A Celebration and a Challenge
Andrew Sugden et al.
>> Origins Essay p. 198

Scientists Laud Bush’s Blue Legacy
But Want More

Higher Temperatures Seen Reducing
Global Harvests
>> Report p. 240

A New Spy Agency Asks Academics
for Help in Meeting Its Mission

Brain Scans of Pain Raise Questions
for the Law

TB Bacteria May Reign Over Cells Intended
to Bridle Them

Indian Neutrino Detector Hits Snag on
Environmental Concerns

On the Origin of Life on Earth
>> Editorial p. 185, Review p. 223

Seeking Africa’s First Iron Men

A New View on—and Hope for—an Old
Disease
A Discriminating Killer

Unsung Hero Robert C. Gallo
G. Abbadessa et al.
An Award for Science Is an Obsolete Notion
M. Gozum
The Time to Demand Funding
C. C. Mello and J. V. Walsh
Autistic Phenotype from MEF2C
Knockout Cells
S. A. Lipton et al.
Science Should Stick to Science
A. M. Thro
Science Careers: Where Does Advocacy Fit?
J. Yang

Unintended Consequences at NIH
T. E. Decoursey

CORRECTIONS AND CLARIFICATIONS

Science for Lawyers
E. Y. Drogin, Ed., reviewed by D. Greenbaum
and M. Gerstein

Trade Liberalization and Economic
Development
J. K. Sundaram and R. von Arnim

When Infinity Does Not Count
V. V. Cheianov
>> Report p. 228

Unjamming a Polymer Glass
D. A. Weitz
>> Report p. 231

Surprising Emotions
E. R. Smith and D. M. Mackie
>> Report p. 276

Extending Polymer Conjugation into the
Second Dimension
D. F. Perepichka and F. Rosei

The Descent of Minerals
C. Vasconcelos and J. A. McKenzie

Old New Nitrogen
J. P. Montoya
>> Report p. 244

Pluripotent Chromatin State
A. S. Chi and B. E. Bernstein

Histone Cross-Talk in Stem Cells
E. Smith and A. Shilatifard
>> Report p. 248

Darwin’s Originality
R. J. Bowler
>> Origins Essay p. 198
BREVIA

227 Bat White-Nose Syndrome: An Emerging Fungal Pathogen?  
D. S. Blehert et al.  
Bats that died en masse in New York state while they were hibernating were infected with a cold-tolerant fungus.

REPORTS

228 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.  
>> Perspective p. 213

231 Direct Measurement of Molecular Mobility in Actively Deformed Polymer Glasses  
H.-N. Lee et al.  
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.  
>> Perspective p. 214

234 Suppression of Metallic Conductivity of Single-Walled Carbon Nanotubes by Cycloaddition Reactions  
M. Kanungo et al.  
Reacting carbon nanotubes with fluorinated olefins suppresses the conductivity of the metallic tubes without affecting semiconducting tubes.

237 Self-Organization of a Mesoscale Bristle into Ordered, Hierarchical Helical Assemblies  
B. Pokroy et al.  
Evaporating an organic liquid from the tips of polymer pillars can induce them to form helical structures.

240 Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat  
D. S. Battisti and R. L. Naylor  
By analogy with past examples, higher growing season temperatures and extreme heat will cause major disruptions to global agriculture.  
>> News story p. 193

244 Foraminiferal Isotope Evidence of Reduced Nitrogen Fixation in the Ice Age Atlantic Ocean  
H. Ren et al.  
Nitrogen fixation in the tropical Atlantic increased during deglaciation and, along with increased denitrification, helped to stabilize the ocean nitrogen reservoir.  
>> Perspective p. 219

248 Drosophila Stem Cells Share a Common Requirement for the Histone H2B Ubiquitin Protease Scrwyaw  
M. Buszczak et al.  
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.  
>> Perspective p. 221

251 The Aryl Hydrocarbon Nuclear Translocator Alters CD30-Mediated NF-κB–Dependent Transcription  
C. W. Wright and C. S. Duckett  
Signals from a cancer-associated receptor that activate a key pathway in the immune system are modulated by its binding to a stress-responsive transcription factor.

256 HDAC4 Regulates Neuronal Survival in Normal and Diseased Retinas  
B. Chen and C. L. Cepko  
An enzyme that deacetylates histones in the nucleus also functions in the cytoplasm to promote the survival of retinal neurons in mice.

