<sub>3d</sub> Defect State in the Band Gap of Titania**  
*S. Wendt et al.*  
 Scanning tunneling microscope data and calculations show that near-surface titanium sites, not bridging oxygen vacancies, determine the useful electronic properties of TiO<sub>2</sub>.

10.1126/science.1159846

### EVOLUTION

**Natural Selection Shapes Genome-Wide Patterns of Copy-Number Polymorphism in *Drosophila melanogaster***  
*J. J. Emerson, M. Cardoso-Moreira, J. O. Borevitz, M. Long*  
 A high-resolution analysis of gene copy number in *Drosophila* species shows that most variations are deleterious but a few for resistance to toxins are being positively selected.

10.1126/science.1158078

## TECHNICAL COMMENT ABSTRACTS

### GEOPHYSICS

**Comment on "Intermittent Plate Tectonics?"** 1291  
*J. Korenaga*

[full text at www.sciencemag.org/cgi/content/full/320/5881/1291a](http://www.sciencemag.org/cgi/content/full/320/5881/1291a)

**Response to Comment on "Intermittent Plate Tectonics?"**  
*P. G. Silver and M. D. Behn*

[full text at www.sciencemag.org/cgi/content/full/320/5881/1291b](http://www.sciencemag.org/cgi/content/full/320/5881/1291b)

## REVIEW

### GEOLOGY

**Rise of the Andes** 1304  
*C. N. Garzione et al.*  
 >> *News story p. 1275*

## BREVIA

### PHYSICS

**Fine Structure Constant Defines Visual Transparency of Graphene** 1308  
*R. R. Nair et al.*

The transparency of sheets of graphene is quantized in a way that allows a simple determination of the fine structure constant, which relates light and relativistic electrons.

## RESEARCH ARTICLES

### ASTRONOMY

**An Eccentric Binary Millisecond Pulsar in the Galactic Plane** 1309  
*D. J. Champion et al.*

A rapidly rotating pulsar has a highly eccentric orbit about its companion star, not the usual circular orbit, challenging ideas on how such binary systems form. >> *Perspective p. 1298*

### MICROBIOLOGY

**Predictive Behavior Within Microbial Genetic Networks** 1313  
*I. Tagkopoulos et al.*

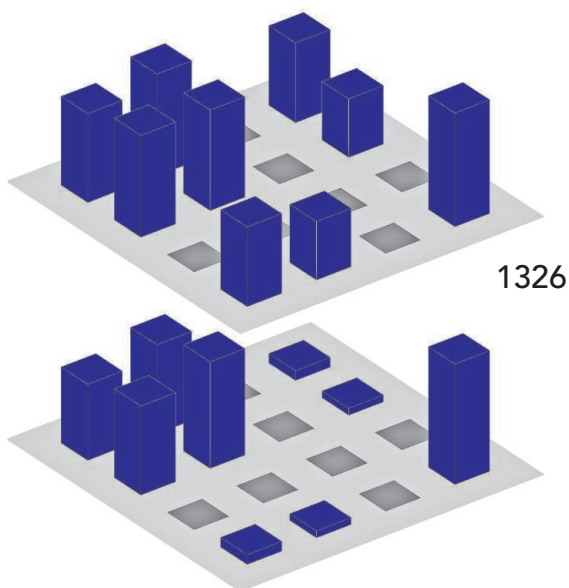
Predictable sequences of environmental signals can be exploited by bacteria so that they learn to anticipate future metabolic needs and thereby gain a competitive edge. >> *Perspective p. 1297*

## REPORTS

### ASTRONOMY

**A Transient Radio Jet in an Erupting Dwarf Nova** 1318  
*E. Körding et al.*

Detection of a radio jet in a dwarf supernova shows that production of synchrotron radiation during accretion of a disk is a ubiquitous source of astrophysical jets.



1326

## REPORTS CONTINUED...

### CHEMISTRY

- Identification of Non-Precious Metal Alloy Catalysts for Selective Hydrogenation of Acetylene** 1320  
*F. Studt et al.*

Calculations of heats of adsorption of hydrocarbons on metals guide experiments and show that a nickel-zinc alloy can replace palladium in selectively oxidizing acetylene.

