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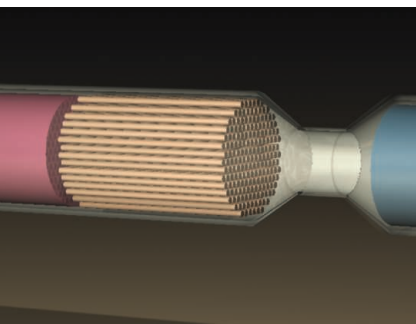

**COVER**

Recycling aluminum cans (shown here in bales at a facility in Philadelphia, PA) is just one of the many approaches directed toward doing something productive with the world's ever-expanding stream of waste. In the special section Working with Waste (page 662), we survey multifaceted efforts to tackle this global challenge. For the story behind the cover, go to <http://scim.ag/cov6095>.

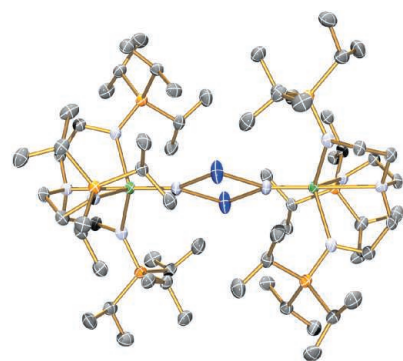
Photo: Huguette Roe, [www.hroepphoto.com](http://www.hroepphoto.com)

**DEPARTMENTS**

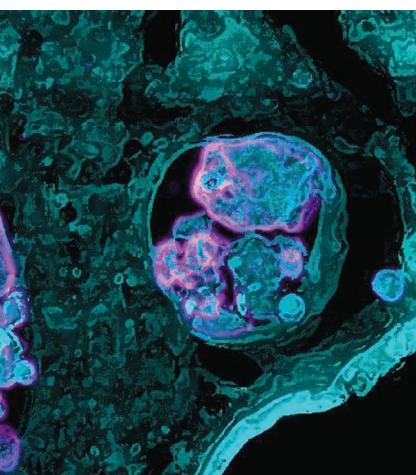
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R. J. Farrauto

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## 661 Retrospective: Elinor Ostrom (1933–2012)

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## RESEARCH ARTICLE

## 704 Evolution of Ocean Temperature and Ice Volume Through the Mid-Pleistocene Climate Transition

H. Elderfield et al.

The effects of changes in ice volume and ocean temperature during the mid-Pleistocene transition have now been resolved.

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## REPORTS

## 710 Divergent Nematic Susceptibility in an Iron Arsenide Superconductor

J.-H. Chu et al.

Electrons are shown to drive a structural transition in a pnictide superconductor.

713 Exceptional Activity for Methane Combustion over Modular Pd@CeO<sub>2</sub> Subunits on Functionalized Al<sub>2</sub>O<sub>3</sub>

M. Cargnello et al.

A catalyst allows complete combustion of methane, a more powerful greenhouse gas than carbon dioxide, to occur at lower temperatures.

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## 717 Synthesis and Structure of a Terminal Uranium Nitride Complex

D. M. King et al.

A uranium triple bond to nitrogen makes use of the heavy element's f orbitals.

&gt;&gt; Perspective p. 652

## 721 The Provenances of Asteroids, and Their Contributions to the Volatile Inventories of the Terrestrial Planets

C. M. O'D. Alexander et al.

Hydrogen isotopic analysis of primitive meteorites implicates asteroids as early sources of Earth's water.

724 Earthquake in a Maze: Compressional Rupture Branching During the 2012 *M<sub>w</sub>* 8.6 Sumatra Earthquake

L. Meng et al.

The mechanics of the largest strike-slip earthquake ever recorded give clues about how intraplate earthquakes rupture.

727 PI4P and PI(4,5)P<sub>2</sub> Are Essential But Independent Lipid Determinants of Membrane Identity

G. R. V. Hammond et al.

The phospholipid phosphatidylinositol 4-phosphate defines important physical properties of the cell membrane.

