Cover
Clusters of the pathogenic bacterium Staphylococcus aureus visualized by scanning electron microscopy. Staphylococcus aureus has been called a "superbug" because of its ability to resist numerous antibiotics and evade host antimicrobial mediators, including nitric oxide. See page 1672.
Image: Annie Cavanagh/Wellcome Images

News of the Week
Proposal to ‘Wikify’ GenBank Meets Stiff Resistance 1598
> Letter by M. I. Bidartondo et al., p. 1616
Millennium Ancestor Gets Its Walking Papers 1599
> Report p. 1662
Pfizer Denied Access to Journals’ Files 1601

ScienceScope
EPA Adjusts a Smog Standard to White House Preference 1601
Wisconsin Stem Cell Patents Upheld 1602
Showdown Looms Over a Biological Treasure Trove 1604
Expert Panel Lays Out the Path to Algebra—and Why It Matters 1605

News Focus
Rinderpest: Driven to Extinction 1606
Protein Structure Initiative: Phase 3 or Phase Out Researchers Hone Their Homology Tools 1610

Letters
Open Letter to Senator Rita Levi-Montalcini 1615
R. Clementi, L. Bargigli, S. Sabbioni
Response R. Levi-Montalcini
Preserving Accuracy in GenBank M. I. Bidartondo et al.
> News story p. 1598
Malaria Eradication in India: A Failure? T. D. Baker

Books et al.

Sex Differences in the Brain From Genes to Behavior J. B. Becker et al., Eds., reviewed by E. Balaban

Education Forum

Perspectives
Detailed Differences 1623
S. Leutgeb
> Research Article p. 1640
Rethinking Ozone Production 1624
P. O. Wennberg and D. Dabdub
> Report p. 1657
Who Wins the Nonvolatile Memory Race? 1625
G. I. Meijer
A Protoplasmic Kiss to Remember 1627
M. Korte
> Report p. 1683
Are Volcanic Gases Serial Killers? 1628
B. Scaillet
> Report p. 1654
Titan’s Hidden Ocean 1629
C. Sotin and G. Tobie
> Report p. 1649

Editorial
1589 Considering Science Education by Bruce Alberts
GENETICS
Mechanism of Self-Sterility in a Hermaphroditic Chordate
Y. Harada et al.
The sea squirt prevents self-fertilization by using a tightly linked genetic locus to encode a sperm-egg receptor-ligand pair, a system similar to that used by flowering plants.
10.1126/science.1152488

MATERIALS SCIENCE
High-Thermoelectric Performance of Nanostructured Bismuth Antimony Telluride Bulk Alloys
B. Poudel et al.
Milling a thermoelectric alloy, which produces electricity from a thermal gradient, into a nanopowder, then pressing it into a bulk form, greatly improves its performance.
10.1126/science.1156446

TECHNICAL COMMENT ABSTRACTS
OCEAN SCIENCE
Comment on “Physical Model for the Decay and Preservation of Marine Organic Carbon”
B. P. Boudreau et al.
full text at www.sciencemag.org/cgi/content/full/319/5870/1616b
Response to Comment on “Physical Model for the Decay and Preservation of Marine Organic Carbon”
D. H. Rothman and D. C. Forney
full text at www.sciencemag.org/cgi/content/full/319/5870/1616c

REVIEWS
GEOCHEMISTRY
Nanominerals, Mineral Nanoparticles, and Earth Systems
M. F. Hochella Jr. et al.
GEOCHEMISTRY
Size-Driven Structural and Thermodynamic Complexity in Iron Oxides
A. Navrotsky, L. Mazeina, J. Majzlan

BREVIA
PSYCHOLOGY
Preparing and Motivating Behavior Outside of Awareness
H. Aarts, R. Custers, H. Marien
Encouraging words flashed on a screen so briefly that they are only perceived unconsciously can, nevertheless, increase the effort put into a subsequent test of strength.

RESEARCH ARTICLE
NEUROSCIENCE
Pattern Separation in the Human Hippocampal CA3 and Dentate Gyrus
A. Bakker, C. B. Kirwan, M. Miller, C. E. L. Stark
High-resolution imaging of the human brain reveals that, as seen in rodents, recognition of small differences in similar memories requires a particular region of the hippocampus. >> Perspective p. 1623

REPORTS
APPLIED PHYSICS
Low-Magnetic-Field Control of Electric Polarization Vector in a Helimagnet
S. Ishiwata, Y. Taguchi, H. Murakawa, Y. Onose, Y. Tokura
The polarization of electrons in a complex iron oxide magnet can be manipulated using only a weak magnetic field, not a strong one as required in other systems.

