CONTENTS

CONTENTS continued

NEWS OF THE WEEK

Chinese Probe Unmasks High-Tech Adulteration With Melamine 1310
Will French Science Swallow Zerhouni’s Strong Medicine? 1312
Giant Scope Heads Europe’s Wish List 1313

SCIENCESCOPE

Interest Rises in DNA Copy Number Variations—Along With Questions 1314
Science Goes Hollywood: NAS Links With Entertainment Industry 1315

NEWS FOCUS

Canada’s Experimental Lakes Contaminating a Lake to Save Others 1316
>> Science Podcast
Adam Reiss: A Universe Past the Braking Point 1320
University Hackers Test the Right to Expose Security Concerns 1322

LETTERS

The Price of Exploration J. B. Garvin 1324
Research Funding: Less Should Be More R. Sousa 1326
Cell Phone and DNA Story Overlooked Studies V. G. Khurana Response G. Vogel 1328
Flaunting the Feminine Side of Research Studies P. Greenberger 1330

CORRECTIONS AND CLARIFICATIONS 1326

BOOKS ET AL.

The Superorganism The Beauty, Elegance, and Strangeness of Insect Societies B. Hölldobler and E. O. Wilson, reviewed by J. H. Hunt 1327
Sun in a Bottle The Strange History of Fusion and the Science of Wishful Thinking C. Seife, reviewed by F. N. von Hippel 1329

EDUCATION FORUM

Scientific Teaching in Practice S. Miller, C. Pfund, C. M. Pribbenow, J. Handelsman 1329
Global Sex Differences in Test Score Variability S. Machin and T. Pekkarinen 1331

PERSPECTIVES

A Tamed Reactive Intermediate J. B. Lambert >> Report p. 1360 1333
Reflections on a Wall of Light P.-M. Binder 1334
Exoplanets—Seeing Is Believing M. S. Marley >> Research Articles pp. 1345 and 1348 1335
An Antibiotic Mimics Immunity C. Nathan >> Report p. 1392 1337
Carbon in Charge R. L. Evans >> Report p. 1363 1338
Controlled Chaos V. N. Uversky and A. K. Dunker >> Report p. 1365 1340

EDITORS’ CHOICE

1291

Science Careers

AAAS News & Notes

New Products

Science Online

This Week in Science

Contact Science

Random Samples

Newsmakers

Random Samples

Newsmakers

Cover

Two direct detections of extrasolar planet candidates. Top: Keck Telescope colored infrared image of star HR 8799, for which the starlight is masked, showing three surrounding planets (red dots). Bottom: Superseded Hubble Space Telescope visible images from 2 years apart, tracing the orbit of a planet surrounding the star Fomalhaut. See pages 1345 and 1348.

Images: Christian Marois/NRC Herzberg Institute of Astrophysics, Canada; Paul Kalas/University of California, Berkeley

1303 Scientists and Human Rights by Leonard Rubenstein and Mona Younis

1299 This Week in Science

1304 Editors’ Choice

1306 Contact Science

1307 Random Samples

1309 Newsmakers

1340 New Products

1301 Science Careers

1310 Chinese Probe Unmasks High-Tech Adulteration With Melamine

1312 Will French Science Swallow Zerhouni’s Strong Medicine?

1313 Giant Scope Heads Europe’s Wish List

1314 Interest Rises in DNA Copy Number Variations—Along With Questions

1315 Science Goes Hollywood: NAS Links With Entertainment Industry

1320 Adam Reiss: A Universe Past the Braking Point

1322 University Hackers Test the Right to Expose Security Concerns

1324 The Price of Exploration J. B. Garvin

1326 CORRECTIONS AND CLARIFICATIONS

1327 The Superorganism The Beauty, Elegance, and Strangeness of Insect Societies B. Hölldobler and E. O. Wilson, reviewed by J. H. Hunt

1328 Sun in a Bottle The Strange History of Fusion and the Science of Wishful Thinking C. Seife, reviewed by F. N. von Hippel

