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

NEWS OF THE WEEK
Louisiana Opens School Door for Opponents of Evolution 1572
Canada Launches Massive Study of Adult Cancer Precursors 1572
Senate Bill Would Alter Biosafety, Select Agent Rules 1573
U.K. Ponders World’s Biggest Tidal Power Scheme 1574
Heinz Center Wants Feds to Build Ecosystem Indicator Partnership 1575

SCIENCESCOPE 1575
Science Minister Drives Push to Strengthen Innovation 1576
Alzheimer’s Risk Factor Also Aids HIV 1577

NEWS FOCUS
An Unpredictably Violent Fault 1578
Abuzz About Behavior 1581
Out of Thin Air 1582
Nano Science and Technology Institute Nanotech 2008 1584
Membrane Makes Plastic Precursor Deliver More Bag for the Buck
Don’t Sweat the Small Stuff
Solar Cells Gear Up to Go Somewhere Under the Rainbow

LETTERS
Environmental Revolution Starts at Home E. C. Ellis 1587
A Graduate Student Oath K. D. Davis et al. 1587
Prized Programs Need Both Eyes and Ears H. Loebner 1587
Giving Samoan Healers Credit for Prostatin P. A. Cox, H. E. Johnson, G. Tavana 1587

CORRECTIONS AND CLARIFICATIONS 1588

BOOKS ET AL.
Reinventing the Sacred A New View of Science, Reason, and Religion S. A. Kauffman, reviewed by D. Noble 1590
Microcosm E. coli and the New Science of Life C. Zimmer, reviewed by D. J. Rankin 1591
A Taste of the Gonzo Scientist >> Online Feature p. 1557 1592

POLICY FORUM
The MPG Illusion R. P. Larrick and J. B. Soll >> Science Podcast 1593

PERPECTIVES
A Matter of Fiss K. M. Cuffey >> Report p. 1626 1596
Imaging Astrocyte Activity F. Wolf and F. Kirchhoff >> Report p. 1638 1597
How Bacteria Change Gear R. M. Berry and J. P. Armitage >> Report p. 1636 1599
Diamond for Quantum Computing S. Prawer and A. D. Greentree 1601
Retrospective: John Archibald Wheeler (1911–2008) K. S. Thorne 1603

http://science.sciencemag.org/content/320/5831/1551.full.html
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www.sciencemag.org  SCIENCE  VOL 320  20 JUNE 2008
SCIENCE EXPRESS

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CLIMATE CHANGE
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

IMMUNOLOGY
Censoring of Autoreactive B Cell Development by the Pre-B Cell Receptor
R. A. Keenan et al.
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

APPLIED PHYSICS
Control of Exciton Fluxes in an Excitonic Integrated Circuit
A. A. High, E. E. Novitskaya, L. V. Butov, M. Hanson, and A. C. Gossard
Coupled quantum-wells structures, patterned to create electron-hole circuits, can perform simple logic operations on optical input signals.
10.1126/science.1157845

IMMUNOLOGY
Modulation of Gene Expression via Disruption of NF-κB Signaling by a Bacterial Small Molecule
V. V. Kravchenko et al.
A small molecule produced by a common pathogenic bacterium inhibits the activity of a key immune transcription factor.
10.1126/science.1156499

TECHNICAL COMMENT ABSTRACTS

PLANETARY SCIENCE
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

REVIEW

ECONOMICS
S. Bowles

1595 & 1622

BREVIA

PLANT SCIENCE
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.

ASTRONOMY
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.

PHYSICS
Single-Cycle Nonlinear Optics
E. Goulielmakis et al.
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.

METEORITICS
The Formation Conditions of Chondrules and Chondrites
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.

GEOCHEMISTRY
Iron Isotope Fractionation During Magmatic Differentiation in Kilauea Iki Lava Lake
F.-Z. Teng, N. Dauphas, R. T. Helz
Iron isotopes fractionated between crystals and melt during crystallization of a lava lake, despite temperatures exceeding 1000°C Celsius, perhaps influenced by differing iron oxidation.

>> Perspective p. 1600
Astrocytes in the visual cortex respond to visual stimuli, showing localization) similar to those of neurons.

J. Schummers, H. Yu, M. Sur

Tuned Responses of Astrocytes and Their Influence

CELL BIOLOGY

MOLECULAR BIOLOGY

Proliferating Cells Express mRNAs with Shortened 3’ Untranslated Regions and Fewer MicroRNA Target Sites

R. Sandberg et al.

Dividing immune cells tend to synthesize messenger RNAs with shorter 3’ regulatory regions, possibly because less control is required over RNA functions.

MICROBIOLOGY

Evolution of Mammals and Their Gut Microbes

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 the same species have the same flora.

MICROBIOLOGY

Ankyrin Repeat Proteins Comprise a Diverse Family of Bacterial Type IV Effectors

X. Pan, A. Lührmann, A. Satoh, M. A. Laskowski-Arce, C. R. Roy

A 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 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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A heterotrimeric G protein.

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REVIEW: Dissociation of Heterotrimeric G Proteins in Cells
N. A. Lambert
G proteins may function as activated heterotrimers, as well as dissociated subunits.

PERSPECTIVE: Does Contractile Ca\(^{2+}\) Control Calcineurin-NFAT Signaling and Pathological Hypertrophy in Cardiac Myocytes?
S. R. Hauser and J. D. Molkentin
Are calcium signaling pathways in the heart regulated by bulk cytoplasmic calcium or by calcium in specialized microdomains?

PERSPECTIVE: A Cunning Stunt—An Alternative Mechanism of Eukaryotic Translation Initiation
S. J. Morley and M. J. Coldwell
Translation of cellular inhibitor of apoptosis 2 transcripts appears to involve a ribosome shunting mechanism, permitting translation in periods of stress.

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Physicist Sylvain Schwartz has won acclaim from both the private sector and the ivory tower.

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