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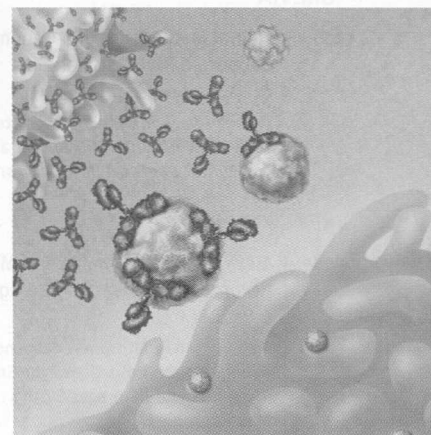
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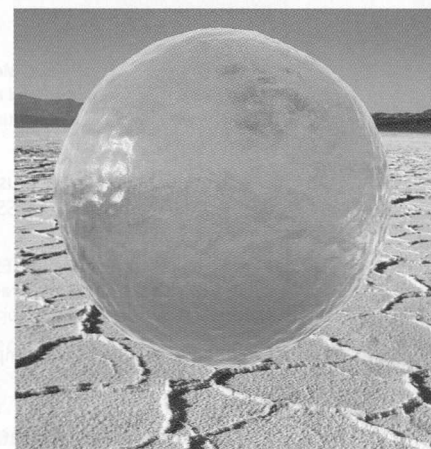
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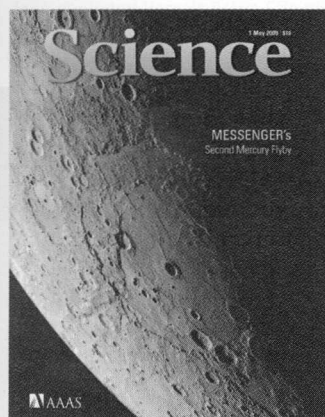
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COVER

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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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**
J. A. Slavin et al.

Mercury's magnetosphere responds more strongly to the influence of the Sun's magnetic field than does Earth's magnetosphere.

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- 610 **MESSENGER Observations of Mercury's Exosphere: Detection of Magnesium and Distribution of Constituents**
W. E. McClintock et al.

High-resolution observations of Mercury's exosphere reveal different spatial distributions of magnesium, calcium, and sodium.

>> Perspective p. 597

- 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***
M. H. Schweitzer et al.

Analysis of well-preserved tissues from an 80-million-year-old hadrosaur support the dinosaur-bird relationship.

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- 631 **A Gross-Pitaevskii Treatment for Supersolid Helium**
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- 632 **Evidence for a Superglass State in Solid ⁴He**
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- 636 **Competition for Light Causes Plant Biodiversity Loss After Eutrophication**
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A few species take advantage of fertilizer to grow fast, shade out competitors, and reduce the number of species in grassland.

- 639 **γ -Secretase Heterogeneity in the Aph1 Subunit: Relevance for Alzheimer's Disease**
L. Serneels et al.

Targeted knockout of only part of the γ -secretase complex lessens toxicity and still improves disease phenotypes.

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- 643 **Burst Spiking of a Single Cortical Neuron Modifies Global Brain State**
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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**
T. A. Hare et al.

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

Plant genes can transfer between cells and across graft junctions, possibly explaining horizontal gene transfer.

- 651 **Circadian Clock Feedback Cycle Through NAMPT-Mediated NAD⁺ Biosynthesis**
K. M. Ramsey et al.

- 654 **Circadian Control of the NAD⁺ Salvage Pathway by CLOCK-SIRT1**
Y. Nakahata et al.

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.

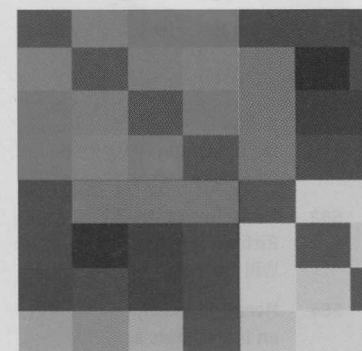
A nonconventional cytosine is edited out to allow a functional transfer RNA structure to form.

- 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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