

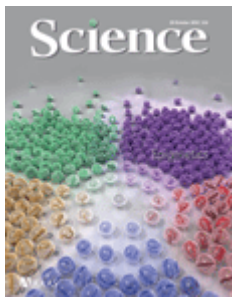
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### Special Issue

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## Epigenetics

INTRODUCTION

### What Is Epigenetics?

Guy Riddihough and Laura M. Zahn

*Science* 29 October 2010: 611.

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

### Reviews

#### **Molecular Signals of Epigenetic States**

Roberto Bonasio, Shengjiang Tu, and Danny Reinberg

*Science* 29 October 2010: 612-616.

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

#### **A Small-RNA Perspective on Gametogenesis, Fertilization, and Early Zygotic Development**

Déborah Bourc'his and Olivier Voinnet

*Science* 29 October 2010: 617-622.

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

#### **Epigenetic Reprogramming in Plant and Animal Development**

Suhua Feng, Steven E. Jacobsen, and Wolf Reik

*Science* 29 October 2010: 622-627.

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

### Perspectives

#### **Paramutation's Properties and Puzzles**

Vicki L. Chandler

*Science* 29 October 2010: 628-629.

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

#### **Epigenetics in the Extreme: Prions and the Inheritance of Environmentally Acquired Traits**

Randal Halfmann and Susan Lindquist

*Science* 29 October 2010: 629-632.

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

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#### **This Week in *Science***

Editor summaries of this week's papers.

*Science* 29 October 2010: 556.

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

#### EDITORIAL:

#### **Driving U.S. Energy Leadership**

Bruce Alberts

*Science* 29 October 2010: 559.

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

**Editors' Choice**

Highlights of the recent literature.

*Science* 29 October 2010: 561.

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

**Science Podcast**

*Science* 29 October 2010: 692.

The show includes distribution of exoplanets, cancer epigenetics, how people detect errors, and more.

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

**New Products**

*Science* 29 October 2010: 692.

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

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

**News of the Week**

## RESEARCH FUNDING

**Campaign for U.K. Science Helps Deflect Budget Ax**

Daniel Clery

*Science* 29 October 2010: 568-569.

Despite warnings to expect funding cuts of 20%, 30%, or even 40%, the U.K. science budget has been fixed this year's amount, £4.6 billion (\$7.2 billion).

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

## PLANETARY SCIENCE

**Liquid Water Found on Mars, But It's Still a Hard Road for Life**

Richard A. Kerr

*Science* 29 October 2010: 571.

Researchers appear to have finally achieved one of the Phoenix lander's primary goals. After digging through the mission to Mars more than 2 years ago, they've discovered signs that liquid water has lately flowed on the

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

## SCIENCEINSIDER

**From the *Science* Policy Blog**

*Science* 29 October 2010: 571.

*Science* Insider reported this week that a battle over a prize in the life sciences that honors Teodoro Obiang Nguema Mbasogo, president and longtime dictator of Equatorial Guinea, has ended with the effective cancellation of the award.

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

## NEWSMAKER INTERVIEW: CARL WIEMAN

**Nobelist 'Coach' Takes On U.S. Science Education**

Jeffrey Mervis

*Science* 29 October 2010: 572.

Carl Wieman took up the job of associate director for science in the White House Office of Science and Tech September. He sat down with *Science* on 21 October to discuss the state of science, technology, engineering and how he became involved.

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

## SCIENCENOW.ORG

**From *Science's* Online Daily News Site***Science* 29 October 2010: 573.

*ScienceNOW* reported this week that a new sensor can detect the explosive triacetone triperoxide, malaria is than feared, exercise boosts muscle stem cells, and new clues to the origins of higher primates have been fo stories.

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

## GENOMICS

**1000 Genomes Project Gives New Map of Genetic Diversity**

Elizabeth Pennisi

*Science* 29 October 2010: 574-575.

The 1000 Genomes Project has produced a compendium of millions of previously unknown single-nucleotide other variants, described in work published this week. A second analysis in this week's issue of *Science* desc determining another aspect of genetic variation that arises when genes and other stretches of DNA are dupli

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

## IRAQ WAR

**Leaked Documents Provide Bonanza for Researchers**

John Bohannon

*Science* 29 October 2010: 575.

The Pentagon is fuming after last week's release of a huge cache of classified Iraq War data by the organiza researchers struggling to build an accurate picture of the death toll in post-invasion Iraq are thrilled.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)**Random Samples***Science* 29 October 2010: 567.[Full Text](#) [Full Text \(PDF\)](#)**News Focus****Epigenetic Drugs Take On Cancer**

Jocelyn Kaiser

*Science* 29 October 2010: 576-578.

Armed with nearly \$10 million raised by telethons, a research "dream team" hopes to prove that a new appro can halt solid tumors.

