EDITORIAL
13 Science for Science
Bruce Alberts

NEWS OF THE WEEK
20 Hitting Early, Epidemic Meningitis Ravages Nigeria and Niger
21 Children’s Study Exhibits Healthy Appetite
22 Sleeping to Reset Overstimulated Synapses
>> Reports pp. 105 and 109
23 Recycling, the Radio-Astronomical Way
24 Nancy Pelosi: Foursquare for Science
25 New Texas Standards Question Evolution, Fossil Record
26 From the Science Policy Blog
27 Overcoming Opposition, Brazil Banks on Stem Cells
28 Support for Tenure-Track Jobs in Biomedical Sciences
29 From Science’s Online Daily News Site

NEWS FOCUS
28 On the Origin of Flowering Plants
>> Science Podcast
32 Ken Golden: Cold Equations
34 Trouble on the Final Frontier

LETTERS
36 Taste of Astronomy Lacked International Flavor
P. Couture
Response
R. Coontz
Creating a Common Climate Language
T. E. Bowman et al.
Effects of Increased Urbanization
R. Chao
Rheumatic Fever: Neglected Again
D. A. Watkins et al.

BOOKS ET AL.
38 Writing
B. B. Powell, reviewed by A. Robinson
39 Origins of Human Communication
M. Tomasello, reviewed by N. J. Enfield

POLICY FORUM
40 Will Threat of Biological Invasions Unite the European Union?
P. E. Hulme et al.

PERSPECTIVES
42 The Forgotten Megafauna
D. M. Hansen and M. Galetti
43 Automating Science
D. Waltz and B. G. Buchanan
>> Reports pp. 81 and 85; Science Podcast
44 Rethinking Water Splitting
R. Eisenberg
>> Report p. 74
46 Building a Better Nano-Biped
W. Sherman
>> Report p. 67
47 Turnover After the Fallout
C. E. Murry and R. T. Lee
>> Report p. 98
48 Just a Dream—or Future Reality?
H. A. Gasteiger and N. M. Marković
>> Report p. 71

REVIEW
50 The Bent Hawaiian-Emperor Hotspot Track: Inheriting the Mantle Wind
J. Tarduno et al.

BREVIA
54 Conditional Mutagenesis in Drosophila
C. M. Choi et al.
A powerful genetic technique allows dissection of gene activity at different times and locations in the Drosophila fruit fly.

CONTENTS continued >>

COVER
QuteMol-rendered image of human rhinovirus 3 (Protein Data Bank ID: 1rhi) illustrating virion topography. Red, blue, and yellow denote the three major surface capsid proteins; examples of RNA regional motifs are colored according to predicted base-pairing fidelity. Sequence diversity within the major surface proteins contributes to the wide range of immunogenic serotypes characteristic of the "common cold." See page 55.

Image: H. Adam Steinberg and Jean-Yves Sgro/
University of Wisconsin–Madison

DEPARTMENTS
11 This Week in Science
15 Editors’ Choice
16 Science Staff
19 Random Samples
113 New Products
114 Science Careers

www.sciencemag.org SCIENCE VOL 324 3 APRIL 2009 Published by AAAS
RESEARCH ARTICLE
55 Sequencing and Analyses of All Known Human Rhinovirus Genomes Reveal Structure and Evolution
A. C. Palmenberg et al.
Rhinoviruses, which are a common cause of colds, fall into three or possibly four major clades and can undergo strain recombination.

REPORTS
59 Photodegradable Hydrogels for Dynamic Tuning of Physical and Chemical Properties
A. M. Kloxin et al.
The mechanical and biochemical properties of hydrogels can be tuned using photochemically induced reactions.

63 Switchable Ferroelectric Diode and Photovoltaic Effect in BiFeO$_3$
T. Choi et al.
Single crystals of bismuth iron oxide contain a single ferroelectric domain that can be switched with an electric field.

67 A Bipedal DNA Brownian Motor with Coordinated Legs
T. Omabegho et al.
A unidirectional DNA walker is constructed and shown to walk a full cycle along a DNA track.