&gt;&gt; Perspective p. 653

730 Lineage Tracing Reveals Lgr5<sup>+</sup> Stem Cell Activity in Mouse Intestinal Adenomas

A. G. Schepers et al.

Multicolor reporter genes signal the fate of stem cells that fuel the growth of intestinal tumors in mice.

## 735 Closed-Loop Control of Epilepsy by Transcranial Electrical Stimulation

A. Berényi et al.

In a rodent model of petit mal epilepsy, the onset of a seizure triggers an electrical pulse that cuts short the seizure.

## 738 Shear-Activated Nanotherapeutics for Drug Targeting to Obstructed Blood Vessels

N. Korin et al.

Nanoparticles carrying a drug that dissolves blood clots disintegrate at sites of stenosis.

&gt;&gt; Perspective p. 658

742 *Drosophila* Dosage Compensation Involves Enhanced Pol II Recruitment to Male X-Linked Promoters

T. Conrad et al.

Boosting gene expression from the entire X chromosome in males happens mainly at the level of transcription initiation.

## 746 Fate-Restricted Neural Progenitors in the Mammalian Cerebral Cortex

S. J. Franco et al.

Where cortical neurons end up is determined before they begin to move.

## 749 Bergmann Glial AMPA Receptors Are Required for Fine Motor Coordination

A. S. Saab et al.

Signaling by glial cells helps to preserve cerebellar neurons that control movements.

## 753 The Pulvinar Regulates Information Transmission Between Cortical Areas Based on Attention Demands

Y. B. Saalman et al.

A region of the thalamus synchronizes neuronal firing in two cortical areas and thus allocates attention.

## SCIENCEONLINE

## SCIENCEEXPRESS

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

### Direct Mapping of Nuclear Shell Effects in the Heaviest Elements

*E. Minaya Ramirez et al.*

Highly precise mass measurements of nobelium and lawrencium isotopes provide insight into superheavy element stability.

10.1126/science.1225636

### Adaptive Sleep Loss in Polygynous Pectoral Sandpipers

*J. A. Lesku et al.*

Male sandpipers spend their Arctic days mating instead of sleeping.

10.1126/science.1220939

### Loss of the Tumor Suppressor BAP1 Causes Myeloid Transformation

*A. Dey et al.*

The deubiquitinating enzyme BAP1 is implicated in myelodysplastic syndrome.

10.1126/science.1221711

### Highly Conserved Protective Epitopes on Influenza B Viruses

*C. Dreyfus et al.*

Three broadly neutralizing human monoclonal antibodies protect mice against influenza B.

10.1126/science.1222908

### Conformational Control of the Ste5 Scaffold Protein Insulates Against MAP Kinase Misactivation

*J. G. Zalatan et al.*

A scaffold protein controls signal transmission by using an auto-inhibitory domain as a gate.

10.1126/science.1220683

## TECHNICALCOMMENTS

### Comment on "Impaired Respiratory and Body Temperature Control Upon Acute Serotonergic Neuron Inhibition"

*S. Löffler et al.*

Full text at [www.sciencemag.org/cgi/content/ful/337/6095/646-b](http://www.sciencemag.org/cgi/content/ful/337/6095/646-b)

### Response to Comment on "Impaired Respiratory and Body Temperature Control Upon Acute Serotonergic Neuron Inhibition"

*S. M. Dymecki et al.*

Full text at [www.sciencemag.org/cgi/content/ful/337/6095/646-c](http://www.sciencemag.org/cgi/content/ful/337/6095/646-c)

## SCIENCENOW

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

Highlights From Our Daily News Coverage

### Starbucks of Ancient America?

Native peoples traded a highly caffeinated 'black drink' at least 700 years ago.

<http://scim.ag/Black-Drink>

### The Roots of Jewishness

A study fills in the genetic map of Jewish history.

<http://scim.ag/Jewish-History>

### Mars Rover Already Doing Science

New observations roll in just minutes after Curiosity's touchdown.

