NEWS OF THE WEEK

Review of Vaccine Failure Prompts a Return to Basics
NASA’s Stern Quits Over Mars Exploration Plans
Germs Take a Bite Out of Antibiotics

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China’s LAMOST Observatory Prepares for the Ultimate Test
U.S. Asked to Bolster Ties With China
DNA From Fossil Feces Breaks Clovis Barrier

>> Science Express Report by M. T. P. Gilbert et al.

NEWS FOCUS

All in the Stroma: Cancer’s Cosa Nostra
American Physical Society Meeting
  Magnetic Measurements Hint at Toaster Superconductivity
  Laser Plays Chemical Matchmaker
  Squeeze Play Makes Solid Helium Flow
Puzzling Over a Steller Whodunit

LETTERS

Conserving Top Predators in Ecosystems
  G. Chapron, H. Andrén, O. Liberg
The Role of Fisheries-Induced Evolution
  Response C. Jørgensen et al.
Tips for NIH M. Aickin

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BOOKS ET AL.

Violence A Micro-sociological Theory
  R. Collins, reviewed by D. D. Laitin

BROWSINGS

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A Case Study of Personalized Medicine
  S. H. Katsanis, G. Javitt, K. Hudson

PERSPECTIVES

Toward Understanding Self-Splicing
  J. A. Piccirilli

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Blooms Like It Hot
  H. W. Paerl and J. Huisman
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  A. G. Bang and M. K. Carpenter

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Tel2 Finally Tells One Story
  M. Chang and J. Lingner
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  P. A. Bland

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Creating Musical Variation
  D. S. Dabby

EDITORIAL

The Promise of Cancer Research by Bruce Alberts
ANTHROPOLOGY
DNA from Pre-Clovis Human Coprolites in Oregon, North America
M. T. P. Gilbert et al.
Fossil human feces from an Oregon cave predate the Clovis culture by about 1000 years, and DNA from the feces marks the presence of Native Americans in North America.
>> News story p. 37
10.1126/science.1154116

PHYSICS
BREVIA: Fine Structure Constant Defines Visual Transparency of Graphene
R. R. Nair et al.
The transparency of sheets of graphene is quantized in a way that allows a simple determination of the fine structure constant, which relates light and relativistic electrons.
10.1126/science.1156965

RESEARCH ARTICLES
ARCHAEOLOGY
Aztec Arithmetic Revisited: Land-Area Algorithms and Acocluha Congruence Arithmetic
B. J. Williams and M. del Carmen Jorge y Jorge
Analysis of ancient property records shows that the Aztecs used common algorithms and a distance standard for calculating land area and specific symbols to represent fractions.

BIOCHEMISTRY
Crystal Structure of a Self-Spliced Group II Intron
N. Toor, K. S. Keating, S. D. Taylor, A. M. Pyle
The autocatalytic group II intron contains a network of unusual tertiary RNA interactions that form a metalloribozyme active site with parallels to eukaryotic spliceosomes.
>> Perspective p. 56

REVIEW
DEVELOPMENTAL BIOLOGY
Stochasticity and Cell Fate
R. Losick and C. Desplan

ECOLOGY
Bats Limit Insects in a Neotropical Agroforestry System
K. Williams-Guillén, I. Perfecto, J. Vandermeer
Exclosure experiments show that bats contribute to the reduction of insects on coffee plants more than has been appreciated and to a comparable degree as birds.

ECOLOGY
Bats Limit Arthropods and Herbivory in a Tropical Forest
M. B. Kalka, A. R. Smith, E. K. V. Kalko
In a lowland tropical forest, bats consume insect herbivores on understory plants at least as much as birds do, thereby also indirectly limiting damage to the plants.

MEDICINE
ROS-Generating Mitochondrial DNA Mutations Can Regulate Tumor Cell Metastasis
K. Ishikawa et al.
Mutations in mitochondrial DNA that cause enhanced production of reactive oxygen species can increase the propensity of tumor cells to metastasize.
10.1126/science.1156906

REPORTS
APPLIED PHYSICS
Revealing Magnetic Interactions from Single-Atom Magnetization Curves
F. Meier, L. Zhou, J. Wiebe, R. Wiesendanger
A scanning tunneling microscope with a spin-polarized tip can characterize the magnetic properties of single atoms on a nonmagnetic surface.

