Cover
An example of “art” by self-styled guerrilla artist Banksy, as seen in East London in November 2007. Human behavior that would be characterized as antisocial punishment can also be called art; prosocial institutions, most notably the campaign Keep Britain Tidy, refer to Banksy’s work as vandalism. See page 1362.

Photo: Chris Jackson/Getty Images

News of the Week
Ecologists Report Huge Storm Loses in China’s Forests
Brazilian Scientists Battle Animal Experimentation Bans
Test of Hawking’s Prediction on the Horizon With
Mock ‘White Hole’

>> Report p. 1367

ScienceScope
NSF Delays Three Projects to Get Better Handle on Costs
U.S. Biomedicine’s Mother Ship Braces for Lab Closings
Antimatter Experiment May Be Too Costly for NASA to Launch
Electron Shadow Hints at Invisible Rings Around a Moon

>> Report p. 1380

News Focus
Preparing for Doomsday
The State of Our Planet’s Defenses
Experts Find No Evidence for a Mammoth-Killer Impact
Corn Genomics Pops Wide Open

>> Report p. 1377

Letters
Editorial Expression of Concern
D. Kennedy and B. Alberts
Rewarding Reviewers M. A. Metz
Rating Reviewers G. Marchionini
Preventing Inequity in International Research
I. Rudan Response C. A. Nelson III et al.
AIDS Vaccine Research: Consider Co-Infections
R. Gruters and A. Osterhaus

Corrections and Clarifications

Books
The Second Life Herald The Virtual Tabloid That Witnessed the Dawn of the Metaverse
P. Ludlow and M. Wallace, reviewed by D. Hunter
HIV/AIDS, Illness, and African Well-Being
T. Falola and M. M. Heaton, Eds., reviewed by A. G. Abimiku

Policy Forum
Moving Toward Transparency of Clinical Trials
D. A. Zarin and T. Tse

Perspectives
Canyon Cutting on a Grand Time Scale
T. Atkinson and M. Leeder
A Tall Tale for U
M. Wickens and J. E. Kwak
Punishment and Cooperation
H. Gintis
On Phytoplankton Trends
V. Smetacek and J. E. Cloern
Sweet Conundrum
M. J. Birnbaum
Science 2.0
B. Shneiderman
Retrospective: Joshua Lederberg (1925–2008)
S. S. Morse

Gordon Research Conferences

1301 Science Online
1303 This Week in Science
1309 Editors’ Choice
1312 Contact Science
1315 Random Samples
1317 Newsmakers
1414 New Products
1415 Science Careers

Editorial
A New Editor-in-Chief
by Bruce Alberts
CHEMISTRY
Linked Reactivity at Mineral-Water Interfaces Through Bulk Crystal Conduction
S. V. Yanina and K. M. Rosso
A current flow through a hematite crystal couples dissolution and growth reactions at different surfaces, a finding likely relevant to a broad range of semiconducting minerals.
10.1126/science.1154833

PHYSICS
Frequency Ratio of Al$^+$ and Hg$^+$ Single-Ion Optical Clocks; Metrology at the 17th Decimal Place
T. Rosenband et al.
Precise measurements of the frequency ratio of two optical clocks indicate that the fine-structure constant is fine and constant to an uncertainty of $10^{-17}$.
10.1126/science.1154622

GEOCHEMISTRY
Comment on "Early Archaean Microorganisms Preferred Elemental Sulfur, Not Sulfate"
H. Bao, T. Sun, I. Kohl, Y. Peng
full text at www.sciencemag.org/cgi/content/full/319/5868/1336b
Response to Comment on "Early Archaean Microorganisms Preferred Elemental Sulfur, Not Sulfate"
P. Philippot et al.
full text at www.sciencemag.org/cgi/content/full/319/5868/1336c

ECOLOGY
Dimethylsulfoniopropionate as a Foraging Cue for Reef Fishes
Reef fish locate desirable feeding opportunities by recognizing dimethylsulfoniopropionate, which is released by coral reef algae in response to foraging by fish.

MEDICINE
Oncogenic CARD11 Mutations in Human Diffuse Large B Cell Lymphoma
G. Lenz et al.
One type of non-Hodgkin’s lymphoma is caused by mutations in a scaffolding protein that inappropriately activate an inflammatory signaling pathway.
10.1126/science.1153629

NEUROSCIENCE
A Model for Neuronal Competition During Development
C. D. Deppmann et al.
Modeling and experiments show that neurons successfully innervate muscle when neuronal sensitization to survival signals outweighs antagonistic signals for cell death.
10.1126/science.1152677

CLIMATE CHANGE
Long-Term Sea-Level Fluctuations Driven by Ocean Basin Dynamics
R. D. Müller, M. Sidrolias, C. Gaina, B. Steinberger, C. Heine
Considering changes in the shape of the ocean basins implies that global sea level fell by ~250 meters since 140 to 80 million years ago, a larger drop than implied in a recent study.

PSYCHOLOGY
Antisocial Punishment Across Societies
B. Herrmann, C. Thöni, S. Gächter
Retaliation against those who enforce the social norms of civic cooperation and rule of law varies among cultures and is more pronounced where social norms are weaker.

>> Perspective p. 1345

REPORTS
Fiber-Optical Analog of the Event Horizon
T. G. Philbin et al.
An optical analog of the event horizon of a gravitational black hole can be produced with light pulses propagating along an optical fiber, providing a tractable experimental system.

>> News story p. 1321
A drug for controlling cholesterol may be useful as an antibiotic because of unexpected structural similarities among critical proteins.

Retro-Aldol Enzymes
De Novo Computational Design of
L. Jiang et al.
A computationally designed enzyme acts as a retro-aldolase that splits a carbon-carbon bond in a nonnatural substrate.

Heterogeneous Nucleation Experiments Bridging the Scale from Molecular Ion Clusters to Nanoparticles
P. M. Winkler et al.
Experiments mimicking aerosol formation show that organic vapors tend to condense on any nanometer-scale particles, particularly negatively charged ones, rather than forming pure nuclei.

Staphylococcus aureus
Mutating a cell-surface virulence protein on strep bacteria stabilizes its structure, minimizing its inflammatory side effects and potentially making it a better vaccine.

A transcriptional co-repressor is part of the protein complex that inhibits developmental gene activation in Arabidopsis until the growth hormone auxin triggers its degradation.

A drug for controlling cholesterol may be useful as an antibiotic because of unexpected structural similarities among critical proteins.
 Too Old, Too Fast
Stem cell identity crisis might explain "accelerated aging" disease.

How Weeds Take to Cities
A clever experiment shows one way to adapt to life in the concrete jungle.

Physicists Successfully Store and Retrieve Nothing
Researchers trap a peculiar state of the vacuum.

Perspective: Matrix Elasticity, Cytoskeletal Tension, and TGF-β: The Insoluble and Soluble Meet
R. G. Wells and D. E. Discher
Extracellular matrix stiffness regulates the equilibrium between storage and release of matrix-bound transforming growth factor–β.

Glossary
Find out what MVE, SFRP, and LCR mean in the world of cell signaling.

Separate individual or institutional subscriptions to these products may be required for full-text access.