In this week's issue:

Editorial

A Celebration and a Challenge
A. Sugden et al.
http://www.sciencemag.org/cgi/content/summary/323/5911/185

Research Summaries

This Week in Science
Editor summaries of this week's papers.
http://www.sciencemag.org/content/vol323/issue5911/twis.dtl

Editors' Choice
Highlights of the recent literature
http://www.sciencemag.org/content/vol323/issue5911/twil.dtl

News of the Week

CONSERVATION: Scientists Laud Bush's Blue Legacy But Want More
Setting a middle course between the wishes of marine biologists and the concerns of the Pentagon and recreational fishers, President George W. Bush this week dusted off a little-used law for the second time in his Administration to protect swaths of ocean totaling an area the size of Spain.
http://www.sciencemag.org/cgi/content/summary/323/5911/192

CLIMATE CHANGE: Higher Temperatures Seen Reducing Global Harvests
In a paper appearing on page 240 of this week's issue of Science, researchers apply 23 global climate models used by the Intergovernmental Panel on Climate Change to estimate end-of-century temperatures. Their conclusions with regard to agriculture are sobering.
http://www.sciencemag.org/cgi/content/summary/323/5911/193

U.S. NATIONAL SECURITY: A New Spy Agency Asks Academics for Help in Meeting Its Mission
In a rare interview, Lisa Porter, the director of the Intelligence Advanced Research Projects Agency, discussed the agency's progress and plans with Science.
http://www.sciencemag.org/cgi/content/summary/323/5911/194

NEUROSCIENCE: Brain Scans of Pain Raise Questions for the Law
Neuroimaging is knocking on the courthouse door. But although certain brain regions consistently rev up when people experience pain, neuroscientists have yet to demonstrate that the converse is true: that any particular pattern of brain activity necessarily indicates the presence of pain.
http://www.sciencemag.org/cgi/content/summary/323/5911/195

MICROBIOLOGY: TB Bacteria May Reign Over Cells Intended to Bridle Them
Researchers report this week that rather than protecting the host as conventional wisdom holds, the hallmark tuberculosis lesions called granulomas in fact promote bacterial multiplication early in infection.
http://www.sciencemag.org/cgi/content/summary/323/5911/196

PARTICLE PHYSICS: Indian Neutrino Detector Hits Snag on Environmental Concerns
Concerns about the well-being of elephants have so far blocked plans for the $167 million India-based Neutrino Observatory, which would tune in to the lightest known fundamental particles.
http://www.sciencemag.org/cgi/content/summary/323/5911/197

Random Samples
http://www.sciencemag.org/content/vol323/issue5911/r-samples.dtl

Newsmakers
http://www.sciencemag.org/content/vol323/issue5911/newsmakers.dtl

News Focus
EVOLUTIONARY ROOTS: On the Origin of Life on Earth
In the first of a monthly series of essays celebrating the Year of Darwin, Carl Zimmer discusses attempts to unravel how life originated on Earth by recreating the process in the laboratory.

http://www.sciencemag.org/cgi/content/summary/323/5911/198

ARCHAEOLOGY: Seeking Africa's First Iron Men
Archaeologists are battling over when--and how--ancient African cultures entered the Iron Age.

http://www.sciencemag.org/cgi/content/summary/323/5911/200

BIOMEDICINE: A New View on--and Hope for--an Old Disease
Researchers are debating whether growths called tubers cause the mental problems in many people with tuberous sclerosis. Regardless, an organ-transplant drug may offer a treatment for the rare disease.

http://www.sciencemag.org/cgi/content/summary/323/5911/203

BIOMEDICINE: A Discriminating Killer
One of tuberous sclerosis complex's most mysterious manifestations is lymphangioleiomyomatosis, a progressive lung disease that only affects women and typically proves fatal within a decade or two of its diagnosis.

http://www.sciencemag.org/cgi/content/summary/323/5911/204

Letters

Unsung Hero Robert C. Gallo
http://www.sciencemag.org/cgi/content/full/323/5911/206

An Award for Science Is an Obsolete Notion
http://www.sciencemag.org/cgi/content/full/323/5911/207

The Time to Demand Funding
http://www.sciencemag.org/cgi/content/full/323/5911/208a

Autistic Phenotype from MEF2C Knockout Cells
http://www.sciencemag.org/cgi/content/full/323/5911/208b

Science Should Slick to Science
http://www.sciencemag.org/cgi/content/full/323/5911/208c

Science Careers: Where Does Advocacy Fit?
http://www.sciencemag.org/cgi/content/full/323/5911/208d

Unintended Consequences at NIH
http://www.sciencemag.org/cgi/content/full/323/5911/209a

Corrections and Clarifications
http://www.sciencemag.org/cgi/content/full/323/5911/209b

Books et al.

