NEWS OF THE WEEK
Misjudged Talk Opens Creationist Rift at Royal Society 1752
After Spectacular Start, the LHC Injures Itself 1753
Rising Costs Could Delay NASA’s Next Mission to Mars and Future Launches 1754
Geologists Find Vestige of Early Earth—Maybe World’s Oldest Rock 1755
>> Report p. 1828
SCIENCESCOPE 1755
U.K. Science Adviser Makes His U.S. Debut 1756
Solid Rock Imposes Its Will on a Core’s Magnetic Dynamo 1756
>> Brevia p. 1800; Report p. 1822
NEWS FOCUS 1758
Proteomics Ponders Prime Time Will Biomarkers Take Off at Last? 1758
Scientists Strive for a Seat at the Table of Each Campaign 1762
>> Science Podcast
Searching for the Secrets of the Super Old 1764

LETTERS 1776
Fixing the Leaky Faucet J. Illes 1776
Redefining Academic Success S. M. Fitzpatrick and J. T. Bruer 1776
Caught in the Middle? S. S. P. Magavi 1786
Just Give Them Fellowships A. P. Pernetta 1778
Destabilizing the Pyramid Scheme D. R. Jackola 1779
Biotechnology Innovation in Africa E. C. Agbo et al. 1781
CORRECTIONS AND CLARIFICATIONS 1778
BOOKS ET AL. 1779
The Race Between Education and Technology C. Goldin and L. F. Katz, reviewed by T. Lemieux 1781
Objectivity L. Daston and P. Galison, reviewed by A. Richardson 1781
EDUCATION FORUM 1779
School Performance Will Fail to Meet Legislated Benchmarks M. J. Bryant et al. 1781
PERSPECTIVES 1783
For Quantum Information, Two Wrongs Can Make a Right J. Oppenheim >> Report p. 1812 1783
The Metastasis Cascade C. A. Klein >> Report p. 1841 1785
Unlocking the Potential of the Spoken Word D. W. Oard 1787
Can Neural Data Improve Economics? E. Maskin >> Report p. 1849 1788
Nonlinear Thinking About Molecular Energy Transfer R. M. Stratt >> Report p. 1817 1789

2008 VISUALIZATION CHALLENGE 1767
For related online content, go to www.sciencemag.org/vis2008/
DEVELOPMENTAL BIOLOGY
Induced Pluripotent Stem Cells Generated Without Viral Integration
M. Stadtfeld, M. Nagaya, J. Utikal, G. Weir, K. Hochedlinger
Transient exposure of mouse fibroblast and liver cells to an adenovirus vector
 carrying factors that induce pluripotency generates stem cells without viral elements
in the genome.
10.1126/science.1162494

GENETICS
Conservation and Rewiring of Functional Modules Revealed by an
Epistasis Map in Fission Yeast
A. Roguev et al.
Comparison of genetic wiring in two types of yeast reveals that protein complexes are
conserved, but the interactions between them can change radically between species.
10.1126/science.1162609

MATERIALS SCIENCE
Evolution of Block Copolymer Lithography to Highly Ordered Square
Arrays
The addition of hydrogen bonding units to two block copolymers leads to a template
with square patterns that can be used for manufacturing integrated circuits.
10.1126/science.1162950

PHYSICS
Complete Characterization of Quantum-Optical Processes
M. Lobino, D. Korystov, C. Kupchak, E. Figueroa, B. C. Sanders, A. I. Lvovsky
A method requiring only the light from a laser as an input yields a full characterization
of quantum optical processes by probing its effect on classical states.
10.1126/science.1162086

REVIEW
CHEMISTRY
Assembling Materials with DNA as the Guide
F. A. Aldaye, A. L. Palmer, H. F. Sleiman
1795

BREVIA
GEOPHYSICS
Magnetic Source Separation in Earth’s Outer Core
K. A. Hoffman and B. S. Singer
Analysis of Earth’s magnetic field as it has changed and reversed
suggests that its dipole arises from a distinct part of the outer core
than that of the rest of the field.
>> News story p. 1756
1800

MEDICINE
Core Signaling Pathways in Human Pancreatic
Cancers Revealed by Global Genomic Analyses
S. Jones et al.
Sequencing of DNA mutations shows that the same 12 signaling
pathways are disrupted in most pancreatic tumors, suggesting
these as key to tumor development.
1801

