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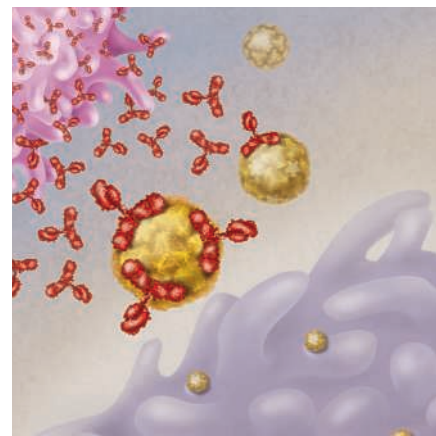
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A mosaic of images collected as the MESSENGER spacecraft viewed Mercury obliquely on approach on 6 October 2008. The Rembrandt impact basin, 715 kilometers in diameter, is seen at the center as night falls across its eastern edge. Results from the flyby are discussed in four Reports beginning on page 606 and a Perspective on page 597.

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

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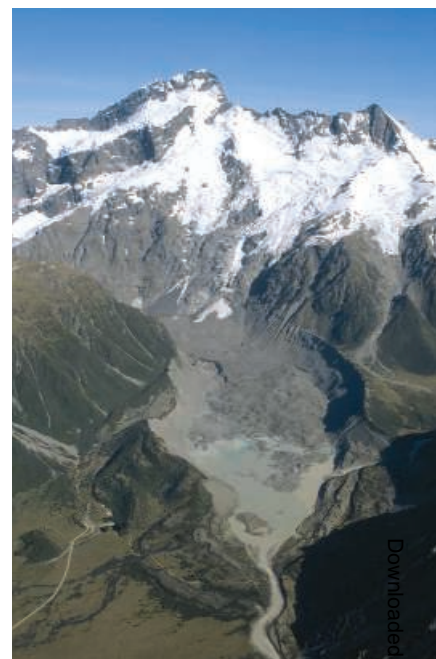
**BREVIA**

- 605** Neural Mechanisms of a Genome-Wide Supported Psychosis Variant  
*C. Esslinger et al.*  
A genetic polymorphism associated with schizophrenia conveys a risk for abnormal connectivity between brain regions.

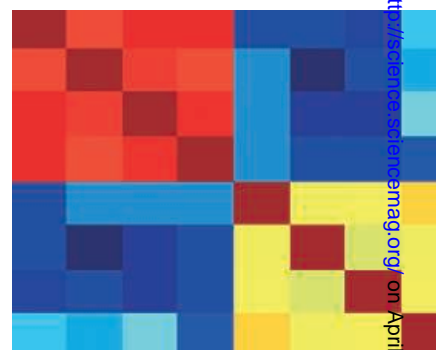
**REPORTS**

- 606** MESSENGER Observations of Magnetic Reconnection in Mercury's Magnetosphere  
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- 610** MESSENGER Observations of Mercury's Exosphere: Detection of Magnesium and Distribution of Constituents  
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High-resolution observations of Mercury's exosphere reveal different spatial distributions of magnesium, calcium, and sodium.  
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- 613** The Evolution of Mercury's Crust: A Global Perspective from MESSENGER  
*B. W. Denevi et al.*  
Data from the Mariner 10 and MESSENGER flybys imply that a substantial fraction of Mercury's surface is volcanic in origin.
- 618** Evolution of the Rembrandt Impact Basin on Mercury  
*T. R. Watters et al.*  
This basin, showing a unique pattern of radial and concentric tectonic features, represents an intermediate stage of filling by volcanic plains.
- 622** High-Frequency Holocene Glacier Fluctuations in New Zealand Differ from the Northern Signature  
*J. M. Schaefer et al.*  
The patterns of glacial advances and retreats in New Zealand during the Holocene contrast markedly with those of the Northern Hemisphere.  
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- 626** Biomolecular Characterization and Protein Sequences of the Campanian Hadrosaur *B. canadensis*  
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- 636** Competition for Light Causes Plant Biodiversity Loss After Eutrophication  
*Y. Hautier et al.*  
A few species take advantage of fertilizer to grow fast, shade out competitors, and reduce the number of species in grassland.
- 639**  $\gamma$ -Secretase Heterogeneity in the Aph1 Subunit: Relevance for Alzheimer's Disease  
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Targeted knockout of only part of the  $\gamma$ -secretase complex lessens toxicity and still improves disease phenotypes.  
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Stimulation of a single nerve cell triggers a switch between slow wave and rapid eye movement sleep.
- 646** Self-Control in Decision-Making Involves Modulation of the vmPFC Valuation System  
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The neural circuitry underlying choice and self-control is revealed by modeling and brain imaging.
- 649** Exchange of Genetic Material Between Cells in Plant Tissue Grafts  
*S. Stegemann and R. Bock*  
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- 651** Circadian Clock Feedback Cycle Through NAMPT-Mediated NAD<sup>+</sup> Biosynthesis  
*K. M. Ramsey et al.*
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A transcriptional-enzymatic feedback loop controls interactions between metabolism and circadian rhythms in mouse cells.  
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- 657** A Cytidine Deaminase Edits C to U in Transfer RNAs in Archaea  
*L. Randau et al.*  
A nonconventional cytosine is edited out to allow a functional transfer RNA structure to form.
- 659** A Yeast Hybrid Provides Insight into the Evolution of Gene Expression Regulation  
*I. Tirosh et al.*  
Gene expression between species of yeast may diverge, but recombination rewires their offspring into vigorous hybrids.

