



COVER

A mosaic of visible to near-infrared images of the surface of Mercury, obtained by the MESSENGER spacecraft on 14 January 2008. The circular feature in the upper right is the Caloris impact basin, 1500 kilometers in diameter. Results from the flyby are discussed in a special section beginning on page 58.

Image: NASA/Johns Hopkins University Applied Physics Laboratory/Arizona State University/Carnegie Institution of Washington

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www.scienceexpress.org

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A Global View of Gene Activity and Alternative Splicing by Deep Sequencing of the Human Transcriptome

M. Sultan et al.

Shotgun sequencing of 27–base pair segments of messenger RNA from human kidney and immune cells identifies previously undescribed transcriptional units and splice junctions.

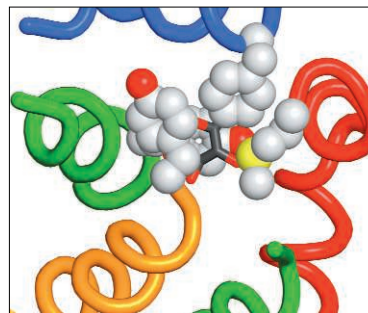
10.1126/science.1160342

ATMOSPHERIC SCIENCE

BREVIA: N₂O₅ Oxidizes Chloride to Cl₂ in Acidic Atmospheric Aerosol*J. M. Roberts, H. D. Osthoff, S. S. Brown, A. R. Ravishankara*

Laboratory studies affirm that the oxidation of chloride ions in aerosols by N₂O₅ is a significant source of chlorine in the troposphere, a major reactant that helps form ozone.

10.1126/science.1158777



BIOCHEMISTRY

The Crystal Structure of a Sodium Galactose Transporter Reveals Mechanistic Insights into Na⁺/Sugar Symport*S. Faham et al.*

The structure of a sugar transporter suggests how these proteins may rearrange to permit the sugar to enter and leave the binding site on opposite sides of the membrane.

10.1126/science.1160406

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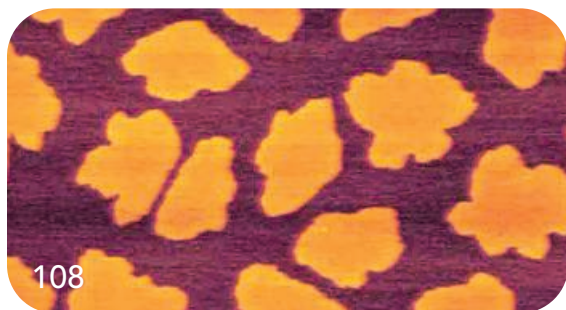
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Rapid sample spinning during nuclear magnetic resonance spectroscopy reveals a highly ordered cation distribution in layered materials.

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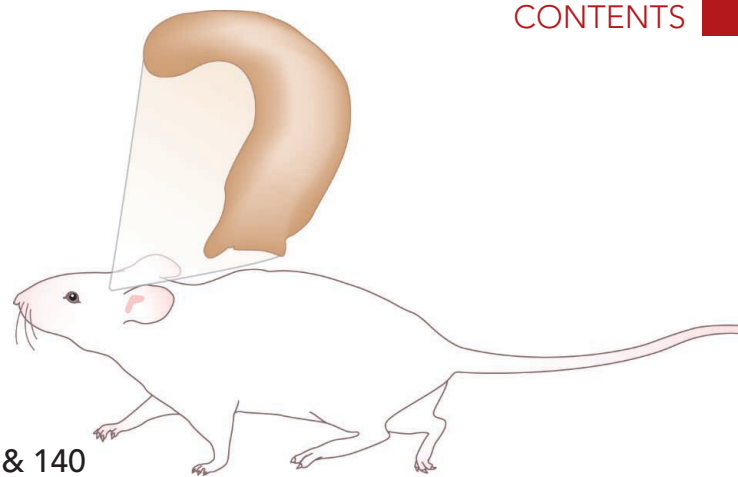
A survey of sequences in GenBank, which represent about 10 percent of described species, shows that the patchy distribution of data is insufficient to build a eukaryotic tree of life.

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Myosin I, a motor protein that plays a role in hearing, is a sensitive tension sensor, reacting to small loads (less than 2 piconewtons) by binding for much longer times to actin.

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When strengthened, individual synapses on dendritic spines contain an activated small regulatory protein that spreads to nearby spines, possibly altering their sensitivity.

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The rat hippocampus provides a representation of the animal's entire spatial environment, coding distances up to 1 meter away in the dorsal region and up to 15 meters at the ventral tip.

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Letting go.

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Why It's Hard to Say Goodbye

Study links loss of a loved one to the brain's pleasure center.

Don't Judge a Plant by Its Species

An ant, an aphid, and a milkweed are changing thoughts about community ecology.

African Lion-Killer Had Help

Virus conspired with tick-borne parasites and extreme droughts.



Farewell, Micella.

SCIENCE CAREERS

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FREE CAREER RESOURCES FOR SCIENTISTS

Educated Woman, Postdoc Edition, Chapter 18: End of the Road

M. P. DeWhyse

Micella Phoenix DeWhyse celebrates her Independence Day—and we're sad; with related podcast interview.

Taken for Granted: By the Numbers

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A committee calls for better government data collection about jobs for scientists.

In Person: Research in France

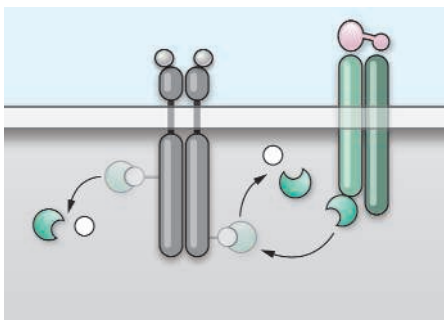
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Understanding the French public research system is critical to foreign scientists coming into the country.

July 2008 Funding News

J. Fernández

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



TIMP-dependent dephosphorylation.

SCIENCE SIGNALING

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REVIEW: Tissue Inhibitors of Metalloproteinases in Cell Signaling—Metalloproteinase-Independent Biological Activities

W. G. Stetler-Stevenson

TIMPs can act directly through cell surface receptors or indirectly through modulation of proteases.

PERSPECTIVE: The Cytoplasmic Tail of MUC1—A Very Busy Place

D. D. Carson

The cytoplasmic domain of mucin 1 (MUC1) plays numerous roles in intracellular signaling pathways.

SCIENCE PODCAST

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Download the 4 July *Science* Podcast to hear about MESSENGER's first Mercury flyby, possible clues to sudden infant death syndrome, preserving Iraqi antiquities, and more.



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