SCIENCE AND THE LAW: Grappling with the Gulf
D. Greenbaum and M. Gerstein
The contributors offer an introductory survey of 13 applied scientific disciplines from the perspective of their uses in legal matters.

http://www.sciencemag.org/cgi/content/summary/323/5911/210a

Books Received
http://www.sciencemag.org/cgi/content/summary/323/5911/210b

Policy Forum

ECONOMICS: Trade Liberalization and Economic Development
J. K. Sundaram and R. von Arnim
Across-the-board trade liberalization often impedes, rather than fosters, development in the poorest countries.

http://www.sciencemag.org/cgi/content/summary/323/5911/211

Perspectives

PHYSICS: When Infinity Does Not Count
Vadim V. Cheianov
A transformation of variables overcomes fundamental difficulties in formulating a unified theory of one-dimensional quantum fluids.

http://www.sciencemag.org/cgi/content/summary/323/5911/213

MATERIALS SCIENCE: Unjamming a Polymer Glass
David A. Weitz
Small probes reveal that glass can melt in different ways.

http://www.sciencemag.org/cgi/content/summary/323/5911/214

BEHAVIOR: Surprising Emotions
E. R. Smith and D. M. Mackie
Why are our predictions of how we’ll feel or act sometimes wrong?

http://www.sciencemag.org/cgi/content/summary/323/5911/215

CHEMISTRY: Extending Polymer Conjugation into the Second Dimension
D. F. Perepichka and F. Rosei
Crystal surface templates may improve the electronic properties of conjugated polymers by linking them into two-dimensional networks.

http://www.sciencemag.org/cgi/content/summary/323/5911/216

GEOCHEMISTRY: The Descent of Minerals
C. Vasconcelos and J. A. McKenzie
The appearance of minerals during Earth history is closely linked to biological evolution.

http://www.sciencemag.org/cgi/content/summary/323/5911/218

OCEAN SCIENCE: Old New Nitrogen
Joseph P. Montoya
During the last glacial period, both nitrogen fixation and denitrification rates are likely to have been much lower than they are today.

http://www.sciencemag.org/cgi/content/summary/323/5911/219

DEVELOPMENTAL BIOLOGY: Pluripotent Chromatin State
A. S. Chi and B. E. Bernstein
Chromatin in pluripotent embryonic stem cells may act as a buffer to transcriptional noise.

http://www.sciencemag.org/cgi/content/summary/323/5911/220

DEVELOPMENTAL BIOLOGY: Histone Cross-Talk in Stem Cells
E. Smith and A. Shilatifard
Specificity of gene regulation in stem cells may occur at the level of ubiquitin signaling to chromatin.
http://www.sciencemag.org/cgi/content/summary/323/5911/221

Review Articles

Darwin’s Originality
Peter J. Bowler
http://www.sciencemag.org/cgi/content/abstract/323/5911/223

Brevia

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/227

Reports

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/228

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/231

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/234

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/237

Historical Warnings of Future Food Insecurity with Unprecedented Seasonal Heat
David 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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/240

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/244

Drosophila Stem Cells Share a Common Requirement for the Histone H2B Ubiquitin Protease Scrawny
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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/248

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/251

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/256

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/259

VopS Disrupts Effector Binding and Downstream Signaling in maize is involved in synthesis of a hormone that suppresses female organ development.
http://www.sciencemag.org/cgi/content/abstract/323/5911/262

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/266

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/269

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.
http://www.sciencemag.org/cgi/content/abstract/323/5911/272

Mispredicting Affective and Behavioral Responses to Racism

Specificity of gene regulation in stem cells may occur at the level of ubiquitin signaling to chromatin.
K. Kawakami et al.
People predict that they will feel worse after witnessing a racist comment than they actually do.
http://www.sciencemag.org/cgi/content/abstract/323/5911/276