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

### **Genes Link Epigenetics and Cancer**

Jocelyn Kaiser

*Science* 29 October 2010: 577.

Recent reports that genes affecting chromatin structure are mutated in several types of solid tumors could be a conundrum of whether so-called epigenetic changes are a cause or a consequence of disease.

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

### PHARMACOGENOMICS

#### **Gene Variants Affect Hepatitis C Treatment, But Link Is Elusive**

Jessica Wapner

*Science* 29 October 2010: 579.

Genome scans have turned up single nucleotide polymorphisms associated with different responses to treatment, but efforts to uncover the mechanism have drawn a blank.

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

### U.S. SCIENCE EDUCATION

#### **Data Say Retention Is Better Answer to 'Shortage' Than Recruitment**

Jeffrey Mervis

*Science* 29 October 2010: 580-581.

Most efforts to improve education in science, technology, engineering, and mathematics start with recruiting teachers already in the classroom may yield a bigger payoff.

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

#### **What's in a Number?**

Jeffrey Mervis

*Science* 29 October 2010: 581.

How far would training 10,000 more science, technology, engineering, and math teachers a year for the next year get us toward achieving President Barack Obama's goal of making the country No. 1 in math and science education? No or

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

### SOCIETY OF VERTEBRATE PALEONTOLOGY

#### **Going Back to the Future To Understand Climate Change**

Ann Gibbons

*Science* 29 October 2010: 582.

Several speakers at the meeting used paleontological data to predict the future, drawing on species' behavior in the past to predict how they will fare—and how to help them—as greenhouse gases warm the planet.

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

### SOCIETY OF VERTEBRATE PALEONTOLOGY

#### **Snapshots From the Meeting**

Ann Gibbons

*Science* 29 October 2010: 583.

Snapshots from the meeting include a clue to how the large, fleet-footed, meat-eating dinosaurs called abelis arms and evidence that climatic shifts can have a "kaleidoscopic" effect, breaking up communities of animals new patterns.

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

#### SOCIETY OF VERTEBRATE PALEONTOLOGY

##### **When Rodents Marched Into Paris**

Ann Gibbons

*Science* 29 October 2010: 583.

At the meeting, researchers announced the discovery of some of the world's oldest rodents, an important clue the first modern mammals spread around the globe, replacing archaic animals and ushering in the age of mo

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

#### Letters

##### **Mass Fruiting in Borneo: A Missed Opportunity**

Chris J. Kettle, Jaboury Ghazoul, Peter S. Ashton, Charles H. Cannon, Lucy Chong, Bibia Diway, Eny Faridah, Andrew Hector, Pete Hollingsworth, Lian Pin Koh, Eyen Khoo, Kanehiro Kitayama, Kuswata Kartawinata, Andr Colin R. Maycock, Satoshi Nanami, Gary Paoli, Matthew D. Potts, Douglas Sheil, Sylvester Tan, Ichie Tomoak Takuo Yamakura, and David F. R. P. Burslem

*Science* 29 October 2010: 584.

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

##### **Asian Water Towers: More on Monsoons**

Felix Pithan

*Science* 29 October 2010: 584-585.

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##### **Asian Water Towers: More on Monsoons—Response**

Walter W. Immerzeel and Marc F. P. Bierkens

*Science* 29 October 2010: 585.

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

##### **The Best Test of Ph.D. Student Success**

Gunnar Newquist

*Science* 29 October 2010: 585-587.

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

##### **The Best Test of Ph.D. Student Success—Response**

David F. Feldon, Briana Crotwell Timmerman, and Michelle Maher

*Science* 29 October 2010: 587.

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

**Books et al.**

## QUANTUM PHYSICS

**Exploiting Entanglement**

Jeremy L. O'Brien

*Science* 29 October 2010: 588-589.

Writing for nonspecialists and the interested public and drawing heavily on research by him and his colleague quantum entanglement, the development of our understanding of the phenomenon, and its potential technolc

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

## NEUROPHILOSOPHY

**Unbounding the Mind**

Erik Myin

*Science* 29 October 2010: 589-590.

The contributors examine Clark and Chalmers's claim that the mind is not confined to the head but extends ir its implications.

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

## EXHIBITION

**Six-Legged Fun**

Maria Cruz

*Science* 29 October 2010: 590.

This exhibition introduces the insect diversity of Portugal by guiding visitors through a series of questions tha sample species in their taxonomic order.

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

**Books Received***Science* 29 October 2010: 590.

A [listing of books received](#) at *Science* during the week ended 22 October 2010.

[Summary](#)

**Essays on Science and Society**

## SPORE\* SERIES WINNER

**Physical Phenomena in Real Time**

David Brookes and Eugenia Etkina

*Science* 29 October 2010: 605-606.

