EDITORIAL
12 Promoting Scientific Standards
Bruce Alberts

NEWS OF THE WEEK
18 Obama Backs New Launcher and Bigger NASA Budget
19 Senate Looms as Bigger Hurdle After Copenhagen
20 Protests by Staff, Advisers Rattle Australian Synchrotron
21 From Science’s Online Daily News Site
22 U.K. Physicists Cry Foul at Major Budget Cuts
22 Errors in Chemistry Claims Cast Doubt on Reactome Paper
23 From the Science Policy Blog
24 Recession Hits Some Sciences Hard at Florida State University
25 Embryo Ruling Keeps Stem Cell Research Legal

NEWS FOCUS
26 In the Afterglow of the Big Bang
>> Science Podcast

LETTERS
30 Bushmeat Hunting and Climate: An Indirect Link
P. A. Jansen et al.
Gray Wolves Not Out of the Woods Yet
J. T. Bruskotter et al.
Patents: A Threat to Innovation?
M. Manocaran
Response
S. J. H. Graham and M. J. Higgins
Let Top Students Go Forth and Prosper
G. Madhavan and B. A. Oakley

BOOKS ET AL.
33 Lizards in an Evolutionary Tree
J. B. Losos, reviewed by R. G. Gillespie
34 Don’t Be Such a Scientist R. Olson;
Am I Making Myself Clear? C. Dean, reviewed by P. Kareiva
34 Browsings

POLICY FORUM
36 Opportunities for Research and NIH
F. S. Collins

PERSPECTIVES
38 Molecular Donuts and Donut Holes
K. H. Whitmire
>> Report p. 72
39 Serendipitous Astronomy
K. R. Lang
41 Janus Catalysts Direct Nanoparticle Reactivity
D. J. Cole-Hamilton
>> Report p. 68
42 Some Enzymes Just Need a Space of Their Own
S. Kang and T. Douglas
>> Report p. 81
43 Brain Activity to Rely On?
D. S. Schwarzkopf and G. Rees
>> Report p. 97
45 Retrospective: Rossiter H. Crozier (1943–2009)
J. J. Boomsma and P. Pamilo

REVIEW
46 Lipid Rifts As a Membrane-Organizing Principle
D. Lingwood and K. Simons

CONTENTS continued >>
BREVIA

51 Masquerade: Camouflage Without Crypsis
J. Skelhorn et al.
Caterpillars masquerading as twigs are misidentified by chick predators as inanimate objects, rather than remaining undetected. >> Science Podcast

RESEARCH ARTICLE

52 Dendritic Mechanisms Underlying Rapid Synaptic Activation of Fast-Spiking Hippocampal Interneurons
H. Hu et al.
Potassium channel enrichment in the dendrites of hippocampal basket cells defines a mechanism of neural network function.

REPORTS

58 An Unusually Fast-Evolving Supernova
D. Poznanski et al.
The distinctive properties of this supernova suggest that it is of a kind predicted by theory but not previously observed.

60 Polarization-Induced Hole Doping in Wide-Band-Gap Uniaxial Semiconductor Heterostructures
J. Simon et al.
A compositional gradient of two semiconductors creates an electronic polarization that ionizes and activates dopant atoms.

64 Translocation of Single-Stranded DNA Through Single-Walled Carbon Nanotubes
H. Liu et al.
Transfer of DNA by electrophoresis through some carbon nanotubes is accompanied by giant current pulses.

68 Solid Nanoparticles That Catalyze Biofuel Upgrade Reactions at the Water/Oil Interface
S. Crossley et al.
Oxide nanoparticles bearing carbon nanotubes and functionalized with palladium act as both emulsifiers and catalysts. >> Perspective p. 41

72 Unveiling the Transient Template in the Self-Assembly of a Molecular Oxide Nanowheel
H. N. Miras et al.
Use of a flow reactor reveals a key intermediate in the formation of a molybdenum oxide nanostructure. >> Perspective p. 38

75 Synchronous Deglacial Overturning and Water Mass Source Changes
N. L. Roberts et al.
Large-scale ocean circulation changed in different ways during a millennial-scale climate event.

78 Human Genome Sequencing Using Unchained Base Reads on Self-Assembling DNA Nanoarrays
R. Drmanac et al.
A low-cost sequencing technique advances us closer to the goal of the $1000 human genome.

