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This Week in *Science*

Editor summaries of this week's papers.

Science 14 October 2011: 153.

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EDITORIAL:

Peruvian Highlands, Fume-Free

Pilar Nores Bodereau

Science 14 October 2011: 157.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

Editors' Choice

Highlights of the recent literature.

Science 14 October 2011: 158.

[Full Text](#) [Full Text \(PDF\)](#)

Science Podcast

Science 14 October 2011: 259.

The show includes Middle Stone Age artisans, NSF's "broader impacts" criteria, carbon nanotube muscle

[Summary](#) [Full Text](#) [Transcript](#)

New Products

Science 14 October 2011: 259.

A weekly roundup of information on newly offered instrumentation, apparatus, and laboratory materials of interest to researchers.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

News of the Week

This Week's Section

Science 14 October 2011: 160-162.

[Summary](#) [Full Text \(PDF\)](#)

Around the World

Science 14 October 2011: 160-161.

In science news around the world this week, a task force has found that a prostate cancer test does more than it was thought to, the European Space Agency will launch two missions to study the sun and the mysterious dark energy that is driving the universe's expansion, the U.K. has pledged £20 million to rid the world of guinea worm, the Indian government announced a new research center to battle future food crises, a dictator's new bid for a UNESCO award has been rebuffed, a country is planning to host an international science conference, and a backup insecticide has shown promise against malaria.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

Random Sample

Science 14 October 2011: 161-162.

The Walters Art Museum's exhibit *Lost and Found: The Secrets of Archimedes* will display the results of a project to decipher the Archimedes Palimpsest from 16 October through 1 January 2012. And this week's numbers include the success rate for reviewed research grant proposals at the National Science Foundation and the "success rate" for reviewed research grant proposals at the National Institutes of Health.

[Summary](#) [Full Text](#)

Findings

Science 14 October 2011: 162.

[Full Text](#) [Full Text \(PDF\)](#)

News & Analysis

GULF OIL SPILL

Panel Draws Ambitious Road Map for Gulf Restoration

David Malakoff

Science 14 October 2011: 163-164.

A presidential task force is calling for dramatically expanding efforts to restore battered Gulf of Mexico ecosystems. The task force is also calling for doubling the amount of dollars in fines resulting from the 2010 *Deepwater Horizon* oil spill to pay for them.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

NOBEL MEMORIAL PRIZE IN ECONOMIC SCIENCES

Teasing Out Cause and Effect in Macroeconomics

Yudhijit Bhattacharjee

Science 14 October 2011: 164.

Christopher Sims and Thomas Sargent have won this year's Nobel Prize in economics for sorting out the complex relationships between variables in the world of macroeconomics.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

NOBEL PRIZE IN CHEMISTRY

Once-Ridiculed Discovery Redefined the Term Crystal

Daniel Clery

Science 14 October 2011: 165.

Daniel Shechtman's discovery that atoms in a solid can achieve fivefold symmetry by arranging themselves in a pattern that never quite repeats—a "quasicrystal"—has netted this year's Nobel Prize in chemistry.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

AIDS RESEARCH

HIV Study Renews Scrutiny of Hormonal Contraception

Jon Cohen

Science 14 October 2011: 166.

Some researchers worry that a recent study that found that hormonal contraceptive use increases HIV risk may have introduced complexities in the data that leave open critical questions about whether injected contraceptives truly pose a risk.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

HUMAN EVOLUTION

African Data Bolster New View of Modern Human Origins

Ann Gibbons

Science 14 October 2011: 167.

Two papers have independently suggested that early *Homo sapiens* interbred with now-extinct forms of *Homo*. The findings suggest that some living Africans carry genes from archaic people, just as all Europeans and Asians recently have been shown to carry genes from archaic *Homo*.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

MICROBIOLOGY

Gut Bacteria Lend a Molecular Hand to Viruses

Elizabeth Pennisi

Science 14 October 2011: 168.

