EDITORIAL

738 Rethinking the Science System
Alan I. Leshner
>> News section p. 750

NEWS OF THE WEEK

742 A roundup of the week's top stories

NEWS & ANALYSIS

- 745 China to Spend Billions Cleaning Up Groundwater
- 746 Seafood Eco-Label Grapples With Challenge of Proving Its Impact
- 747 NSF to Turn Tank Killer Into Storm Chaser
- 748 Blue Brain Founder Responds to Critics, Clarifies His Goals

NEWS FOCUS

- 750 U.S. SCIENCE AND AUSTERITY Fewer Dollars, Forced Choices Setting Priorities Has Never Been Fun
- 753 Darwinism vs. Social Engineering at NIH
- 754 Commitments, Ideology Clash Over DOE Research Spending
- 756 NSF Goes Back to Basics to Preserve Basic Research >> Science Careers article p. 736
- 757 A Difficult View From Space for NOAA
- 758 Will Tight Budgets Sink NASA Flagships? >> Editorial p. 738; Science Podcast

LETTERS

760 Editorial Expression of Concern
B. Alberts
Competencies: A Cure for
Pre-Med Curriculum
W. A. Anderson et al.
Drawing Attention to Diagram Use

E. Manalo and Y. Uesaka
CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.

- 762 Knocking on Heaven's Door L. Randall, reviewed by M. Shermer
- 762 Browsings
- 763 One Culture The Royal Society, London; reviewed by S. Reardon

POLICY FORUM

764 Is Weather Event Attribution Necessary for Adaptation Funding? M. Hulme et al.

PERSPECTIVES

- 766 Living Fossil Younger than Thought
 S. S. Renner
 >> Report p. 796
- 767 Toward High-Throughput Zeolite Membranes M. Tsapatsis
- 768 Anatomy of Prostaglandin Signals
 N. Stella
 >> Report p. 809
- 770 Pyro-Technic Control of Metabolism R. F. Irvine and R. M. Denton >> Report p. 802
- 771 Mosquito Trials
 S. James et al.

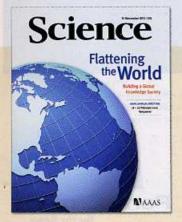
CONTENTS continued >>



page 750



page 764



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.

Image: Fotosearch.com

DEPARTMENTS

737 This Week in Science

739 Editors' Choice

740 Science Staff

833 New Products

834 AAAS Meeting Program

844 Science Careers

REPORTS

773 Twin Matter Waves for Interferometry
Beyond the Classical Limit
B. Lücke et al.

An entangled state of up to 10,000 atoms is used to enhance the resolution of an atomic interferometer.

776 Direct Observation of Molecular Preorganization for Chirality Transfer on a Catalyst Surface V. Demers-Corpentier et al. Scanning tunneling microscopy and theoretical calculations shed light on an asymmetric heterogeneous catalyst.

780 N₂ Reduction and Hydrogenation to Ammonia by a Molecular Iron-Potassium Complex

M. M. Rodriquez 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.

Sea surface temperature anomalies can predict annual fire season severity in South America up to 3 to 5 months in advance.

792 Phase Transition of FeO and Stratification in Earth's Outer Core

Stratified convection in the outer core may influence Earth's magnetic field.

794 Aerosol Indirect Effect on Biogeochemical Cycles and Climate N. Mahowald

Anthropogenic aerosols can affect climate through their impacts on biogeochemical

>> Science Podcast

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. Szijgyarto 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

I. 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

B14 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-Miaoni 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.

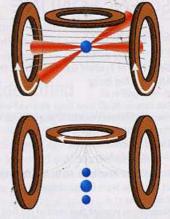
A persisting wave of the cytokine interleukin-6 allows control of chronic viral infections.

829 Attention But Not Awareness Modulates the BOLD Signal in the Human V1 During Binocular Suppression

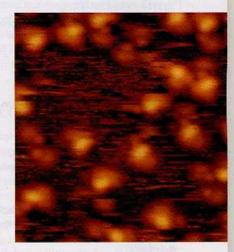
M. Watanabe et al.

Activity in the primary visual cortex is modulated by attention to an object, but not by whether the object is visible.

CONTENTS continued >>



pages 773



page 776



page 821