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## COVER

The theme of the 2012 AAAS Annual Meeting, 16 to 20 February in Vancouver, Canada, is *Flattening the World: Building a Global Knowledge Society*. This theme focuses the program on the complex, interconnected challenges of the 21st century and on pathways to global solutions through international, multidisciplinary efforts. Speakers come from more than half of the world's top research universities and institutes. The preliminary program begins on page 834.

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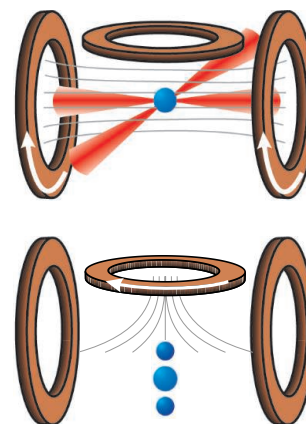
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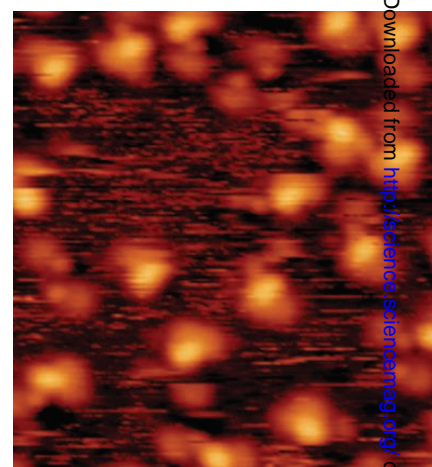
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*B. Lücke et al.*  
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*V. Demers-Carpentier et al.*  
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- 780** N<sub>2</sub> Reduction and Hydrogenation to Ammonia by a Molecular Iron-Potassium Complex  
*M. M. Rodríguez et al.*  
A molecular iron complex offers insights into the industrial iron catalyst used to split nitrogen to make ammonia.
- 783** Lithospheric Thinning Beneath Rifted Regions of Southern California  
*V. Lekic et al.*  
Seismic imaging reveals the degree to which extensional forces can pull apart the lithosphere.
- 787** Forecasting Fire Season Severity in South America Using Sea Surface Temperature Anomalies  
*Y. Chen et al.*  
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- 792** Phase Transition of FeO and Stratification in Earth's Outer Core  
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- 794** Aerosol Indirect Effect on Biogeochemical Cycles and Climate  
*N. Mahowald*  
Anthropogenic aerosols can affect climate through their impacts on biogeochemical cycles.  
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- 796** Recent Synchronous Radiation of a Living Fossil  
*N. S. Nagalingum et al.*  
Despite their ancient origin, the majority of extant cycad species radiated within the past 10 million years.  
>> *Perspective p. 766*
- 799** Global DNA Demethylation During Mouse Erythropoiesis in Vivo  
*J. R. Shearstone et al.*  
Erythroblasts undergoing differentiation into red cells lose one-third of DNA methylation marks at nearly all genomic loci.
- 802** Influence of Inositol Pyrophosphates on Cellular Energy Dynamics  
*Z. Szigyarto et al.*  
Inositol pyrophosphates are implicated in coordination of cell proliferation and metabolism.  
>> *Perspective p. 770*
- 806** Sirt5 Is a NAD-Dependent Protein Lysine Demalonylase and Desuccinylase  
*J. Du et al.*  
Biological functions of sirtuins may involve lysine desuccinylase and demalonylase activities.
- 809** Endocannabinoid Hydrolysis Generates Brain Prostaglandins That Promote Neuroinflammation  
*D. K. Nomura et al.*  
A new tissue-specific pathway for the synthesis of proinflammatory prostaglandins is described.  
>> *Perspective p. 768*
- 814** Failure to Confirm XMRV/MLVs in the Blood of Patients with Chronic Fatigue Syndrome: A Multi-Laboratory Study  
*G. Simmons et al.*  
The assays used to detect XMRV in patients with chronic fatigue syndrome are unreliable.
- 817** tRNAs Marked with CCACCA Are Targeted for Degradation  
*J. E. Wilusz et al.*  
Transfer RNAs with unstable acceptor stems can be tagged by CCA-adding enzymes and targeted for destruction by 3'-5' exonucleases.
- 821** A *Burkholderia pseudomallei* Toxin Inhibits Helicase Activity of Translation Factor eIF4A  
*A. Cruz-Migoni et al.*  
A toxin associated with a disease often observed in Vietnam veterans is identified and characterized.
- 825** Late Interleukin-6 Escalates T Follicular Helper Cell Responses and Controls a Chronic Viral Infection  
*J. A. Harker et al.*  
A persisting wave of the cytokine interleukin-6 allows control of chronic viral infections.
- 829** Attention But Not Awareness Modulates the BOLD Signal in the Human V1 During Binocular Suppression  
*M. Watanabe et al.*  
Activity in the primary visual cortex is modulated by attention to an object, but not by whether the object is visible.

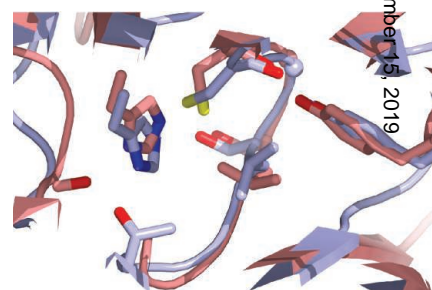
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## SCIENCEONLINE

## SCIENCEEXPRESS

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

### Detection of Pristine Gas Two Billion Years After the Big Bang

*M. Fumagalli et al.*

Two cosmic clouds have been observed with a composition close to that of the universe before the first stars were formed.