Two reports in this week's issue of *Science* describe viruses that co-opt components of the gut microflora to help them replicate.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

News Focus

PEER REVIEW

Beyond the Data

Jeffrey Mervis

Science 14 October 2011: 169-171.

The latest attempt to clarify how NSF assesses grant proposals for possible impacts beyond the expected ended a long-running debate.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#) [Podcast Interview](#)

The Community Weighs In on Broader Impacts

Science 14 October 2011: 170-171.

[Full Text](#) [Full Text \(PDF\)](#)

PREDICTING CLIMATE CHANGE

Vital Details of Global Warming Are Eluding Forecasters

Richard A. Kerr

Science 14 October 2011: 173-174.

Decision-makers need to know how to prepare for inevitable climate change, but climate researchers are their fuzzy picture of what the future holds.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

Letters

Chemical Elements: What's in a Name?

J. P. Leal

Science 14 October 2011: 176.

[Full Text](#) [Full Text \(PDF\)](#)

Biosecurity and the Politics of Fear

Philip E. Hulme

Science 14 October 2011: 176-177.

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Partial Retraction

Robert H. Silverman, Jaydip Das Gupta, Vincent C. Lombardi, Francis W. Ruscetti, Max A. Pfof, Kathryn : Sandra K. Ruscetti, Rachel K. Bagni, Cari Petrow-Sadowski, Bert Gold, Michael Dean, and Judy A. Mikovii

Science 14 October 2011: 176.

Published online 22 September 2011 [DOI:10.1126/science.1212182]

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Books *et al.*

PSYCHOLOGY

Social Psychology and Social Change

Geoffrey L. Cohen

Science 14 October 2011: 178-179.

Weighing contributions of social psychology to understanding and remedying social problems, Wilson argues transforming people's lives lies in their learning to recast the stories they tell themselves.

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Browsings

Science 14 October 2011: 179.

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Books Received

Science 14 October 2011: 179.

A [listing of books received](#) at *Science* during the week ending 07 October 2011.

[Summary](#)

Policy Forum

PUBLIC HEALTH

A Major Environmental Cause of Death

William J. Martin II, Roger I. Glass, John M. Balbus, and Francis S. Collins

Science 14 October 2011: 180-181.

Exposure to indoor air pollution from household burning and solid fuels affects nearly half of the world's p

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Perspectives

MICROBIOLOGY

Keeping Bacteria at a Distance

Malin E.V. Johansson and Gunnar C. Hansson

Science 14 October 2011: 182-183.

An antibacterial peptide is essential for restricting contact between the intestinal microbiota and host.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

MATERIALS SCIENCE

Self-Assembly Enters the Design Era

Alex Travesset

Science 14 October 2011: 183-184.

A set of simple rules is used to design and control the self-assembly of nanoparticles into complex struct

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

EVOLUTION

The Costs of Breathing

Nick Lane

Science 14 October 2011: 184-185.

Selection for respiratory function has implications for organism fitness, fertility, and life span.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

CELL BIOLOGY

SevERing Mitochondria

Angelika S. Rambold and Jennifer Lippincott-Schwartz

Science 14 October 2011: 186-187.

The endoplasmic reticulum is an active participant in the division of another organelle, the mitochondrion

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)

CHEMISTRY

Shining Light on Diabolic Points

Benjamin J. Whitaker

Science 14 October 2011: 187-188.

A direct probe of the electronic dynamics where excited states intersect has been achieved by using high

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ECOLOGY

Grass Trumps Trees with Fire

Audrey L. Mayer and Azad Henareh Khalyani

Science 14 October 2011: 188-189.

Feedbacks involving rainfall, fire, and vegetation govern transitions between forests, savannas, and grass

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)**Review****The Diets of Early Hominins**

Peter S. Ungar and Matt Sponheimer

Science 14 October 2011: 190-193.[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)**Brevia****Replication-Dependent Loss of 5-Hydroxymethylcytosine in Mouse Preimplantation Embryos**

Azusa Inoue and Yi Zhang

Science 14 October 2011: 194.

