DEPARTMENTS
134 Science Online
135 This Week in Science
137 Editors’ Choice
138 Contact Science
139 Random Samples
141 Newsmakers
221 New Products
222 Science Careers

EDITORIAL
136 A Case for New Institutions
by Kamaljit S. Bawa,
Ganesan Balachander, and Peter Raven

NEWS OF THE WEEK
Budget Cuts Mean Layoffs at Two DOE Labs,
End for SLAC Collider
HIV Gets By With a Lot of Help From Human Host
>> Science Express Research Article by A. L. Brass et al.
Daggers Are Drawn Over Revived
Cosmic Ray–Climate Link
More Climate Wackiness in the Cretaceous
Supergreenhouse?
>> Report p. 189

SCIENCESCOPE
145 Panel: EPA Proposal for Air Pollution Short on Science
The Importance of Being Eaten
>> Report p. 192
Marine Mammals Still Imperiled After Sonar Ruling

NEWS FOCUS
Gunning for the Ivy League
Engineers Aim for a Quality Boost
Valérie Pécresse Interview: After Initial Reforms,
French Minister Promises More Changes
American Geophysical Union Meeting
Getting a Quick Read on the Biggest Tsunami Earthquakes
Climate Tipping Points Come In From the Cold
Cancer’s Bulwark Against Immune Attack: MDS Cells

LETTERS
Fighting Algae in Kaneohe Bay T. J. Goreau
Response J. E. Smith et al.
Taihu Lake Not to Blame for Wuxi’s Woes M. Yang et al.
Correcting the Record on the Data Quality Act
W. G. Kelly Jr.

CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
A Guinea Pig’s History of Biology The Plants and
Animals Who Taught Us the Facts of Life
J. Endersby, reviewed by V. B. Smocovitis
Introduction to Quantum Mechanics A Time-Dependent
Perspective D. J. Tannor, reviewed by S. Gray

POLICY FORUM
Ocean Iron Fertilization—Moving Forward in a
Sea of Uncertainty
K. O. Buesseler et al.

PERSPECTIVES
A Few to Flip the Angiogenic Switch
S. Rafii and D. Lyden
>> Report p. 195
Quo Vadis, Specificity?
H. Schrieber and D. A. Rowley
>> Report p. 215
Dicey Assemblies
J. Janin
>> Report p. 206
What Triggers Tremor?
E. Richardson and C. Marone
>> Brevia p. 173; Report p. 186
Not So Simple
J. I. Brauman
>> Report p. 183

CONTENTS continued >>
**VIROLOGY**
Identification of Host Proteins Required for HIV Infection Through a Functional Genomic Screen  
A. L. Brass et al.  
An RNAi screen identified 237 new and 38 known human proteins required for HIV infection, including ones used in Golgi transport and in viral integration and transcription. **News story p. 143**  
10.1126/science.1152725

**GENETICS**
Widespread Genetic Incompatibility in *C. elegans* Maintained by Balancing Selection  
H. S. Seidel, M. V. Rockman, L. Kruglyak  
Strong natural selection is maintaining multiple alleles of a gene in wild populations of the nematode *C. elegans*, despite their negative effect on fitness.  
10.1126/science.1151107

**PHYSICS**
Electronic Liquid Crystal State in the High-Temperature Superconductor YBa$_2$Cu$_3$O$_{6.45}$  
V. Hinkov et al.  
Neutron scattering measurements suggest that ordering of fluctuating electron spins explains the liquid crystal phases recently seen in some correlated electron systems.  
10.1126/science.1152309

**PHYSICS**
Observation of the Spin Hall Effect of Light via Weak Measurements  
O. Hosten and P. Kwiat  
Displacement of light at an air-glass interface depends on its polarization, showing that photons have a spin Hall effect comparable to that seen for electrons.  
10.1126/science.1152697

**TECHNICAL COMMENT ABSTRACTS**
OCEANS  
Comment on “The Southern Ocean Biological Response to Aeolian Iron Deposition”  
P. W. Boyd and D. Mackie  
full text at www.sciencemag.org/cgi/content/full/319/5860/159a