MATERIALS SCIENCE
Observation of Giant Diffusivity Along Dislocation Cores
M. Legros, G. Dehm, E. Arzt, T. J. Balk
Observations on the movements of silicon atoms in a thin film of aluminum show that dislocations can align and act like a channel or pipe to greatly accelerate diffusion.

PLANETARY SCIENCE
Titan’s Rotation Reveals an Internal Ocean and Changing Zonal Winds
R. D. Lorenz et al.
An imbalance between the orbital and rotational periods of Saturn’s moon Titan implies that momentum is exchanged with its atmosphere and that it contains an internal ocean. >> Perspective p. 1629
## Science Reports Continued...

### PLANETARY SCIENCE

**Chloride-Bearing Materials in the Southern Highlands of Mars**
*M. M. Osterloo et al.*
Spectral observations from Mars Odyssey detect chloride minerals, apparently forming from the evaporation of water, across some of the oldest regions on Mars.

### GEOCHEMISTRY

**Sulfur and Chlorine in Late Cretaceous Deccan Magmas and Eruptive Gas Release**
*S. Self, S. Blake, K. Sharma, M. Biddwoson, S. Septon*
Measurements on rare glass inclusions and rims in India’s Deccan flood basalt imply that these end-Cretaceous eruptions injected huge amounts of sulfur into the atmosphere. >> Perspective p. 1628

### ATMOSPHERIC SCIENCE

**Atmospheric Hydroxyl Radical Production from Electronically Excited NO₂ and H₂O**
*S. Li, J. Matthews, A. Sinha*
The reaction of electronically excited nitrogen dioxide with water releases large amounts of OH radicals, an important oxidant, to the troposphere. >> Perspective p. 1624

### PALEONTOLOGY

**Synchronous Aggregate Growth in an Abundant New Ediacaran Tubular Organism**
*M. L. Droser and J. G. Gehling*
Tubular fossils up to 30 centimeters long dominate the fossil assemblage in the Late Precambrian of the Flinders Range, Australia, and show multiple modes of growth.

### ANTHROPOLOGY

**Orrorin tugenensis Femoral Morphology and the Evolution of Hominin Bipedalism**
*B. G. Richmond and W. L. Jungers*
Comparison of femora from an early, ostensibly human fossil to those from apes, humans, and hominins confirms that *Orrorin tugenensis* was a basal bipedal hominin. >> News story p. 1599

### CELL BIOLOGY

**Activation of FOXO1 by Cdk1 in Cycling Cells and Postmitotic Neurons**
*Z. Yuan et al.*
A cell cycle–associated kinase phosphorylates the transcription factor FOXO1, which activates transcription of a regulator of mitosis.

### MEDICINE

**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).

**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.

### NEUROSCIENCE

**Drosophila Egg-Laying Site Selection as a System to Study Simple Decision-Making Processes**
*C. Yang, P. Belawat, E. Hafen, L. Y. Jan, Y.-N. Jan*
Experiments show how flies make complex decisions when laying eggs, choosing surfaces containing sucrose only when other options are not available.

**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. >> Perspective p. 1627

### PSYCHOLOGY

**Spending Money on Others Promotes Happiness**
*E. W. Dunn, L. B. Aknin, M. I. Norton*
A survey, a study of windfall spending, and a lab experiment all indicate that spending money on others results in more happiness than does spending money on oneself.

---

**CONTENTS continued >>**

[Downloaded from http://science.sciencemag.org/ on December 25, 2017]
Four new sections of Science Signaling bring new resources to the cell signaling community.

The 2007 meeting of the Signal Transduction Society focused on results obtained using state-of-the-art imaging methodologies.

Two cultured cell systems provide insight into intracellular and extracellular events involved in cellular differentiation and senescence.

Posttranslational lipid modification of RhoA is necessary for T cell migration into the central nervous system during neuroinflammation.

The cultural shift from academia to nonacademic workplaces requires careful self-assessment.

The Harvard economist thanks postdocs for their skilled and diligent servitude.

Download the 14 March Science Podcast to hear about the evolution of human bipedalism, subliminal influence on behavior, and for farewell thoughts from senior news correspondent Jean Marx.
Science 319 (5870), 1585-1696.

http://science.sciencemag.org/content/319/5870

http://www.sciencemag.org/help/reprints-and-permissions