

## EDITORIAL

- 1361 UNsustainable?  
*Carlos A. Nobre*  
 >> *Policy Forum p. 1383; Essays p. 1396*

## NEWS OF THE WEEK

- 1364 A roundup of the week's top stories

## NEWS & ANALYSIS

- 1367 Social Scientists Hope for Reprieve From the Senate  
 1368 Seagrasses Partner With Clams to Stay Healthy  
 >> *Report p. 1432*  
 1369 Microbial Survey of Human Body Reveals Extensive Variation

## NEWS FOCUS

- 1372 How Do You Count the Dead?  
 >> *Science Podcast*  
 1375 The Reluctant Toad Killer

## LETTERS

- 1379 Forgotten Biodiversity in Desert Ecosystems  
*S. M. Durant et al.*  
 Predatory Publishers and Plagiarism Prevention  
*P. A. Jansen and P.-M. Forget*  
 1380 Life in Science: Potato Pedagogy  
*B. Brucker*  
 1380 CORRECTIONS AND CLARIFICATIONS

## BOOKS ET AL.

- 1381 Finnish Lessons  
*P. Sahlberg, reviewed by H. Saalbach*  
 1382 Ignorance  
*S. Firestein, reviewed by M. Cerf*

## POLICY FORUM

- 1383 Avoiding Empty Ocean Commitments at Rio+20  
*L. Veitch et al.*  
 >> *Editorial p. 1361; Essays p. 1396*

## PERSPECTIVES

- 1386 COX-2 Inhibitors and Cardiovascular Risk  
*C. P. Cannon and P. J. Cannon*  
 1387 Absolute Dating of Cave Art  
*J. Hellstrom*  
 >> *Research Article p. 1409*  
 1388 Cancer and Telomeres—An ALternative to Telomerase  
*J. W. Shay et al.*  
 1390 Fragments of the Lunar Cataclysm  
*A. E. Rubin*  
 >> *Report p. 1426*  
 1391 All Packed Up and Ready to Go  
*Y. Jacob and R. Martienssen*  
 >> *Reports pp. 1445 and 1448*  
 1393 The Heartbeat of Ecosystems  
*M. A. Palmer and C. M. Febria*  
 >> *Report p. 1438*  
 1394 A Boron-Boron Triple Bond  
*G. Frenking and N. Holzmann*  
 >> *Report p. 1420*

## ESSAYS

- 1396 Science for Sustainable Development  
 Analyzing Sustainable Development Goals  
*L. Brito*  
 The Urban Challenge  
*D. Fisk*  
 Harnessing New Scientific Capacity  
*A. Abreu*  
 From Industrial Toward Ecological in China  
*J. Pan*  
 Creating the New Development Ecosystem  
*A. Dehgan*  
 Systems Science for Policy Evaluation  
*P. Kabat*  
 Rigorous Evaluation of Human Behavior  
*E. Duflo*  
 >> *Editorial p. 1361; Policy Forum p. 1383*

## REVIEW

- 1401 The Functions of Biological Diversity in an Age of Extinction  
*S. Naeem et al.*

CONTENTS continued >>



page 1375



pages 1361, 1383, & 1396

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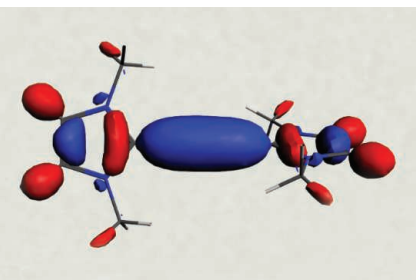
## COVER

View of a ceiling in Altamira Cave, Cantabria, Spain (original image rotated 180°). The multicolor (brown and red) bison depicted here date to ~18,000 years ago but were painted on top of earlier single-color artwork (red). New uranium-thorium dates on calcite crusts show that the large (~50-centimeter) double-claviform figure (center right) is at least 35,600 years old, indicating that, at the latest, cave painting here began shortly after humans first arrived. See page 1409.

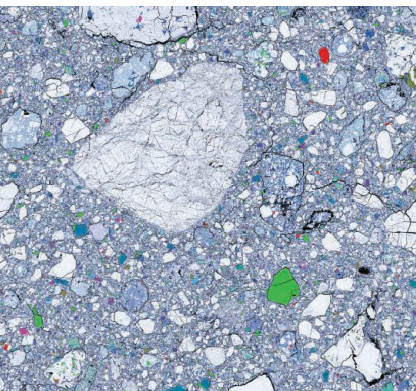
Photo: Pedro Saura

## DEPARTMENTS

- 1358 This Week in *Science*  
 1362 Editors' Choice  
 1363 *Science* Staff  
 1462 New Products  
 1463 *Science* Careers



pages 1394 &amp; 1420



pages 1390 &amp; 1426



pages 1368 &amp; 1432

**BREVIA**

- 1408** Massive Phytoplankton Blooms Under Arctic Sea Ice  
*K. R. Arrigo et al.*  
In midsummer, diatoms have taken advantage of thinning ice cover to feed in nutrient-rich waters.