Response to Comment on “The Southern Ocean Biological Response to Aeolian Iron Deposition”  
N. Cassar et al.  
full text at www.sciencemag.org/cgi/content/full/319/5860/159b

**REVIEWS**
ECOLOGY  
Climate Change, Deforestation, and the Fate of the Amazon  
Y. Malhi et al.

**BREVIA**
GEOPHYSICS  
Widespread Triggering of Nonvolcanic Tremor in California  
J. Gomberg et al.  
A large Alaskan earthquake triggered tremors along the San Andreas and other strike-slip faults in California, showing that this process is not specific to subduction zones.  
>> Perspective p. 166; Report p. 186

**REPORTS**
ASTRONOMY  
Stellar Feedback in Dwarf Galaxy Formation  
S. Mashchenko, J. Wadsley, H. M. P. Couchman  
Simulations show that stellar winds and material expelled from supernovae alter the gravitational potential of dwarf galaxies, perhaps explaining their dark matter cores.

PHYSICS  
Superconducting Vortices in CeCoIn$_5$: Toward the Pauli-Limiting Field  
A. D. Bianchi et al.  
The response of CeCoIn$_5$ differs from that of other superconductors and from accepted theory because its superconducting state approaches a quantum critical point.

CHEMISTRY  
Self-Assembled Water-Soluble Nucleic Acid Probe Tiles for Label-Free RNA Hybridization Assays  
Y. Ke, S. Lindsay, Y. Chang, Y. Liu, H. Yan  
Large DNA scaffolds with multiple pairs of single-strand overhangs can capture specific RNA molecules for subsequent label-free detection by atomic force microscopy.
BIOCHEMISTRY

Designed Protein-Protein Association
D. Grueninger et al.
A few changes in the side chains of amino acids at the contact interfaces of natural enzymes may suffice to induce higher-order oligomers. >> Perspective p. 165

CELL BIOLOGY

Membrane Phosphatidylserine Regulates Surface Charge and Protein Localization
A fluorescent tag specific for a negatively charged lipid shows that its higher concentration in endosomes and lysosomes attracts cationic proteins within the cell.

PSYCHOLOGY

The Limits of Counting: Numerical Cognition Between Evolution and Culture
S. Beller and A. Bender
Several Pacific-island languages with few words for numbers may be derived from more sophisticated and abstract counting systems rather than being their precursors.

IMMUNOLOGY

Recognition of a Ubiquitous Self Antigen by Prostate Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.

IMMUNOLOGY

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

ECOLOGY

Breakdown of an Ant-Plant Mutualism Follows the Loss of Large Herbivores from an African Savanna T. M. Palmer et al.
Excluding mammalian herbivores from a savanna ecosystem decreased ant colonies on the resident Acacia trees, leading to attack by beetles and unexpected tree mortality. >> News story p. 145

MEDICINE

Chlorination of Nerve Cells
K. A. Daniel et al.
Experiments in mice show that chlorination of cells promotes the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

PALEOCLIMATE

Isotopic Evidence for Glaciation During the Cretaceous Supergreenhouse
A. Bornemann et al.
A glacial interval lasting about 200,000 years interrupted the warm Late Cretaceous climate and produced ice sheets half as large as the modern Antarctic Ice Sheet. >> News story p. 145

BIOCHEMISTRY

Imaging Nucleophilic Substitution Dynamics
J. Mikosch et al.
A precisely controlled gas-phase collision experiment unveils the quantum mechanical details underlying the classic organic chemical reaction of Cl- with CH3I. >> Perspective p. 168

GEOPHYSICS

Tidal Modulation of Nonvolcanic Tremor
J. L. Rubinstein et al.
Small tremors and slow slip along the Cascadia subduction zone pulse every 12.4 and 24 to 25 hours, implying that lunar tides are driving this activity along weak faults. >> Perspective p. 166; Brevia p. 173

IMMUNOLOGY

Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.