259 Genetic Code Supports Targeted Insertion of Two Amino Acids by One Codon  
A. A. Turanov et al.  
One codon can code for two different amino acids within the same gene, with the choice determined by an RNA structure in an untranslated region.

262 tasselseed1 Is a Lipoxygenase Affecting Jasmonic Acid Signaling in Sex Determination of Maize  
I. F. Acosta et al.  
A gene that controls male floral development in maize is involved in synthesis of a hormone that suppresses female organ development.

266 Structure of a Type IV Secretion System Core Complex  
R. Fronzes et al.  
The structure of a bacterial secretion complex suggests how Gram-negative bacteria might regulate the transfer of certain virulence factors.

269 AMPylation of Rho GTPases by Vibrio VopS Disrupts Effector Binding and Downstream Signaling  
M. L. Yarbrough et al.  
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.

272 Simpson’s Paradox in a Synthetic Microbial System  
J. S. Chuang et al.  
Stochastic fluctuations in the population structure of microorganisms can allow a disadvantaged subpopulation to be maintained.

276 Mispredicting Affective and Behavioral Responses to Racism  
K. Kawakami et al.  
People predict that they will feel worse after witnessing a racist comment than they actually do.  
>> Perspective p. 215

CONTENTS continued >>
CONTENTS

SCIENCEEXPRESS
www.scienceexpress.org

HIN-200 Proteins Regulate Caspase Activation in Response to Foreign Cytoplasmic DNA
T. L. Roberts et al.
A family of proteins is identified that binds to foreign cytoplasmic DNA in mammalian cells and regulates the immune response.
10.1126/science.1169841

Self-Sustained Replication of an RNA Enzyme
T. A. Lincoln and G. F. Joyce
Two ribozymes synthesize each other from oligonucleotide substrates to give a self-replicating system.
10.1126/science.1167856

Function of Mitochondrial Stat3 in Cellular Respiration
J. Wegrzyn et al.
A protein that has a nuclear function as a transcription factor also functions to support respiration in the mitochondria.
10.1126/science.1164551

SCIENCE NOW
www.sciencenow.org

Highlights From Our Daily News Coverage

How Twisters Get Their Spin
Simulations show tornadoes must have large water droplets to form.

Tougher Than a Black Hole
Dense clouds resist cosmic monster’s violent pull.

Death of a Star Scientist Inflicts Long-Term Damage on Field
Collaborators experience dramatic drop in output that can last decades.

SCIENCE SIGNALING
www.sciencesignaling.org

The Signal Transduction Knowledge Environment

EDITORIAL GUIDE: 2008 Signaling Breakthroughs of the Year
E. M. Adler
The signaling breakthroughs of 2008 extended from protein crystals to cells and subcellular structures to whole genomes.

PERSPECTIVE: MicroRNAs—Opening a New Vein in Angiogenesis Research
J. E. Fish and D. Srivastava
MicroRNAs regulate angiogenic signaling in endothelial cells.

PERSPECTIVE: Computational Implications of Cooperative Plasticity Induction at Nearby Dendritic Sites
K. Morita
Cooperative interactions at nearby synapses may endow individual neurons with computational functions.

JOURNAL CLUB: Drosophila Toll Pathway—The New Model
Y. Ashok
New data has led to reevaluation of the proteolytic cascades that activate Toll in flies.

SCIENCE CAREERS
www.sciencemag.org/career_development

Free Career Resources For Scientists

Opportunities: Career Advantages of Collaboration
P. Fiske
While the value of collaboration is widely acknowledged, the career advantages are rarely discussed.

Bilateral Training Opportunities in the United States and Portugal
S. Coelho
New programs between U.S. and Portuguese universities offer scientists unique training opportunities.

Archaeology for Fun and Profit
S. Coelho
Private companies provide career opportunities for archaeologists.

Science Careers Best of 2008
Science Careers Staff
Our editors choose the best career articles of the past year.

SCIENCE PODCAST
www.sciencemag.org/multimedia/podcast

Free Weekly Show
Download the 9 January Science Podcast to hear about responses to racism, love songs of the dengue vector mosquito, and a new series about evolution.

ORIGINS BLOG
blogs.sciencemag.org/origins
A History Of Beginnings

QUARTERLY AUTHOR INDEX
www.sciencemag.org/feature/data/aidex.dtl