False-color image of a section of the Semarkona meteorite. The round objects are chondrules; the large one near the bottom center is about 2 millimeters across. Magnesium-rich minerals (olivine and pyroxene) appear red, sodium-rich glass appears yellow, and the iron-rich material surrounding the chondrules includes matrix (greenish) and sulfides, metal, and oxides (blue). The sodium in the glass suggests that the chondrules formed in extremely dusty environments in the early solar system.

See page 1617.

Image: Jeffrey Grossman/USGS
High-Resolution Greenland Ice Core Data Show Abrupt Climate Change Happens in Few Years
J. P. Steffensen et al.
Greenland’s climate flipped to a different state within 1 to 3 years more than once during the last deglaciation.
10.1126/science.1157707

Censoring of Autoreactive B Cell Development by the Pre-B Cell Receptor
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A protein that helps newly rearranged antibody chains arrive at the cell surface of immature immune cells is found to help delete cells with potential autoreactivity.
10.1126/science.1157533

Comment on “Athabasca Valles, Mars: A Lava-Draped Channel System”
D. P. Page
full text at www.sciencemag.org/cgi/content/full/320/5883/1588b

Response to Comment on “Athabasca Valles, Mars: A Lava-Draped Channel System”
W. L. Jaeger et al.
full text at www.sciencemag.org/cgi/content/full/320/5883/1588c

Auxin Gradients Are Associated with Polarity Changes in Trees
E. M. Kramer et al.
In quaking aspen trees that have been injured, gradients of the hormone auxin redirect the wood grain as the wound heals.
1610

Strong Limit on a Variable Proton-to-Electron Mass Ratio from Molecules in the Distant Universe
M. T. Murphy, V. V. Flambaum, S. Muller, C. Henkel
Absorbed radio emissions from a distant quasar provide an estimate of a fundamental constant, the proton/electron mass ratio, over time and limit its possible variations.
1611

Ionizing neon atoms with light pulses generates shorter light bursts, less than 100 attoseconds long, that can be used to test electron interactions and strong-field theories.
1614

The high sodium content of grains from the early solar system implies that they formed in parts of the solar nebula with unexpectedly high densities of dust, limiting volatilization.
1617

The high isotope content of crystals and melt during crystallization of a lava lake, despite temperatures exceeding 1000° Celsius, perhaps influenced by differing iron oxidation.
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shorter 3’ regulatory regions, possibly because less control is
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R. E. Ley et al.
Genomic sampling of the microbes in the feces of 60 mammals show
that herbivores harbor the most diversity and that individuals of
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of Bacterial Type IV Effectors
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An microbial protein containing ankyrin repeats is injected into
host cells through a specialized secretion system where it prevents
microtubule-dependent vesicular fusion.

CELL BIOLOGY
Bora and the Kinase Aurora A Cooperatively Activate 1655
the Kinase Plk1 and Control Mitotic Entry
A. Seki, J. A. Coppinger, C.-Y. Jang, J. R. Yates III, G. Fang
Mitosis begins in mammalian cells when a protein accumulates
between cell divisions and interacts with a second protein to initiate a
cascade of kinase activation.

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by Accumulation Variability
M. M. Helsen et al.
Satellite data since 1995, corrected for the conversion of snow to
denser ice, imply that ice sheets grew slowly in the East Antarctic
but decreased around the Amundsen Sea.

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Copy-Number Polymorphism in Drosophila melanogaster
J. J. Emerson, M. Cardosa-Moreira, J. O. Borevitz, M. Long
A high-resolution analysis of gene copy number in Drosophila species
shows that most variations are deleterious but a few for
resistance to toxins are being positively selected.

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Sequence Alignment and Evolutionary Analysis
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An algorithm that treats insertions and deletions as distinct events in
genomic data improves sequence alignments, allowing more accurate
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Bacillus subtilis Biofilm
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One bacterial protein synthesized during the production of a biofilm
matrix acts as a clutch to disable the flagellum while the microbe is
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Mitosis begins in mammalian cells when a protein accumulates
between cell divisions and interacts with a second protein to initiate a
cascade of kinase activation.
A heterotrimeric G protein.

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S. R. Houser and J. D. Molkentin
Are calcium signaling pathways in the heart regulated by bulk cytoplasmic calcium or by calcium in specialized microdomains?

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