PSYCHOLOGY

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

ECOLOGY

Breakdown of an Ant-Plant Mutualism Follows the Loss of Large Herbivores from an African Savanna T. M. Palmer et al.
Excluding mammalian herbivores from a savanna ecosystem decreased ant colonies on the resident Acacia trees, leading to attack by beetles and unexpected tree mortality. >> News story p. 145

MEDICINE

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Dendritic Cell–Induced Memory T Cell Activation in Nonlymphoid Tissues
L. M. Wakim et al.
Immune cells, normally produced in lymphoid organs, can also be activated in the nervous system in response to a viral challenge.

MOLECULAR BIOLOGY

DNA Oxidation as Triggered by H3K9me2
J. Shi et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.

PSYCHOLOGY

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

ECOLOGY

Breakdown of an Ant-Plant Mutualism Follows the Loss of Large Herbivores from an African Savanna T. M. Palmer et al.
Excluding mammalian herbivores from a savanna ecosystem decreased ant colonies on the resident Acacia trees, leading to attack by beetles and unexpected tree mortality. >> News story p. 145

MEDICINE

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Dendritic Cell–Induced Memory T Cell Activation in Nonlymphoid Tissues
L. M. Wakim et al.
Immune cells, normally produced in lymphoid organs, can also be activated in the nervous system in response to a viral challenge.

MOLECULAR BIOLOGY

DNA Oxidation as Triggered by H3K9me2
J. Shi et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.

PSYCHOLOGY

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

ECOLOGY

Breakdown of an Ant-Plant Mutualism Follows the Loss of Large Herbivores from an African Savanna T. M. Palmer et al.
Excluding mammalian herbivores from a savanna ecosystem decreased ant colonies on the resident Acacia trees, leading to attack by beetles and unexpected tree mortality. >> News story p. 145

MEDICINE

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Dendritic Cell–Induced Memory T Cell Activation in Nonlymphoid Tissues
L. M. Wakim et al.
Immune cells, normally produced in lymphoid organs, can also be activated in the nervous system in response to a viral challenge.

MOLECULAR BIOLOGY

DNA Oxidation as Triggered by H3K9me2
J. Shi et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.

PSYCHOLOGY

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

ECOLOGY

Breakdown of an Ant-Plant Mutualism Follows the Loss of Large Herbivores from an African Savanna T. M. Palmer et al.
Excluding mammalian herbivores from a savanna ecosystem decreased ant colonies on the resident Acacia trees, leading to attack by beetles and unexpected tree mortality. >> News story p. 145

MEDICINE

Endothelial Progenitor Cells Control the Angiogenic Switch in Mouse Lung Metastasis
D. Gao et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Dendritic Cell–Induced Memory T Cell Activation in Nonlymphoid Tissues
L. M. Wakim et al.
Immune cells, normally produced in lymphoid organs, can also be activated in the nervous system in response to a viral challenge.

MOLECULAR BIOLOGY

DNA Oxidation as Triggered by H3K9me2
J. Shi et al.
Experiments in mice show that certain bone marrow cells promote the development of lung cancers by helping blood vessels form within the tumors. >> Perspective p. 163

IMMUNOLOGY

Cancer–Infiltrating CD8+ T Lymphocytes
P. A. Savage et al.
In mice, a common histone protein that coats DNA is unexpectedly detected within prostate tumors by the immune system, suggesting a potential therapeutic approach.
Notch-dependent activation of R-Ras reverses H-Ras–mediated suppression of integrin activity.

A dispersing and a clustering pathway for acetylcholine receptors converge on the postsynaptic protein rapsyn in skeletal muscle.

A gene triplicated in Down syndrome may provide cancer protection.

Switchgrass produces five times as much energy as required to make it into a crop-based fuel.

New booklet aims to bring Darwin’s theory to the masses.

Finding Darwin’s theory interesting can be exciting and rewarding.

Mike Taylor’s fascination with sauropods led him to do a Ph.D.

A software developer’s hobby in baseball statistics landed him a job with a major league baseball team.