**RESEARCH ARTICLE**

- 1409** U-Series Dating of Paleolithic Art in 11 Caves in Spain  
*A. W. G. Pike et al.*  
Dating of calcite crusts overlying art in Spanish caves shows that painting began more than 40,000 years ago.  
>> *Perspective p. 1387*; *Science Podcast*

**REPORTS**

- 1413** Spin-Orbit Echo  
*N. Sugimoto and N. Nagaosa*  
A distinct parameter, twisted spin, is predicted to be conserved in a two-dimensional semiconductor with spin-orbit interaction.
- 1416** Dipolar Antiferromagnetism and Quantum Criticality in LiErF<sub>4</sub>  
*C. Kraemer et al.*  
Scattering experiments reveal that magnetic ordering can arise from dipolar interactions, not only from exchange.
- 1420** Ambient-Temperature Isolation of a Compound with a Boron-Boron Triple Bond  
*H. Braunschweig et al.*  
A boron analog of an alkyne has been synthesized by reduction of a brominated precursor.  
>> *Perspective p. 1394*
- 1422** Reticulated Nanoporous Polymers by Controlled Polymerization-Induced Microphase Separation  
*M. Seo and M. A. Hillmyer*  
In situ preparation of a block copolymer can be used to induce microphase separation to make mesoporous materials.
- 1426** Direct Detection of Projectile Relics from the End of the Lunar Basin-Forming Epoch  
*K. H. Joy et al.*  
Analysis of lunar rocks from the Apollo missions reveals fragments from meteorites that hit the Moon in the ancient past.  
>> *Perspective p. 1390*
- 1429** Sparse Pre-Columbian Human Habitation in Western Amazonia  
*C. H. McMichael et al.*  
Analysis of soils in western Amazonia finds little evidence for pre-Columbian human occupations there.

- 1432** A Three-Stage Symbiosis Forms the Foundation of Seagrass Ecosystems  
*T. van der Heide et al.*  
A marine plant, small mollusks, and their resident sulfide-oxidizing bacteria survive together.  
>> *News story p. 1368*
- 1434** Fear of Predation Slows Plant-Litter Decomposition  
*D. Hawlena et al.*  
The risk of being eaten by spiders changes the elemental composition of grasshoppers, which affects soil microbes.  
>> *Science Podcast*
- 1438** Continental-Scale Effects of Nutrient Pollution on Stream Ecosystem Functioning  
*G. Woodward et al.*  
Leaf-litter breakdown rates across 100 European streams offer insights into ecosystem health during eutrophication.  
>> *Perspective p. 1393*
- 1440** p53 Dynamics Control Cell Fate  
*J. E. Purvis et al.*  
After DNA damage, pulses of p53 allow recovery, whereas sustained levels lead to senescence.
- 1445** A Histone Acetyltransferase Regulates Active DNA Demethylation in *Arabidopsis*  
*W. Qian et al.*  
A plant epigenetic regulator recognizes both histones and methylated DNA and prevents gene silencing.
- 1448** MORC Family ATPases Required for Heterochromatin Condensation and Gene Silencing  
*G. Moissiard et al.*  
A conserved family of adenosine triphosphatases predicted to catalyze alterations in chromosome superstructure is required for gene silencing.  
>> *Perspective p. 1391*
- 1451** The Structures of COPI-Coated Vesicles Reveal Alternate Coatomer Conformations and Interactions  
*M. Faini et al.*  
The flexible coatomer complex makes contact with a variable number of neighbors and coats vesicles of variable size.
- 1454** Awake Hippocampal Sharp-Wave Ripples Support Spatial Memory  
*S. P. Jadhav et al.*  
The neuronal "replay" of past experience may allow animals to retrieve specific memories and use them to guide behavior.
- 1458** Segregation of Axonal and Somatic Activity During Fast Network Oscillations  
*T. Dugladze et al.*  
Inhibition by axo-axonic interneurons functionally separates the input and output of hippocampal pyramidal cells.

## SCIENCEONLINE

## SCIENCEEXPRESS

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

Universities, Key to Prosperity

*C. O. Holliday*

10.1126/science.1225457

Adenylate Cyclases of *Trypanosoma brucei* Inhibit the Innate Immune Response of the Host

*D. Salmon et al.*

Parasites release cyclic adenosine monophosphate when swallowed up by myeloid cells, thereby turning off a host defense pathway.

10.1126/science.1222753

Function, Targets, and Evolution of *Caenorhabditis elegans* piRNAs

*M. P. Bagijn et al.*

Piwi-bound piwi-interacting RNAs recruit endogenous small interfering RNAs to silence mobile genetic elements.