81 Structure and Mechanisms of a Protein-Based Organelle in Escherichia coli
S. Tanaka et al.
Structures of the shell proteins from a bacterial organelle help to explain how it functions in metabolizing ethanolamine. >> Perspective p. 42

84 The Tasmanian Devil Transcriptome Reveals Schwann Cell Origins of a Clonally Transmissible Cancer
E. P. Murchison et al.
Sequencing the Tasmanian devil facial tumor disease provides a potential diagnostic marker. >> Science Podcast

88 O-Mannosyl Phosphorylation of Alpha-Dystroglycan Is Required for Laminin Binding
T. Yoshida-Moriguchi et al.
A posttranslational sugar modification required to prevent certain dystrophies is identified and characterized.

91 The Rate and Molecular Spectrum of Spontaneous Mutations in Arabidopsis thaliana
S. Ossowski et al.
Rapid sequencing technologies allow a more accurate calculation of the mutation rate for plants.

94 Targeted 3′ Processing of Antisense Transcripts Triggers Arabidopsis FLC Chromatin Silencing
F. Liu et al.
A backward transcript of the FLOWERING LOCUS C gene of Arabidopsis is involved in regulation of the sense-strand transcription.

97 Reproducibility Distinguishes Conscious from Nonconscious Neural Representations
A. Schurger et al.
Analysis of functional magnetic resonance imaging data reveals that neural activation patterns are more reproducible for seen versus unseen objects. >> Perspective p. 43
Hand Size—Not Sex—Determines Sense of Touch

Seasick? Try Controlling Your Breathing

Darwinian Evolution of Prions in Cell Culture

Protein PRDM9 Is a Major Determinant of Meiotic Recombination Hotspots in Humans and Mice

Drive Against Hotspot Motifs in Primates Implicates the PRDM9 Gene in Meiotic Recombination

Pdmd9 ControlsActivation of Mammalian Recombination Hotspots

Achromat-modifying enzyme functions in the determination of recombination loci within the genome.

E. D. Parvanov et al.

10.1126/science.1182363

Recombination Hotspots in Humans and Mice: Protein PRDM9 Is a Major Determinant of Meiotic Recombination

F. Baudat et al.

10.1126/science.1181495

Recombination Hotspots

J. Li et al.

10.1126/science.1180871

Darwinian Evolution of Prions in Cell Culture

J. Li et al.

10.1126/science.1183218

Protein PRDM9 Is a Major Determinant of Meiotic Recombination Hotspots in Humans and Mice

F. Baudat et al.

10.1126/science.1183439

Drive Against Hotspot Motifs in Primates Implicates the PRDM9 Gene in Meiotic Recombination

S. Myers et al.

10.1126/science.1182363

Pdmd9 ControlsActivation of Mammalian Recombination Hotspots

E. D. Parvanov et al.

Achromat-modifying enzyme functions in the determination of recombination loci within the genome.

S. D. Boyd et al.

10.1126/science.1183844

238U/235U Variations in Meteorites: Extant 247Cm and Implications for Pb-Pb Dating

G. A. Brennecka et al.

Variable abundances of meteorite isotopes may require correcting the lead-based age of the solar system by 5 million years.

10.1126/science.1180871

Deacetylase HDAC6

Y. Lissau Deribe et al.

HDAC6 sets a brake that slows down the delivery of activated epidermal growth factor receptors to the degradative compartment.

RESEARCH ARTICLE: Tumor Suppression by PTEN Requires the Activation of the PKR-eIF2α Phosphorylation Pathway

Z. Mouni et al.

PTEN provides a link between tumor suppression and the inhibition of protein synthesis independently of its regulation of P38α signaling.

RESEARCH ARTICLE: Cbl Controls EGFR Fate by Regulating Early Endosome Fusion

G. D. Visser Smit et al.

The E3 ubiquitin ligase Cbl mediates the fusion of early endosomes necessary to target EGFR for lysosomal degradation.

PERSPECTIVE: Channeling Calcium—A Shared Mechanism for Exocytosis-Endocytosis Coupling

S. S. Vogel

Exocytotic insertion of calcium channels can couple exocytosis with endocytosis.

SCIENCECAREERS

www.sciencemag.org/career_magazine

Free Career Resources for Scientists

A Scientist’s Infectious Enthusiasm

S. Webb

Benjamin tenOever is an unconventional virologist who is working to make his discoveries clinically relevant.

Coming to America: Doing a Postdoc in the U.S.

L. Lauersen

The logistics can be intimidating, but a postdoc in the United States is rewarding.

SCIENCETRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

PERСПЕКТИВA: PPARγ Activation—A Potential Treatment for Pulmonary Hypertension

G. Hansmann and R. T. Zamanian

A new target is identified to thwart heart failure.

PERСПЕКТИВA: α2α Adrenergic Receptors in the Genetics, Pathogenesis, and Treatment of Type 2 Diabetes

S. B. Liggett

Results originating from rat genetics make a compelling case for the ADRA2A locus and type 2 diabetes in humans.