Published online 22 September 2011 [DOI:10.1126/science.1212483]

The oxidation product of methylated cytosine is passively lost from DNA in the zygote as cell division pro

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)**Research Article****Synthesized Light Transients**

A. Wirth, M. Th. Hassan, I. Grguraš, J. Gagnon, A. Moulet, T. T. Luu, S. Pabst, R. Santra, Z. A. Alahmed, V. Pervak, F. Krausz, and E. Goulielmakis

Science 14 October 2011: 195-200.

Published online 8 September 2011 [DOI:10.1126/science.1210268]

Light spanning the near infrared to the ultraviolet has been confined in pulses shorter than a single optical

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)**Reports****Observation of Correlated Particle-Hole Pairs and String Order in Low-Dimensional Mott Insulators**

M. Endres, M. Cheneau, T. Fukuhara, C. Weitenberg, P. Schauß, C. Gross, L. Mazza, M. C. Bañuls, L. Po

Science 14 October 2011: 200-203.

Parity correlations in a one-dimensional Bose gas in an optical lattice reveal a hidden “string order.”

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Nanoparticle Superlattice Engineering with DNA

Robert J. Macfarlane, Byeongdu Lee, Matthew R. Jones, Nadine Harris, George C. Schatz, and Chad A. M

Science 14 October 2011: 204-208.

Design rules allow the synthesis of nanoparticle-DNA superlattices in nine different lattices.

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Conical Intersection Dynamics in NO₂ Probed by Homodyne High-Harmonic Spectroscopy

H. J. Wörner, J. B. Bertrand, B. Fabre, J. Higuete, H. Ruf, A. Dubrouil, S. Patchkovskii, M. Spanner, Y. Mair
E. Constant, P. B. Corkum, and D. M. Villeneuve

Science 14 October 2011: 208-212.

Coincident vibrational and electronic rearrangements in a photoexcited molecule are tracked in fine detail

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Linear Alkane Polymerization on a Gold Surface

Dingyong Zhong, Jörn-Holger Franke, Santhosh Kumar Podiyanchari, Tobias Blömker, Haiming Zhang, C
Harald Fuchs, and Lifeng Chi

Science 14 October 2011: 213-216.

The confining channel geometry of a gold surface induces selective end-to-end linking of hydrocarbon ch

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Flash Heating Leads to Low Frictional Strength of Crustal Rocks at Earthquake Slip Rates

David L. Goldsby and Terry E. Tullis

Science 14 October 2011: 216-218.

Extreme temperatures generated over short distances may weaken faults during earthquakes.

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

A 100,000-Year-Old Ochre-Processing Workshop at Blombos Cave, South Africa

Christopher S. Henshilwood, Francesco d'Errico, Karen L. van Niekerk, Yvan Coquinot, Zenobia Jacobs, S
Michel Menu, and Renata García-Moreno

Science 14 October 2011: 219-222.

Early humans mixed and stored ochre pigments in shells 100,000 years ago, an indication of the emerge

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#) [Podcast Interview](#)

The Dynamic Architecture of *Hox* Gene Clusters

Daan Noordermeer, Marion Leleu, Erik Splinter, Jacques Rougemont, Wouter De Laat, and Denis Duboule

Science 14 October 2011: 222-225.

Sequential activation of *Hox* genes correlates with a transition of negative to positive three-dimensional c

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Early Gamma Oscillations Synchronize Developing Thalamus and Cortex

Marat Minlebaev, Matthew Colonnese, Timur Tsintsadze, Anton Sirota, and Roustem Khazipov

Science 14 October 2011: 226-229.

Thalamic gamma rhythms help develop highly spatially and laminar-specific ascending cortical projection

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

The Global Extent and Determinants of Savanna and Forest as Alternative Biome States

A. Carla Staver, Sally Archibald, and Simon A. Levin

Science 14 October 2011: 230-232.

Savanna and forest are alternative states governed by fire at intermediate rainfall levels.

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Global Resilience of Tropical Forest and Savanna to Critical Transitions

Marina Hirota, Milena Holmgren, Egbert H. Van Nes, and Marten Scheffer

Science 14 October 2011: 232-235.