CHEMISTRY
The Roles of Subsurface Carbon and Hydrogen in Palladium-Catalyzed Alkyne Hydrogenation
D. Teschner et al.
The population of hydrogen and carbon within a palladium catalyst governs the hydrogenation of alkynes on its surface.

10.1126/science.1154116
10.1126/science.1156965
10.1126/science.1156906
10.1126/science.1156906
REPORTS CONTINUED...

GEOCHEMISTRY
The Electrical Conductivity of Post-Perovskite in Earth’s D’ Layer
K. Ohta et al.
A major silicate mineral deep in Earth’s mantle has a high electrical conductivity, causing a sufficiently strong coupling with the core to explain variations in Earth’s rotation.

ASTRONOMY
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.

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CLIMATE CHANGE
Covariant Glacial-Interglacial Dust Fluxes in the Equatorial Pacific and Antarctica
G. Winckler et al.
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.

MOLECULAR BIOLOGY
Selective Blockade of MicroRNA Processing by Lin-28
S. R. Viswanathan, G. Q. Daley, R. I. Gregory
A protein necessary for reprogramming skin fibroblasts to pluripotent stem cells is an RNA-binding protein that normally inhibits microRNA processing in embryonic cells.

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MICROBIOLOGY
Bacteria Subsisting on Antibiotics
G. Dantas et al.
A wide range of bacteria in the environment, many related to human pathogens, are both resistant to antibiotics and consume them as their only source of carbon for growth.

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CELL BIOLOGY
Reversible Compartmentalization of de Novo Purine Biosynthetic Complexes in Living Cells
S. An, R. Kumar, E. D. Sheets, S. J. Benkovic
The enzymes needed for purine biosynthesis cluster in the cytoplasm when cells are depleted of purine but dissociate when the demand for purine is low.

BIOCHEMISTRY
Single-Molecule DNA Sequencing of a Viral Genome
T. D. Harris et al.
The M13 viral genome has been resequenced by a single-molecule method that allows simultaneous sequencing of 280,000 DNA strands of 25 bases with 100 percent coverage.

NEUROSCIENCE
Entrainment of Neuronal Oscillations as a Mechanism of Attentional Selection
P. Lakatos et al.
In monkeys that are paying attention to a rhythmic stimulus, brain oscillations become tuned to the stimulus so that the response in the visual cortex is enhanced.

NEUROSCIENCE
Episodic-Like Memory in Rats: Is It Based on When or How Long Ago?
W. A. Roberts et al.
Unlike humans, who can place past events within a temporal framework, rats can only remember when an event happened by tracking the time elapsed since its occurrence.
SCIENCE SIGNALING
www.stke.org THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

REVIEW: Calpain in the CNS—From Synaptic Function to Neurotoxicity
J. Liu, M. Cheng Liu, K. K. W. Wang
Physiological activation of calpains may play a role in memory, whereas pathological activation leads to cell death.

PODCAST
E. M. Adler and J. F. Foley
Mutations in the IGF-1 receptor are associated with longer life span in humans.

Gorgeous trains get no love from peahens.

Network among polar scientists.

SCIENCE CAREERS
www.sciencecareers.org/career_development CAREER RESOURCES FOR SCIENTISTS

Taken for Granted: Help Is on the Way (for Some)
B. Benderly
A flurry of activity on workforce issues in early March did little to ease the problems of young scientists.

A Competitive Fellowship
J. Mervis
Next year, NSF officials hope to launch a novel training program connected to the president’s American Competitiveness Initiative.

Networking Group Seeks to Bridge the Poles
C. Reed
A fledgling organization connects polar scientists.

April 2008 Funding News
J. Fernández
Learn about the latest in research funding opportunities, scholarships, fellowships, and internships.

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