10.1126/science.1213581

>> [Science Podcast](#)

### Protostellar Feedback Halts the Growth of the First Stars in the Universe

*T. Hosokawa et al.*

Simulations suggest that most of the first stars in the universe might have been less massive than previously thought.

10.1126/science.1207433

### Interconversion Between Intestinal Stem Cell Populations in Distinct Niches

*N. Takeda et al.*

Two niches with distinct characteristics work in tandem.

10.1126/science.1213214

### Inhibitory Plasticity Balances Excitation and Inhibition in Sensory Pathways and Memory Networks

*T. P. Vogels et al.*

Plasticity at inhibitory synapses maintains balanced excitatory and inhibitory synaptic inputs at cortical neurons.

10.1126/science.1211095

### Hemoglobins S and C Interfere with Actin Remodeling in *Plasmodium falciparum*-Infected Erythrocytes

*M. Cyrklaff et al.*

The malaria parasite mines actin from the membrane skeleton of its erythrocyte host to generate a cytoskeletal structure.

10.1126/science.1213775

## SCIENCENOW

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

Highlights From Our Daily News Coverage

### Was the Spotted Horse an Imaginary Creature?

DNA analysis shows the veracity of early cave paintings.

<http://scim.ag/CaveArt>

### Drug Tested on Brain-Dead People Shrinks Monkeys' Waistlines

Protein pieces block blood flow to fat tissue.

<http://scim.ag/ObesityTherapy>

### Fundamental Constant May Depend on Where in the Universe You Are

Retread of old idea meets with skepticism, however.

<http://scim.ag/space-constant>

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

**8 November issue:** <http://scim.ag/ss110811>

### RESEARCH RESOURCE: Systematic Phosphorylation Analysis of Human Mitotic Protein Complexes

*B. Hegemann et al.*

Analysis of the phosphorylation of mitotic protein complexes suggests that specific members of the complexes relay regulatory signals to these molecular machines.

### RESEARCH ARTICLE: Short RNA Duplexes Elicit RIG-I-Mediated Apoptosis in a Cell Type- and Length-Dependent Manner

*O. Ishibashi et al.*

Short double-stranded RNAs induce death in certain cell types without knocking down gene expression.

### PERSPECTIVE: Setting the Clock for Recirculating Lymphocytes

*A. Eichner and M. Sixt*

Desensitization of a sphingosine 1-phosphate receptor enables lymphocytes to leave the vascular compartment.

## PODCAST

*D. M. Sabatini and A. M. VanHook*

The vacuolar ATPase is required for amino acid-mediated activation of mTORC1.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

**9 November issue:** <http://scim.ag/stm110911>

### FOCUS: C-Path—A Watson-Like Visit to the Pathology Lab

*D. L. Rimm*

**RESEARCH ARTICLE: Systematic Analysis of Breast Cancer Morphology Uncovers Stromal Features Associated with Survival**  
*A. H. Beck et al.*

Computer-based quantification of tumor morphology has arguably solved the problem of standardized tumor grading.

### PERSPECTIVE: Harmonization of Immune Biomarker Assays for Clinical Studies

*S. H. van der Burg et al.*

Harmonizing immune assay use in clinical trials could reduce data variability and support immune biomarker development.

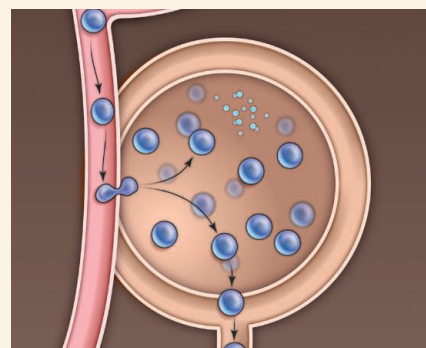
**RESEARCH ARTICLE: A Peptidomimetic Targeting White Fat Causes Weight Loss and Improved Insulin Resistance in Obese Monkeys**  
*K. F. Barnhart et al.*

A peptide-based drug that targets the vasculature of adipose tissue induces weight loss and improves metabolic function in spontaneously obese monkeys.

**RESEARCH ARTICLE: Differential Inhibitor Sensitivity of Anaplastic Lymphoma Kinase Variants Found in Neuroblastoma**

*S. C. Bresler et al.*

Neuroblastoma sensitivity to crizotinib depends on the ATP-binding affinity of ALK variants, suggesting that higher doses may overcome resistance.



## SCIENCE SIGNALING

Lymphocytes on the move.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

### NASA's Planetary Protection Officer

*R. Kaufman*

Cassie Conley's job is, among other challenges, to protect Earth from the (pond) scum of the universe.

[http://scim.ag/Cassie\\_Conley](http://scim.ag/Cassie_Conley)

### Building a New Niche Network

*M. Price*

Scientists studying the physics of living systems utilize an NSF initiative to expand their network and make it easier to find jobs.

[http://scim.ag/niche\\_network](http://scim.ag/niche_network)

>> [News story p. 750](#)

## SCIENCE PODCAST

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

Free Weekly Show

On the 11 November *Science* Podcast: pristine gas clouds, the indirect effects of aerosols, moving research forward with a tighter budget, and more.

## SCIENCE INSIDER

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

Science Policy News and Analysis

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