71 Iron-Based Catalysts with Improved Oxygen Reduction Activity in Polymer Electrolyte Fuel Cells
M. Lefèvre et al.
Iron-based catalysts now rival traditional platinum fuel-cell catalysts.

74 Consecutive Thermal H$_2$ and Light-Induced O$_2$ Evolution from Water Promoted by a Metal Complex
S. W. Kohl et al.
A ruthenium complex can split water into hydrogen and oxygen through successive thermal and photolytic steps.

78 Persistent Positive North Atlantic Oscillation Mode Dominated the Medieval Climate Anomaly
V. Trouet et al.
The North Atlantic Oscillation drove the climate anomalies across Europe and northern Africa during the Medieval Climate Anomaly.

81 Distilling Free-Form Natural Laws from Experimental Data
M. Schmidt and H. Lipson
An algorithm has been developed to search for natural laws of physics in large data sets.

85 The Automation of Science
R. D. King et al.
A robot scientist discovers orphan enzymes that take part in yeast metabolism.

89 Priming in Systemic Plant Immunity
H. W. Jung et al.
Azelaic acid is a long-distance signal conferring immunity against infection in plants.

92 RNA Pol II Accumulates at Promoters of Growth Genes During Developmental Arrest
L. R. Baugh et al.
Growth and development genes, poised for expression during developmental arrest in nematodes, respond rapidly to feeding.

95 Nuclear Hormone Receptor Regulation of MicroRNAs Controls Developmental Progression
A. Bethke et al.
During Caenorhabditis elegans development, a hormone-coupled microRNA molecular switch turns off earlier programs to allow for later ones.

98 Evidence for Cardiomyocyte Renewal in Humans
O. Bergmann et al.
Analyses of human heart cells labeled by a worldwide pulse-chase event reveal that some heart cells are younger than their owner.

102 S-Nitrosylation of Drp1 Mediates β-Amyloid–Related Mitochondrial Fission and Neuronal Injury
D.-H. Cho et al.
Biochemical modification of a neuronal protein damages mitochondria and is linked to neurodegeneration.

105 Use-Dependent Plasticity in Clock Neurons Regulates Sleep Need in Drosophila
J. M. Donlea et al.
Neurons involved in circadian rhythms are required for increased sleep after social experience and for consolidation of memories.

109 Widespread Changes in Synaptic Markers as a Function of Sleep and Wakefulness in Drosophila
G. F. Gilestro et al.
In Drosophila, neural connection proteins increase their expression after wakefulness and decrease it after sleep.
RESEARCH ARTICLE: Phosphorylation of Nogo Receptors Suppresses Nogo Signaling, Allowing Neurite Regeneration
Y. Takei
Extracellular phosphorylation of Nogo receptors by casein kinase II blocks agonist binding.

PERSPECTIVE: Reversing DNA Methylation: New Insights from Neuronal Activity–Induced Gadd45b in Adult Neurogenesis
H. Wu and Y. E. Sun
Gadd45b causes epigenetic modification of promoters for Bdnf and Fgf genes in postmitotic neurons in response to neuronal activity.

PERSPECTIVE: Syndecans Shed Their Reputation as Inert Molecules
M. D. Bass et al.
The shedding of the extracellular domain of a transmembrane proteoglycan can be controlled by its cytoplasmic domain.

Size and Shape of Saturn’s Moon Titan
H. A. Zebker et al.
Titan’s poles lie at lower elevations than the equator, perhaps explaining its high-latitude hydrocarbon lakes.

Fabricating Genetically Engineered High-Power Lithium Ion Batteries Using Multiple Virus Genes
Y. J. Lee et al.
a genetically modified virus is used to form an efficient cathodic battery material.

How Choosing Changes You
Could deciding on a beach vacation make you less fond of mountains?

How Choosing Changes You
Did science really hit the jackpot?

Science does not hit the jackpot.

Options are mixed about the ultimate impact of the huge federal stimulus on early-career scientists.

Did science really hit the jackpot?
Editor's Summary