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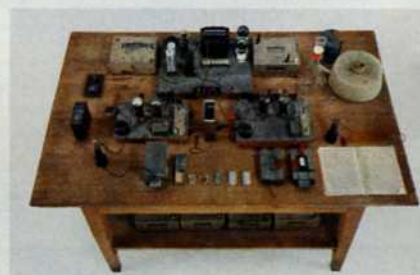
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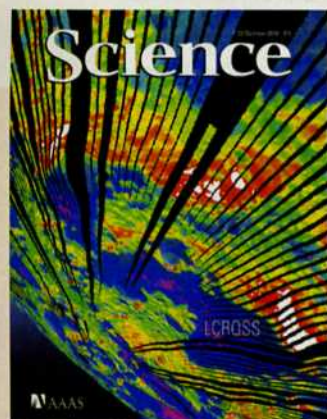
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## COVER

Surface temperature map of the south polar region of the Moon acquired by the Lunar Reconnaissance Orbiter Diviner Lunar Radiometer Experiment. Blue and violet areas are intensely cold impact craters. The Lunar Crater Observation and Sensing Satellite (LCROSS) spacecraft struck one of these craters (near the center of the frame), revealing the presence of water ice and other frozen volatiles. See the six research papers beginning on page 463.

*Image: David A. Paige/UCLA/JPL/GSFC/NASA*

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- 483 **Hydrogen Mapping of the Lunar South Pole Using the LRO Neutron Detector Experiment LEND**  
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- 486 **A New Mixing Diagnostic and Gulf Oil Spill Movement**  
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An ocean model can account for the trajectory and fragmentation of the recent Gulf of Mexico oil spill.  
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- 489 **Oscillatory Mass Transport in Vapor-Liquid-Solid Growth of Sapphire Nanowires**  
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- 493 **Species Selection Maintains Self-Incompatibility**  
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- 499 **Two Pairs of Neurons in the Central Brain Control *Drosophila* Innate Light Preference**  
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A neural circuit connects perceptual inputs to behavioral outputs.  
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- 502 **Fast Vesicle Fusion in Living Cells Requires at Least Three SNARE Complexes**  
R. Mohrmann et al.  
Membrane fusion proteins cooperate to promote rapid secretory vesicle exocytosis from neuroendocrine cells.

- 505 **Mechanisms of Proton Conduction and Gating in Influenza M2 Proton Channels from Solid-State NMR**  
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Histidine side-chain dynamics regulate proton conduction in an influenza proton channel.

- 509 **Insight into the Mechanism of the Influenza A Proton Channel from a Structure in a Lipid Bilayer**  
M. Sharma et al.  
A tetrameric cluster of histidine and tryptophan residues, through its unique chemistry, shepherds protons through the M2 channel.  
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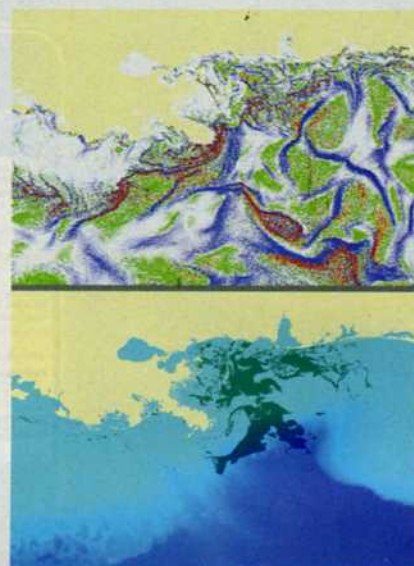
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Gene flow among African malaria vectors is more restricted than previously thought.

- 514 **SNP Genotyping Defines Complex Gene-Flow Boundaries Among African Malaria Vector Mosquitoes**  
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- 517 **ATM Activation by Oxidative Stress**  
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