### GEOPHYSICS

- The Aftershock Signature of Supershear Earthquakes** 1323  
*M. Bouchon and H. Karabulut*

Destructive earthquakes that ruptured faster than the speed of sound have aftershocks off the fault plane, but not on it, because of the high stresses generated by the shock wave.

### PHYSICS

- Multipartite Entanglement Among Single Spins in Diamond** 1326  
*P. Neumann et al.*

Nitrogen vacancy centers in diamond are used to generate and detect 2-qubit and 3-qubit entangled states at room temperature.

### PHYSICS

- Strong Dissipation Inhibits Losses and Induces Correlations in Cold Molecular Gases** 1329  
*N. Syassen et al.*

Inducing inelastic collisions in cold gas condensates confined in one-dimensional tubes extends the lifetime of the molecules by more than an order of magnitude. >> *Perspective p. 1300*

### CELL BIOLOGY

- Subdiffraction Multicolor Imaging of the Nuclear Periphery with 3D Structured Illumination Microscopy** 1332  
*L. Schermelleh et al.*

Fluorescence tags illuminated through a diffraction grating reveal the structure of nuclear pores, surrounding channels, and chromatin at a resolution of about 100 nanometers.

### MOLECULAR BIOLOGY

- Intersection of the RNA Interference and X-Inactivation Pathways** 1336  
*Y. Ogawa, B. K. Sun, J. T. Lee*

Two noncoding RNAs required for X-chromosome inactivation in female mice form a duplex that is cleaved by the RNA interference machine, indicating a link between X inactivation and RNA interference.

### MOLECULAR BIOLOGY

- Fission Yeast Pot1-Tpp1 Protects Telomeres and Regulates Telomere Length** 1341  
*T. Miyoshi, J. Kanoh, M. Saito, F. Ishikawa*

Yeast chromosome ends are protected by a protein complex similar to that in mammals, which prevents end-to-end chromosome fusion and controls telomere length.

>> *Perspective p. 1301*

### MOLECULAR BIOLOGY

- The Transcriptional Landscape of the Yeast Genome Defined by RNA Sequencing** 1344  
*U. Nagalakshmi et al.*

A more complete catalog of transcribed DNA of yeast is assembled by shotgun sequencing of messenger RNA and reveals numerous previously unknown transcribed regions.

### DEVELOPMENTAL BIOLOGY

- The Transcription/Migration Interface in Heart Precursors of *Ciona intestinalis*** 1349  
*L. Christiaen et al.*

In embryonic cells destined to form the heart in a simple chordate, a genetic network activates modules of effector genes for proteins that control cellular migration.

### NEUROSCIENCE

- High Impulsivity Predicts the Switch to Compulsive Cocaine-Taking** 1352  
*D. Belin et al.*

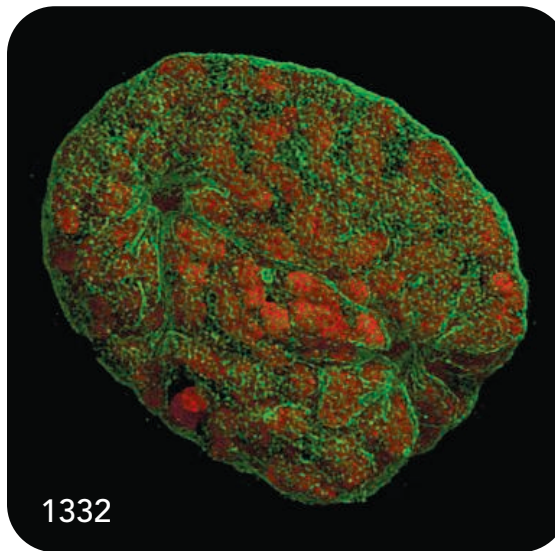
Rats that are more impulsive, but not those that seek novelty, tend to compulsively consume cocaine and become addicted.