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## SCIENCEONLINE

## SCIENCEEXPRESS

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

### The Genetic Structure and History of Africans and African Americans

*S. A. Tishkoff et al.*

A genetic study illuminates population history, as well as the relationships among and the origin of major language families.

10.1126/science.1172257

>> *News story p. 575; Science Podcast*

### Abscisic Acid Inhibits Type 2C Protein Phosphatases via the PYR/PYL Family of START Proteins

*S.-Y. Park et al.*

10.1126/science.1173041

### Regulators of PP2C Phosphatase Activity Function as Abscisic Acid Sensors

*Y. Ma et al.*

Links between two ancient multimer protein families signal responses to the plant hormone abscisic acid.

10.1126/science.1172408

### Dispersion of the Excitations of Fractional Quantum Hall States

*I. V. Kukushkin et al.*

The dispersion of excitations in a buried two-dimensional electron system can now be probed.

10.1126/science.1171472

### Superconductivity at the Two-Dimensional Limit

*S. Qin et al.*

Superconductivity persists in lead films down to just two monolayers thick.

10.1126/science.1170775

## SCIENCE NOW

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

Highlights From Our Daily News Coverage

### China Falls Short on Olympic Cleanup

Attempt to control emissions did little to curb pollution, study finds.

### Presto, Instant Sunglasses!

A lightning-fast chemical provides glare protection in a split second.

### Artificial Blood Vessels Prove Effective

Tubes made from a patient's own cells show promise for kidney dialysis.

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

### EDITORIAL GUIDE: Omic Empiricism

*D. B. Searls*

Omic researchers might do well to consider the duality between empiricism and rationalism.

### RESEARCH ARTICLE: G $\alpha_{i1}$ and G $\alpha_{i3}$ Are Required for Epidermal Growth Factor–Mediated Activation of the Akt–mTORC1 Pathway

*C. Cao et al.*

Two members of the G $\alpha_i$  family of G proteins form complexes with EGFR and the adaptor protein Gab1 to mediate activation of Akt.

### RESEARCH ARTICLE: Ligand Binding to LRP1 Transactivates Trk Receptors by a Src Family Kinase–Dependent Pathway

*Y. Shi et al.*

Trk receptor–mediated neurite outgrowth is triggered by distinct ligands that activate LRP1.

### RESEARCH ARTICLE: Neurotransmitters Drive Combinatorial Multistate Postsynaptic Density Networks

*M. P. Coba et al.*

Analysis of protein phosphorylation patterns provides insight into the organization of molecular networks at the postsynaptic density.

### PERSPECTIVE: Nontraditional Signaling Mechanisms of Lipoprotein Receptors

*G. W. Rebeck*

Lipoprotein receptors can trigger calcium-dependent kinase activation, gene transcription, or TrkA receptor–dependent signaling.

### REVIEW: Signaling by Gasotransmitters

*A. K. Mustafa et al.*

Nitric oxide, carbon monoxide, and hydrogen sulfide act as messengers in the cardiovascular, immune, and nervous systems.

### PRESENTATION: Mechanobiology of the Skeleton

*C. H. Turner et al.*

Mechanical force induces osteogenesis by repressing the production of sclerostin, an inhibitor of Wnt signaling.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

### Taken for Granted: The Burning Question of Lab Safety

*B. L. Benderly*

After the death of a lab worker, experts warn that many academic labs are unsafe.

### For Med Students, Research Training Opportunities Abound

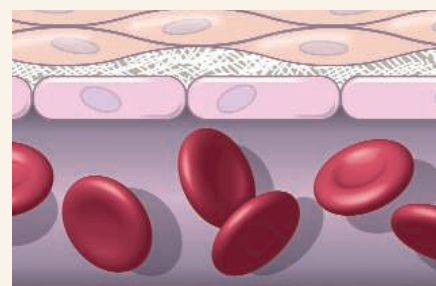
*L. S. Chiu*

Specialized programs, plus adding research to the curriculum, give medical students a taste of research.

### A Chemistry Career on the Fast Track

*E. Pain*

Romanian chemist Mihail Barboiu keeps several projects going at several institutions.



## SCIENCE SIGNALING

Gasotransmitters elicit vasorelaxation.



## SCIENCE CAREERS

Safety in academic labs.

## SCIENCE PODCAST

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Download the 1 May *Science* Podcast to hear about the evolutionary history of Africans and African Americans, the origins of the immune system, and more.

## ORIGINS BLOG

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A History of Beginnings

## SCIENCE INSIDER

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

Science Policy News and Analysis

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