10.1126/science.1220952

Rapid Progression of Ocean Acidification in the California Current System

*N. Gruber et al.*

Rising concentrations of atmospheric carbon dioxide threaten to amplify the severity of ocean acidification in upwelling zones.

10.1126/science.1216773

Mitochondrial Import Efficiency of ATF5-1 Regulates Mitochondrial UPR Activation

*A. M. Nargund et al.*

When stressed, the mitochondrion reduces import of a transcription factor, which enters the nucleus instead.

10.1126/science.1223560

## SCIENCE NOW

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Highlights From Our Daily News Coverage

Putting the Brakes on the Immune System

Researchers discover powerful but short-lived cells that rein in immune attacks.

<http://scim.ag/Immune-Brakes>

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As we grow older, we lose DNA modifications that can protect against cancer and other diseases.

<http://scim.ag/Age-Genes>

Life Blooms Under Arctic Ice

Researchers discover green blooms of phytoplankton more than one meter below the surface.

<http://scim.ag/Ice-Blooms>

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

**12 June issue:** <http://scim.ag/ss061212>

RESEARCH ARTICLE: The Transcription Factor TFEB Links mTORC1 Signaling to Transcriptional Control of Lysosome Homeostasis

*A. Rocznik-Ferguson et al.*

## PODCAST

*S. M. Ferguson and A. M. VanHook*

Regulated nuclear translocation of a transcription factor maintains lysosomal homeostasis.

RESEARCH ARTICLE: The *lin-4* MicroRNA Targets the LIN-14 Transcription Factor to Inhibit Netrin-Mediated Axon Attraction

*Y. Zou et al.*

A microRNA instructs neurons when to stop axonal pathfinding.

PERSPECTIVE: S-Nitrosylation Signaling in *Escherichia coli*

*I. Gusarov and E. Nudler*

Two posttranslational modifications of a transcription factor enable bacteria to adapt to changes in NO and O<sub>2</sub>.

## SCIENCE TRANSLATIONAL MEDICINE

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Integrating Medicine and Science

**13 June issue:** <http://scim.ag/stm061312>

EDITORIAL: Listen, Understand, Engage

*A. Thomson and M. Watson*

For more effective vaccine advocacy, scientists and policy-makers must translate and apply insights from the cognitive and social sciences to the way they communicate and engage with the public.

RESEARCH ARTICLE: Cell Carriage, Delivery, and Selective Replication of an Oncolytic Virus in Tumor in Patients

*R. A. Adair et al.*

FOCUS: The Virus That Came in from the Cold

*J. C. Bell*

Oncolytic reovirus is carried by cells to tumors and protected from neutralizing antibodies in the circulation.

RESEARCH ARTICLE: Myocardial Infarction Triggers Chronic Cardiac Autoimmunity in Type 1 Diabetes

*R. V. S. R. K. Gottumukkala et al.*

FOCUS: Autoimmune Diabetes Inflames the Heart

*R. H. Eckel and G. S. Eisenbarth*

Acute myocardial infarction triggers an autoimmune attack on the heart in a mouse model of type 1 diabetes and in human type 1 diabetic patients.

RESEARCH ARTICLE: Exome Sequencing Can Improve Diagnosis and Alter Patient Management

*T. J. Dixon-Salazar et al.*

Exome sequencing of 118 patients with neurodevelopmental disorders shows that this technique is useful for identifying new pathogenic mutations and for correcting diagnosis in ~10% of cases.

RESEARCH ARTICLE: Mucus-Penetrating Nanoparticles for Vaginal Drug Delivery Protect Against Herpes Simplex Virus

*L. M. Ensign et al.*

Mucus-penetrating particles improve drug delivery to the mucosal surface of the mouse vagina and deliver acyclovir for enhanced protection against vaginal herpes infection in mice.

RESEARCH ARTICLE: Successful Treatment of Ebola Virus–Infected Cynomolgus Macaques with Monoclonal Antibodies

*X. Qiu et al.*

Macaques survived infection with Ebola virus when treated starting at 24 hours after infection with a mix of three neutralizing monoclonal antibodies.

## SCIENCE CAREERS

[www.sciencereers.org/career\\_magazine](http://www.sciencereers.org/career_magazine)

Free Career Resources for Scientists

Soldiers Becoming Scientists

*M. Price*

The Post-9/11 GI Bill and other programs are enabling some veterans to pursue careers in science.

<http://scim.ag/SoldierScientists>

Tooling Up: Interview Intangibles

*D. Jensen*

The most important aspects of your job interview are things you may not have thought about.

[http://scim.ag/TU\\_Intangibles](http://scim.ag/TU_Intangibles)

## SCIENCE PODCAST

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

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On the 15 June *Science* Podcast: stressed-out grasshoppers, a new way to date cave paintings, counting the dead on a global scale, and more.

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[news.sciencemag.org/scienceinsider](http://news.sciencemag.org/scienceinsider)

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