Glioblastoma Multiforme
D. W. Parsons et al.
Comprehensive analysis of mutations in a brain cancer identifies
previously unidentified cancer genes and a frequently mutated
protein that may serve as a therapeutic marker.
1807

PHYSICS
Quantum Communication with Zero-Capacity
Channels
G. Smith and J. Yard
Two quantum communication channels, each of which is so noisy
that it has zero capacity to independently transmit information,
can do so when used together.
>> Perspective p. 1783
1812

CHEMISTRY
Synthesis and Solid-State NMR Structural
Characterization of $^{13}$C-Labeled Graphite Oxide
W. Cai et al.
Solid-state nuclear magnetic resonance study of graphite oxide made
with 100 percent carbon-13 reveals a complex bonding network
involving several carbon species.
1815
**CHEMISTRY**

Linear Response Breakdown in Solvation Dynamics Induced by Atomic Electron-Transfer Reactions
A. E. Bragg, M. C. Cavanagh, B. J. Schwartz
A solvent equilibrates faster around a sodium-electron ion pair formed from Na⁺ than from Na⁻, violating a widely used approximation for modeling solvent dynamics.

**PLANETARY SCIENCE**

Mars’ Paleomagnetic Field as the Result of a Single-Hemisphere Dynamo
S. Stanley, L. Elkins-Tanton, M. T. Zuber, E. M. Parmentier
A model of Mars’ early magnetic field with a north-south gradient in heat flow from the core yields a strong field only in the south, explaining the relic magnetism in the crust.

**GEOPHYSICS**

The Structure and Dynamics of Mid-Ocean Ridge Hydrothermal Systems
D. Coumou, T. Driesner, C. A. Heinrich
A three-dimensional model shows that mid-ocean hydrothermal systems self-organize into broad warm downflows feeding narrow, pipelike hot upflows.

**GEOCHEMISTRY**

Neodymium-142 Evidence for Hadean Mafic Crust
An unusual isotopic anomaly in rocks along the Hudson Bay suggests that they formed 4.28 billion years ago and support early formation of a separate reservoir in Earth’s mantle.

**PSYCHOLOGY**

Infants’ Perseverative Search Errors Are Induced by Pragmatic Misinterpretation
J. Topál, G. Gergely, Á. Miklósi, Á. Erdohegyi, G. Csibra
Infants may make mistakes in certain tasks because of the powerful effects of social interaction with an adult, not because of brain immaturity as was previously assumed.

**BIOCHEMISTRY**

Antigen Recognition by Variable Lymphocyte Receptors
B. W. Han, B. R. Herrin, M. D. Cooper, J. A. Wilson
The receptor that binds antigens in jawless vertebrates differs from the immunoglobulins of jawed vertebrates and uses a variable concave surface and Carboxyl terminal for recognition.

**MEDICINE**

Disruption of the CFTR Gene Produces a Model of Cystic Fibrosis in Newborn Pigs
C. S. Rogers et al.
Newborn pigs carrying a mutated copy of the gene defective in cystic fibrosis exhibit many features of the human disease and may provide fresh insights for therapy.

**PSYCHOLOGY**

The Coevolution of Cultural Groups and Ingroup Favoritism
C. Efferson, R. Lalive, E. Fehr
Results of a laboratory game show that cultural groups and ingroup favoritism arise spontaneously when individuals display an external marker that predicts their actions.

**MEDICINE**

Seeding and Propagation of Untransformed Mouse Mammary Cells in the Lung
K. Podsypanina et al.
In mice, normal mammary cells can colonize the lung, suggesting that metastases might arise from displaced normal cells acquiring genetic changes that confer malignancy.

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**RESEARCH ARTICLE: Nedd4 Controls Animal Growth by Regulating IGF-1 Signaling**

X. R. Cao, N. L. Lill, N. Boase, P. P. Shi, D. R. Croucher, H. Shan, J. Qu, E. M. Sweezer, T. Place, P. A. Kirby, R. J. Daly, S. Kumar, B. Yang

Nedd4 acts through Grb10 to enhance insulin-like growth factor signaling and control animal growth.

**PERSPECTIVE: Caspase-2—Vestigial Remnant or Master Regulator?**

C. M. Troy and E. M. Ribe

Both mitochondrial-dependent and -independent cell death pathways are mediated by caspase-2.

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E. M. Adler, N. R. Gough, A. M. VanHook

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