Tree distributions across continents indicate three distinct stable states in tree cover—forest, savanna, and

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

The *Escherichia coli* Replisome Is Inherently DNA Damage Tolerant

Joseph T. P. Yeeles and Kenneth J. Marians

Science 14 October 2011: 235-238.

The core DNA replication machinery of *Escherichia coli* has an inherent ability to squeeze past DNA damage

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Sequential Establishment of Stripe Patterns in an Expanding Cell Population

Chenli Liu, Xiongfei Fu, Lizhong Liu, Xiaojing Ren, Carlos K.L. Chau, Sihong Li, Lu Xiang, Hualing Zeng, C. Peter Lenz, Xiaodong Cui, Wei Huang, Terence Hwa, and Jian-Dong Huang

Science 14 October 2011: 238-241.

A synthetic circuit implementing density-controlled bacterial motility autonomously produces a tunable stripe

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

NMR Detection of Structures in the HIV-1 5'-Leader RNA That Regulate Genome Packaging

Kun Lu, Xiao Heng, Lianko Garyu, Sarah Monti, Eric L. Garcia, Siarhei Kharytonchyk, Bilguujin Dorjsuren, Simonne Jones, Atheeth Hiremath, Sai Sachin Divakaruni, Courtney LaCotti, Shawn Barton, Daniel Tumm Sara Albrecht, Alice Telesnitsky, and Michael F. Summers

Science 14 October 2011: 242-245.

An RNA structural switch regulates whether the HIV genome is translated or dimerized and packaged.

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Successful Transmission of a Retrovirus Depends on the Commensal Microbiota

Melissa Kane, Laure K. Case, Karyl Kopaskie, Alena Kozlova, Cameron MacDermid, Alexander V. Cherv and Tatyana V. Golovkina

Science 14 October 2011: 245-249.

Commensal microflora promote the pathogenesis of mucosally acquired viruses.

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Intestinal Microbiota Promote Enteric Virus Replication and Systemic Pathogenesis

Sharon K. Kuss, Gavin T. Best, Chris A. Etheredge, Andrea J. Pruijssers, Johnna M. Frierson, Lora V. Hoc and Julie K. Pfeiffer

Science 14 October 2011: 249-252.

Commensal microflora promote the pathogenesis of mucosally acquired viruses.

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MED12, the Mediator Complex Subunit 12 Gene, Is Mutated at High Frequency in Uterine Leiomyomas

Netta Mäkinen, Miika Mehine, Jaana Tolvanen, Eevi Kaasinen, Yilong Li, Heli J. Lehtonen, Massimiliano G Minna Taipale, Mervi Aavikko, Riku Katainen, Elina Virolainen, Tom Böhling, Taru A. Koski, Virpi Launonen Pia Vahteristo, and Lauri A. Aaltonen

Science 14 October 2011: 252-255.

Published online 25 August 2011 [DOI:10.1126/science.1208930]

Uterine fibroids frequently harbor mutations in a specific gene that has been implicated in transcriptional

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

The Antibacterial Lectin RegIII Promotes the Spatial Segregation of Microbiota and Host in the Intestine

Shipra Vaishnava, Miwako Yamamoto, Kari M. Severson, Kelly A. Ruhn, Xiaofei Yu, Omry Koren, Ruth Le and Lora V. Hooper

Science 14 October 2011: 255-258.

Innate immune signaling and antimicrobial peptide activity maintain separation of the microbiota and inte-

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)

Technical Comments**Comment on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations’**

Adam Wolf and William R. L. Anderegg

Science 14 October 2011: 177.

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Comment on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations’

Robert J. Hijmans

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Nathan L. Stephenson and Adrian J. Das

Science 14 October 2011: 177.

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Response to Comments on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations’

Solomon Z. Dobrowski, Shawn M. Crimmins, Jonathan A. Greenberg, John T. Abatzoglou, and Alison R. M

Science 14 October 2011: 177.

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