The use of videos allows teachers to tame the vagaries of experimentation while engaging students in the pr

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

**Policy Forum**

## RESEARCH FUNDING

**Sustaining the Data and Bioresource Commons**

Paul N. Schofield, Janan Eppig, Eva Huala, Martin Hrabe de Angelis, Mark Harvey, Duncan Davidson, Tom W Damian Smedley, Nadia Rosenthal, Klaus Schughart, Vassilis Aidinis, Glauco Tocchini-Valentini, and John M.

*Science* 29 October 2010: 592-593.

Globalization of biomedical research requires sustained investment for databases and biorepositories.

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

## Perspectives

### IMMUNOLOGY

#### **Innate Lymphoid Cell Relations**

Marc Veldhoen and David R. Withers

*Science* 29 October 2010: 594-595.

A common progenitor cell gives rise to distinct lineages of innate lymphoid cells in the gastrointestinal tract.

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

### CHEMISTRY

#### **Caging Carbon Dioxide**

Christian Lastoskie

*Science* 29 October 2010: 595-596.

A better understanding of amine-CO<sub>2</sub> interactions may be pivotal in functionalizing novel adsorbents for carb

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

### CELL BIOLOGY

#### **Forced to Be Unequal**

Stephan W. Grill

*Science* 29 October 2010: 597-598.

The distribution of a motor protein generates an unequal contractile force that controls the asymmetric divisio

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

### STEM CELLS

#### **Epigenome Disruptors**

Myriam Hemberger and Roger Pedersen

*Science* 29 October 2010: 598-599.

What can stem cells tell us about epigenetic perturbations?

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

### CHEMISTRY

#### **A Little Chemistry Helps the Big Get Bigger**

James W. Evans and Patricia A. Thiel

*Science* 29 October 2010: 599-600.

The coarsening of small metal particles can be enhanced when metal atoms are transported between particle complexes.

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### STRUCTURAL BIOLOGY



**The Tao of Chloride Transporter Structure**

Joseph A. Mindell

*Science* 29 October 2010: 601-602.

A protein structure from a heat-loving alga offers insight into the diverse family of CLC chloride channels and

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

## IMMUNOLOGY

**Infection Protection and Natural Selection**

Lynn B. Martin and Courtney A. C. Coon

*Science* 29 October 2010: 602-603.

On an island off Scotland, variation in sheep immune response imposes fitness costs and benefits.

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

## RETROSPECTIVE

**Georges Charpak (1924–2010)**

Yves Quéré

*Science* 29 October 2010: 604.

A generous Nobel laureate had a passion for particle detectors and reforming science education.

[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)**Association Affairs****AAAS News and Notes***Science* 29 October 2010: 607.[Summary](#) [Full Text](#) [Full Text \(PDF\)](#)**Brevia****Magnitude of the 2010 Gulf of Mexico Oil Leak**

Timothy J. Crone and Maya Tolstoy

*Science* 29 October 2010: 634.

Published online 23 September 2010 [DOI:10.1126/science.1195840]

Modeling videos suggest that around 4.4 million barrels of oil escaped from the broken Deepwater Horizon w

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#)**Research Articles****Structure of a Eukaryotic CLC Transporter Defines an Intermediate State in the Transport Cycle**

Liang Feng, Ernest B. Campbell, Yichun Hsiung, and Roderick MacKinnon

*Science* 29 October 2010: 635-641.

Published online 30 September 2010 [DOI:10.1126/science.1195230]

The structure of a chloride transporter and its regulatory domain provides insight into the ion-exchange mech

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

**Diversity of Human Copy Number Variation and Multicopy Genes**

Peter H. Sudmant, Jacob O. Kitzman, Francesca Antonacci, Can Alkan, Maika Malig, Anya Tsalenko, Nick Sar Jay Shendure, 1000 Genomes Project, and Evan E. Eichler

*Science* 29 October 2010: 641-646.

Specific gene copies can be identified in regions of high copy number variability in the human genome.

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

**Reports****Rate of Gas Phase Association of Hydroxyl Radical and Nitrogen Dioxide**

Andrew K. Mollner, Sivakumaran Valluvadasan, Lin Feng, Matthew K. Sprague, Mitchio Okumura, Daniel B. M Stanley P. Sander, Philip T. Martien, Robert A. Harley, Anne B. McCoy, and William P. L. Carter

*Science* 29 October 2010: 646-649.

Laboratory measurements of a critical atmospheric rate constant should improve predictions of tropospheric

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

**Direct Observation and Quantification of CO<sub>2</sub> Binding Within an Amine-Functionalized Nanoporous Solid**

Ramanathan Vaidhyanathan, Simon S. Iremonger, George K. H. Shimizu, Peter G. Boyd, Saman Alavi, and T

*Science* 29 October 2010: 650-653.