<http://scim.ag/Mars-Rover>

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

7 August issue: <http://scim.ag/ss080712>

### RESEARCH ARTICLE: Microtubules Underlie Dysfunction in Duchenne Muscular Dystrophy

*R. J. Khairallah et al.*

## PODCAST

*C. W. Ward et al.*

Decreasing microtubule density reduces contraction-induced muscle injury.

### RESEARCH ARTICLE: Nucleolar Localization of a Netrin-1 Isoform Enhances Tumor Cell Proliferation

*C. Delloye-Bourgeois et al.*

A nuclear-localized isoform of netrin may enhance ribosome biogenesis to promote cancer growth.

### REVIEW: The Abluminal Endothelial Membrane in Neurovascular Remodeling in Health and Disease

*D. M. Hermann and A. ElAli*

Understanding brain vascular remodeling may allow effective intervention in cases of injury or disease that disrupt the blood-brain barrier.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

8 August issue: <http://scim.ag/stm080812>

### RESEARCH ARTICLE: A Hendra Virus G Glycoprotein Subunit Vaccine Protects African Green Monkeys from Nipah Virus Challenge

*K. N. Bossart et al.*

The Hendra virus attachment G glycoprotein fully protects nonhuman primates from lethal Nipah virus challenge.

>> *Perspective p. 651*

### RESEARCH ARTICLE: Selective Activation of Adenosine A<sub>2A</sub> Receptors on Immune Cells by a CD73-Dependent Pro-Drug Suppresses Joint Inflammation in Experimental Rheumatoid Arthritis

*U. Flögel et al.*

### PERSPECTIVE: The Outsiders—Emerging Roles of Ectonucleotidases in Inflammation

*C. Szabo and P. Pacher*

Phosphorylated adenosine A<sub>2A</sub> receptor agonists suppressed inflammation in a model of arthritis without A<sub>2A</sub>-mediated vasodilatory side effects.

### RESEARCH ARTICLE: Instructive Nanofiber Scaffolds with VEGF Create a Microenvironment for Arteriogenesis and Cardiac Repair

*Y.-D. Lin et al.*

### FOCUS: Treating the Leading Killer

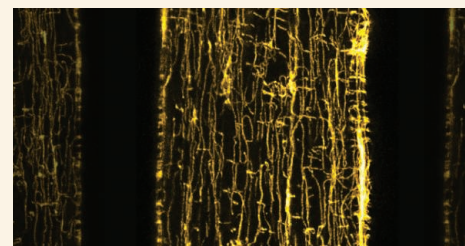
*K. L. Christman*

An intramyocardial microenvironment was created using nanofibers and VEGF for endogenous cardiac repair after infarction.

### RESEARCH ARTICLE: A Combination of Buprenorphine and Naltrexone Blocks Compulsive Cocaine Intake in Rodents Without Producing Dependence

*S. Wee et al.*

An opioid agonist and antagonist, given together, decrease cocaine abuse in rodents without causing dependence and provide a potential treatment for cocaine addiction.



SCIENCE SIGNALING  
Muscle microtubule network.

## SCIENCE CAREERS

[www.sciencereers.org/career\\_magazine](http://www.sciencereers.org/career_magazine)  
Free Career Resources for Scientists

### Taken for Granted: Crossing the Rubicon

*B. L. Benderly*

By admitting responsibility for the conditions that caused Sheri Sangji's death, the University of California takes a step toward better lab safety.  
[http://scim.ag/TFG\\_Rubicon](http://scim.ag/TFG_Rubicon)

### Perspective: Science Training and Mental Health

*M. P. DeWhyse*

In the wake of the Colorado shootings, the scientific community should pay more attention to the psychological well-being of emerging scientists.  
[http://scim.ag/Training\\_MentalHealth](http://scim.ag/Training_MentalHealth)

### Gambling on Transformative Research

*E. Pain*

Scientists with the right skills and attitude find limited but increasing opportunities to pursue high-risk, high-reward research.  
<http://scim.ag/GamblingTransformative>

## SCIENCE PODCAST

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

On the 10 August Science Podcast: Garbology 101, challenges in metal recycling, the "yuck factor," and an end to waste.

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