



## COVER

Ordovician sedimentary rocks at Presqu'île de Crozon, Brittany, France. These rocks show high-frequency cycles of less than 500,000 years between bay and open marine conditions. This and similar records allow reconstruction of global sea level from 550 to 250 million years ago. The pink boulder at the bottom is about 15 centimeters across. See page 64.

*Photo: Bilal U. Haq*

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## Natal Homing and Connectivity in Atlantic Bluefin Tuna Populations

J. R. Rooker et al.

Isotopes in the ear bones of tuna reveal that two populations—from the Gulf of Mexico and the Mediterranean—mingle in the Atlantic as adolescents but return home to breed. >> *Science Podcast*

10.1126/science.1161473

## CHEMISTRY

## Molecular Confinement Accelerates Deformation of Entangled Polymers During Squeeze Flow

H. D. Rowland, W. P. King, J. B. Pethica, G. L. W. Cross

When polymers are squeezed at nanometer scales, the longest chains unexpectedly flow more easily, even though in theory they should be the most entangled.

10.1126/science.1157945

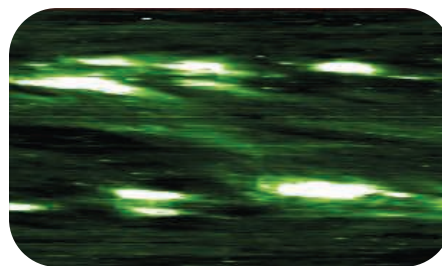
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Ubiquitin-Like Protein Involved in the Proteasome Pathway of *Mycobacterium tuberculosis*

M. J. Pearce, J. Mintseris, J. Ferreyra, S. P. Gygi, K. H. Darwin

A prokaryotic version of ubiquitin, a eukaryotic tag for protein degradation, is linked to lysines in prokaryotic proteins destined for destruction, a process called pupylation.

10.1126/science.1163885



## ASTROPHYSICS

## A Large Excess in Apparent Solar Oblateness Due to Surface Magnetism

M. D. Fivian, H. S. Hudson, R. P. Lin, H. J. Zahid

Satellite measurements indicate that the sun is more oblate than previous measurements suggested, a shape resulting from the combined effects of rotation and magnetism.

10.1126/science.1160863

## BIOCHEMISTRY

The 2.6 Angstrom Crystal Structure of a Human A<sub>2A</sub> Adenosine Receptor Bound to an Antagonist

V.-P. Jaakola et al.

The ligand binding pocket of the caffeine-binding human adenosine receptor has a different position and orientation than that of other G protein-linked receptors.

10.1126/science.1164772

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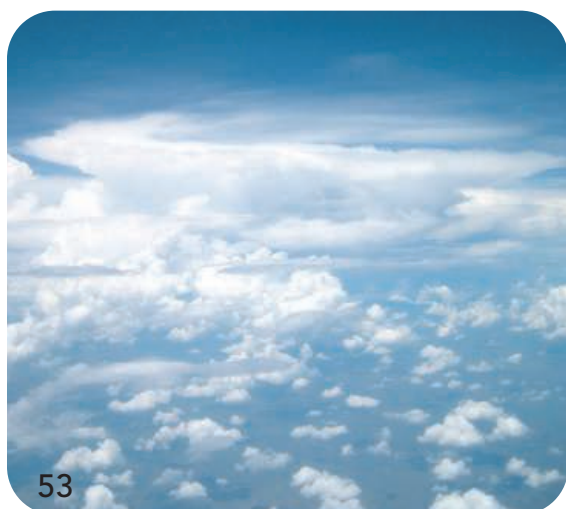
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J. Zhang, X. Liu, R. Blume, A. Zhang, R. Schlägl, D. S. Su

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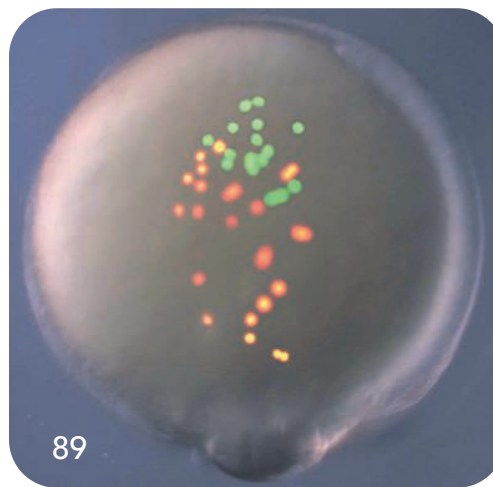
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>> *Science Podcast*



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*I. S. Levine*

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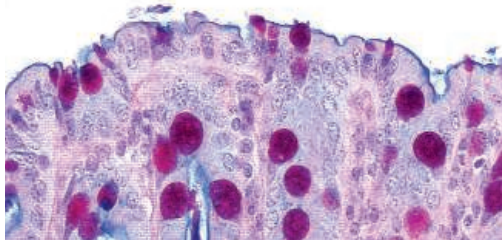
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The biggest challenges in moving abroad are not always scientific.

### October 2008 Funding News

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



Purinergic receptor antagonists inhibit inflammation.

## SCIENCE SIGNALING

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### RESEARCH ARTICLE: Purinergic Control of T Cell Activation by ATP Released Through Pannexin-1 Hemichannels

*U. Schenk, A. M. Westendorf, E. Radaelli, A. Casati, M. Ferro, M. Fumagalli, C. Verderio, J. Buer, E. Scanziani, F. Grassi*

Pannexin hemichannel-mediated release of ATP provides an autocrine, costimulatory signal for T cell activation.

### RESEARCH ARTICLE: Kinome siRNA Screen Identifies Regulators of Ciliogenesis and Hedgehog Signal Transduction

*M. Evangelista, T. Y. Lim, J. Lee, L. Parker, A. Ashique, A. S. Peterson, W. Ye, D. P. Davis, F. J. de Sauvage*

Cdc2l1 is a component of the Hh signaling pathway and opposes the activity of the negative regulator Sufu.

### PERSPECTIVE: A Wnt-fall for Gene Regulation—Repression

*N. P. Hoverter and M. L. Waterman*

Recognition of a nonclassical Wnt-response element by the transcription factor TCF results in  $\beta$ -catenin acting as a transcriptional repressor of certain Wnt target genes.

### PRESENTATION: Somatic Cell Genetics for the Study of NF- $\kappa$ B Signaling in Innate Immunity

*R. Krumbach, S. Bloor, G. Ryzhakov, F. Randow*

A forward genetic screen in immortalized cells identifies NF- $\kappa$ B signaling components required to transduce signals from Toll-like receptors.

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