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Covariant Glacial-Interglacial Dust Fluxes in the Equatorial Pacific and Antarctica
G. Winckler, R. F. Anderson, M. Q. Fleisher, D. McGee, N. Mahowald
A 500,000-year record shows that more dust, which provides iron and other nutrients, was blown into the equatorial Pacific during glacial periods than during warm periods.
10.1126/science.1150595

GEOCHEMISTRY
Graphite Whiskers in CV3 Meteorites
M. Fries and A. Steele
Graphite whiskers, a naturally occurring allotrope of carbon, have been found in primitive grains in several meteorites and may explain spectral features of supernovae.
10.1126/science.1153578

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New Materials at a Glance
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TDP-43 Mutations in Familial and Sporadic Amyotrophic Lateral Sclerosis
J. Sreedharan et al.
Mutations in a gene that encodes a protein that aggregates in several neurodegenerative disorders are linked to amyotrophic lateral sclerosis (Lou Gehrig’s disease).
10.1126/science.1154584

NEUROSCIENCE
Protein Synthesis and Neurotrophin-Dependent Structural Plasticity of Single Dendritic Spines
J. Tanaka et al.
Pairing of stimuli in hippocampal cells induces secretion of the growth factor BDNF, causing enlargement of individual spines and strengthening of synapses.
10.1126/science.1152864

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GENETICS
Complete Chemical Synthesis, Assembly, and Cloning of a Mycoplasma genitalium Genome
D. G. Gibson et al.
A complete bacterial genome is synthesized, assembled, and cloned, providing a method that will be useful for generating large DNA molecules de novo.
10.1126/science.1154587

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Asphericity in Supernova Explosions from Late-Time Spectroscopy
K. Maeda et al.
Spectroscopic signatures show that supernova explosions of stars that have lost their hydrogen envelopes are strongly aspherical and may be jetlike.
10.1126/science.1154588
Electronic Transport Through Disordered Metal Films
S. Aigner et al.
At ultracold temperatures, magnetometry suggests that defects in a gold wire produce organized, long-range electron deflections oriented at 45° to the direction of current flow.

Chemically Derived, Ultrasmooth Graphene Nanoribbon Semiconductors
X. Li, X. Wang, L. Zhang, S. Lee, H. Dai
Unlike nanotubes, 10-nanometer-wide graphene nanoribbons have smooth edges and can act as semiconductors.

Deeply Inverted Electron-Hole Recombination in a Luminescent Antibody-Stilbene Complex
E. W. Debler et al.
The bright blue emission from a stilbene-antibody complex, a versatile biosensor, is not fluorescence, but arises from charge recombination between a stilbene anion and a cationic side chain.

Land Clearing and the Biofuel Carbon Debt
J. Fargione, J. Hill, D. Tilman, S. Polasky, P. Hawthorne
Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change
T. Searchinger et al.
Converting forests and grasslands to biofuels crop production results in a net carbon flux to the atmosphere for decades despite any displacement of fossil fuel use.

Local Positive Feedback Regulation Determines Cell Shape in Root Hair Cells
S. Takeda, C. Gapper, H. Kaya, E. Bell, K. Kuchitsu, L. Dolan
Accumulation of an oxidase enzyme at one end of Arabidopsis root hair cells generates reactive oxygen species, which in turn trigger calcium entry and directional growth.

Ceramide Triggers Budding of Exosome Vesicles into Multivesicular Endosomes
K. Trajkovic et al.
Endosomes, membrane-bound vesicles later released from cells, are filled by a lipid-controlled budding of certain membrane regions into the lumen. >><Perspective p. 1191
Bigger amygdalas in aggressive teens.

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Tough-to-handle adolescents share bigger amygdala.

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Computer models show how releasing clouds of fine particles could cool the planet.

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[www.stke.org](http://www.stke.org)  THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

MEETING REPORT: cGMP Matters
B. Kemp-Harper and R. Feil
Emerging therapies for treating cardiovascular disorders target the cGMP signaling system.

TEACHING RESOURCE: Using Web-Based Discussion Forums as a Model of the Peer-Review Process and a Tool for Assessment
Asynchronous discussion forums have several advantages over in-class journal club discussions.

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S. Carpenter
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A. McNeil
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M. P. DeWhyne
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K. Arney
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