>> *Science Podcast*

### NEUROSCIENCE

- Patches with Links: A Unified System for Processing Faces in the Macaque Temporal Lobe** 1355  
*S. Moeller, W. A. Freiwald, D. Y. Tsao*

The six regions of the macaque cortex that respond to faces are strongly and specifically interconnected, indicating hierarchical processing of face stimuli.

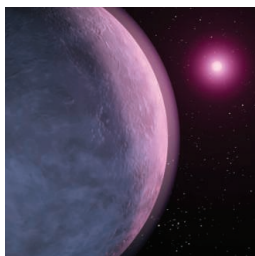


ADVANCING SCIENCE. SERVING SOCIETY

**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 © 2008 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): \$144 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$770; 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 \$20.00 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.

CONTENTS continued >>



No place like home.

## SCIENCE NOW

[www.sciencenow.org](http://www.sciencenow.org)

HIGHLIGHTS FROM OUR DAILY NEWS COVERAGE

**Smallest Extrasolar Planet Portends Other Earths**  
Newly discovered world only three times as large as ours, orbits tiny sun.

### Rodent Bones of Contention

Rat fossils may settle dispute over when humans reached New Zealand.

### Mutation Spells Bad News for Breast Cancer Patients

Defect in *NQO1* gene dramatically reduces survival rates, responsiveness to treatment.



Iraq and Afghanistan veterans return to campus.

## SCIENCE CAREERS

[www.sciencereers.org/career\\_development](http://www.sciencereers.org/career_development)

FREE CAREER RESOURCES FOR SCIENTISTS

### Student-Veterans Come Marching Home: Their Return to Studies

*A. Kotok*

A group of Iraq and Afghanistan veterans tells about their new lives as science and engineering students.

### Student-Veterans Come Marching Home: A New G.I. Bill for Scientists

*A. Kotok*

Can the proposed G.I. Bill do for Iraq and Afghanistan veterans what the original G.I. Bill did for World War II veterans?

### Taken for Granted: Over Here

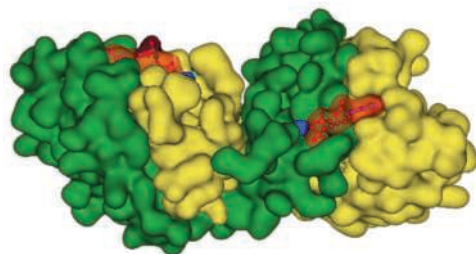
*B. L. Benderly*

Science and technology fields offer professional opportunities for veterans who choose wisely.

### June 2008 Funding News

*GrantsNet Staff*

Learn about the latest in research funding, scholarships, fellowships, and internships.



Dimeric GTPase domains of the kinase LRRK2.

## SCIENCE SIGNALING

[www.sciencesignaling.org](http://www.sciencesignaling.org)

THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

### PERSPECTIVE: ROCO Kinase Activity Is Controlled by Internal GTPase Function

*B. Weiss*

The guanosine triphosphatase (GTPase) domain of leucine-rich repeat kinase 2 (LRRK2) mediates LRRK2 homodimerization and controls its protein kinase activity.

### PERSPECTIVE: Dual Functions of the KNOTTED1 Homeodomain—Sequence-Specific DNA Binding and Regulation of Cell-to-Cell Transport

*N. Bolduc, S. Hake, D. Jackson*

A single domain confers different subcellular localizations of the homeodomain protein KN1.

### TEACHING RESOURCE: Physiological and Pathological Actions of Calpains in Glutamatergic Neurons

*J. Liu, M. C. Liu, K. K. W. Wang*

A pair of animations illustrates how neuronal calpains contribute to synaptic plasticity or neuronal toxicity.

## SCIENCE PODCAST

[www.sciencemag.org/about/podcast.dtl](http://www.sciencemag.org/about/podcast.dtl)

FREE WEEKLY SHOW

Download the 6 June *Science* Podcast to hear about climate-driven impacts on marine life, impulsivity and cocaine addiction, new insights into the Indus civilization, and more.



Separate individual or institutional subscriptions to these products may be required for full-text access.



# Science

**320 (5881)**

*Science* **320** (5881), 1257-1366.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/320/5881>

**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.