1329 Scientific Teaching in Practice S. Miller, C. Pfund, C. M. Pribbenow, J. Handelsman

1330 Global Sex Differences in Test Score Variability S. Machin and T. Pekkarinen


1334 Reflections on a Wall of Light P.-M. Binder

1335 Exoplanets—Seeing Is Believing M. S. Marley >> Research Articles pp. 1345 and 1348

1337 An Antibiotic Mimics Immunity C. Nathan >> Report p. 1392

1338 Carbon in Charge R. L. Evans >> Report p. 1363

1340 Controlled Chaos V. N. Uversky and A. K. Dunker >> Report p. 1365
**MICROBIOLOGY**
AMPylation of Rho GTPases by Vibrio VopS Disrupts Effector Binding and Downstream Signaling
M. L. Yarbrough, Y. Li, L. N. Kinch, N. V. Grishin, H. L. Ball, K. Orth
A GI-active pathogen destroys intestinal cells, in part by improperly modifying a host signaling protein, causing loss of cell shape and contributing to cell death.
10.1126/science.1166382

**PHYSICS**
Universal Theory of Nonlinear Luttinger Liquids
A. Imambekov and L. I. Glazman
A theory of one-dimensional quantum liquids is generalized from linear interactions among particles to nonlinear ones, affecting, for example, predicted tunneling dynamics.
10.1126/science.1165403

**DEVELOPMENTAL BIOLOGY**
Drosophila Stem Cells Share a Common Requirement for the Histone H2B Ubiquitin Protease Scrawny
M. Buszczak, S. Paterno, A. C. Spradling
Stem cells in the germ line, epithelium, and intestine all require a particular modification of histone H2B to repress key differentiation genes and maintain pluripotency.
10.1126/science.1165678

**MATERIALS SCIENCE**
Direct Measurement of Molecular Mobility in Actively Deformed Polymer Glasses
H.-N. Lee, K. Paeng, S. F. Swallen, M. D. Ediger
Optical bleaching of a dilute molecular probe shows that when a rubbery polymer begins to flow, polymer chains become more mobile than predicted from a classical model.
10.1126/science.1165995

**ECOLOGY**
Comment on “Climate-Driven Ecosystem Succession in the Sahara: The Past 6000 Years”
V. Brovkin and M. Claussen
full text at www.sciencemag.org/cgi/content/full/322/5906/1326b

Response to Comment on “Climate-Driven Ecosystem Succession in the Sahara: The Past 6000 Years”
S. Kröpelin, D. Verschuren, A.-M. Lézine
full text at www.sciencemag.org/cgi/content/full/322/5906/1326c

**CLIMATE CHANGE**
A Simple Law for Ice-Shelf Calving
R. B. Alley et al.
An empirical model of iceberg production as an ice shelf that buttresses a glacier spread may help to predict glacial flow and sea level rise as Earth’s climate warms.
1344

**ASTRONOMY**
Optical Images of an Exosolar Planet 25 Light-Years from Earth
P. Kalas et al.
Images from the Hubble Space Telescope reveal a Jupiter-sized planet, perhaps with a surrounding dust disk, orbiting about 115 astronomical units from a nearby main sequence star.
1345

Direct Imaging of Multiple Planets Orbiting the Star HR 8799
C. Marois et al.
Infrared images from the Keck and Gemini telescopes reveal three giant planets orbiting counterclockwise around a young star, in a scaled-up version of our solar system.
1348

**RESEARCH ARTICLES**
**CELL BIOLOGY**
Detection of GTP-Tubulin Conformation in Vivo Reveals a Role for GTP Remnants in Microtubule Rescues
A. Dimitrov et al.
GTP-bound tubulin is found at microtubule ends in living cells and also within microtubules, where it may promote repolymerization and avert microtubule collapse.
1353

**PHYSICS**
Resolving Vacuum Fluctuations in an Electrical Circuit by Measuring the Lamb Shift
A. Fragner et al.
A solid-state qubit in an electrical circuit connected to a vacuum field shows a shift in its transition energy level, a classic quantum effect typically seen in isolated atoms.
1357

**BREVIA**
A Simple Law for Ice-Shelf Calving
R. B. Alley et al.
An empirical model of iceberg production as an ice shelf that buttresses a glacier spread may help to predict glacial flow and sea level rise as Earth’s climate warms.
1344

10.1126/science.1165995
REPORTS CONTINUED...