Crystallographic resolution of bound carbon dioxide in a porous solid validates methods of theoretically predi

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

**The Occurrence and Mass Distribution of Close-in Super-Earths, Neptunes, and Jupiters**

Andrew W. Howard, Geoffrey W. Marcy, John Asher Johnson, Debra A. Fischer, Jason T. Wright, Howard Isaac Jay Anderson, Doug N. C. Lin, and Shigeru Ida

*Science* 29 October 2010: 653-655.

About one-quarter of observed Sun-like stars harbors a close-in terrestrial-mass planet.

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

**Transferable GaN Layers Grown on ZnO-Coated Graphene Layers for Optoelectronic Devices**

Kunook Chung, Chul-Ho Lee, and Gyu-Chul Yi

*Science* 29 October 2010: 655-657.

Graphene can replace sapphire crystals as the substrate for the growth of gallium nitride layers.

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

**Large  $\delta^{13}\text{C}$  Gradients in the Preindustrial North Atlantic Revealed**

Are Olsen and Ulysses Ninnemann

*Science* 29 October 2010: 658-659.

The preanthropogenic distribution of carbon isotopes in the North Atlantic provides a correct baseline for clim

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

**Early Use of Pressure Flaking on Lithic Artifacts at Blombos Cave, South Africa**

Vincent Mourre, Paola Villa, and Christopher S. Henshilwood

*Science* 29 October 2010: 659-662.

Tools dating to ~75,000 years ago show evidence of pressure flaking, long before the technique became wide

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

#### **Fitness Correlates of Heritable Variation in Antibody Responsiveness in a Wild Mammal**

Andrea L. Graham, Adam D. Hayward, Kathryn A. Watt, Jill G. Pilkington, Josephine M. Pemberton, and Danie

*Science* 29 October 2010: 662-665.

In Soay sheep, self-reactive antibodies are indicators of an evolutionary trade-off between survival and repro

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

#### **Lineage Relationship Analysis of ROR $\gamma$ <sup>+</sup> Innate Lymphoid Cells**

Shinichiro Sawa, Marie Cherrier, Matthias Lochner, Naoko Satoh-Takayama, Hans Jörg Fehling, Francina Lan and Gérard Eberl

*Science* 29 October 2010: 665-669.

Immune cells develop to preempt intestinal colonization by microbial symbionts.

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

#### **Filtering of Visual Information in the Tectum by an Identified Neural Circuit**

Filippo Del Bene, Claire Wyart, Estuardo Robles, Amanda Tran, Loren Looger, Ethan K. Scott, Ehud Y. Isacoff

*Science* 29 October 2010: 669-673.

A neural circuit in zebrafish is preferentially activated by small visual stimuli, facilitating the capture of prey.

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

#### **Visualizing Ribosome Biogenesis: Parallel Assembly Pathways for the 30S Subunit**

Anke M. Mulder, Craig Yoshioka, Andrea H. Beck, Anne E. Bunner, Ronald A. Milligan, Clinton S. Potter, Bridg and James R. Williamson

*Science* 29 October 2010: 673-677.

A time-resolved electron microscopy method provides snapshots that reveal the mechanism of ribosome self

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

#### **Polarized Myosin Produces Unequal-Size Daughters During Asymmetric Cell Division**

Guangshuo Ou, Nico Stuurman, Michael D'Ambrosio, and Ronald D. Vale

*Science* 29 October 2010: 677-680.

Motor proteins help to produce developmentally distinct daughter cells during development

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

#### **A Size Threshold Limits Prion Transmission and Establishes Phenotypic Diversity**

Aaron Derdowski, Suzanne S. Sindi, Courtney L. Klaips, Susanne DiSalvo, and Tricia R. Serio

*Science* 29 October 2010: 680-683.

Yeast prion conformations specify phenotypes by affecting the size distribution of aggregates.

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

**Cognitive Illusions of Authorship Reveal Hierarchical Error Detection in Skilled Typists**

Gordon D. Logan and Matthew J. C. Crump

*Science* 29 October 2010: 683-686.

One error-detection mechanism monitors the correctness of one's action, whereas a second mechanism mor

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#) [Podcast Interview](#)**Evidence for a Collective Intelligence Factor in the Performance of Human Groups**

Anita Williams Woolley, Christopher F. Chabris, Alex Pentland, Nada Hashmi, and Thomas W. Malone

*Science* 29 October 2010: 686-688.

A metric for group performance on a battery of cognitive tasks yields a group intelligence quantity: collective i

[Abstract](#) [Full Text](#) [Full Text \(PDF\)](#) [Supporting Online Material](#) [Podcast Interview](#)**From the AAAS Office of Publishing and Member Services**

BUSINESS OFFICE FEATURE

**LIFE SCIENCE TECHNOLOGIES: Structural Genomics Shapes Up Protein Research**

Mike May

*Science* 29 October 2010: 689.[Summary](#)For all checked items [VIEW ABSTRACTS](#)