CHEMISTRY
A Cryptand-Encapsulated Germanium(II) Dication 1360
P. A. Rupar, V. N. Staroverov, K. M. Baines
A cage-like molecule typically used to sequester hard metal cations such as Ca^{2+} in solution proves capable of capturing the softer, elusive free germanium ion Ge^{2+}. >> Perspective p. 1333

GEOCHEMISTRY
Carbonatite Melts and Electrical Conductivity in the 1363
Asthensosphere
F. Gaillard et al.
The electrical conductivity of molten carbonates is higher than that of silicate minerals; thus, minor amounts of carbonate melt could explain electrical signals of Earth’s mantle.
>> Perspective p. 1338

BIOCHEMISTRY
Tight Regulation of Unstructured Proteins: From Transcript Synthesis to Protein Degradation 1365
J. Gsponer et al.
Yeast proteins with unstructured regions tend to be highly regulated, consistent with the idea that these regions may mediate critical regulatory protein-protein interactions.
>> Perspective p. 1340

BIOCHEMISTRY
Structural Evidence for Common Ancestry of the Nuclear Pore Complex and Vesicle Coats 1369
S. G. Brahawn et al.
The protein complex that controls entry and exit from the cell nucleus shares a structural element with vesicle coat proteins, suggesting that it is built around a lattice-like scaffold.

ECOLOGY
The Widespread Threat of Calcium Decline in Fresh Waters 1374
A. Jeziorski et al.
As calcium levels decline in Canadian lakes, populations of a keystone prey crustacean are being depleted, with likely consequences for freshwater food webs.

MEDICINE
Genomic Analysis of the Clonal Origins of Relapsed Acute Lymphoblastic Leukemia 1377
C. G. Mullighan et al.
The cells responsible for relapse of a particular type of leukemia are often not the same cells that gave rise to the original disease.
>> Science Podcast

PLANT SCIENCE
A Genetic Framework for the Control of Cell Division and Differentiation in the Root Meristem 1380
R. Dello Ioio et al.
The number of stem cells in plant roots is controlled by an auxin-cytokine feedback loop in which a particular gene integrates signals from both hormones.

MOLECULAR BIOLOGY
Chromosome Alignment and Transvection Are Antagonized by Condensin II 1384
T. A. Hartl, H. F. Smith, G. Bosco
A Drosophila protein required for dissolution of homologous chromosome bundles independently prevents long-distance effects of one allele on the transcription of its homolog.

MOLECULAR BIOLOGY
An Epigenetic Role for Maternally Inherited piRNAs in Transposon Silencing 1387
J. Brennecke et al.
In Drosophila, small RNAs derived from transposons are inherited from the mother and directly inhibit activation of these potentially detrimental transposons in offspring. >> Science Podcast

MICROBIOLOGY
PA-824 Kills Nonreplicating Mycobacterium tuberculosis by Intracellular NO Release 1392
R. Singh et al.
An unusual drug candidate for resistant tuberculosis generates nitrous acid and thus acts as an intracellular nitric oxide donor, augmenting the innate immune system. >> Perspective p. 1337

CELL BIOLOGY
Absence of the SRC-2 Coactivator Results in a Glycogenopathy Resembling Von Gierke’s Disease 1395
A. R. Chopra et al.
In mice, a coactivator binds to a nuclear orphan receptor and regulates glucose-6-phosphatase transcription and thus glucose homeostasis.
Did Icebergs Warm the World?
Errant ice might have driven ancient surges of carbon dioxide.

Scientists Untangle Woolly Mammoth Genome
New data give clues to creature’s evolution and hardiness.

When a Flood Beats a Trickle
Old-fashioned irrigation saves water.

Can your career spare 15 minutes?

Tooling Up: 15 Minutes to a Better Interview
D. Jensen
The basic rules of interview courtesy and etiquette are worth reviewing.

Young Italian Scientists Take to the Streets
E. Pain
Italian scientists on short-term contracts protest cuts in research funding and jobs.

From the Archives: Cheating, Betrayal, Denial, and Lies
M. P. DeWysye
As Thanksgiving approached, our Educated Woman realized that grad school was not everything she had anticipated.