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Reversible Reactions of Ethylene
Butterfly Navigation

Special Issue

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Carbon Capture and Sequestration

Clearing the Air

H. Jesse Smith, Julia Fahrenkamp-Uppenbrink, and Robert Coontz
Science 25 September 2009: 1641.
[Full Text](#) » [PDF](#) »

News

Round and Round: A Guide to the Carbon Cycle
Dennis Normile
Science 25 September 2009: 1642-1643.
The atmosphere is only one component in an enormous complex of nested physical and chemical processes, some of which remain poorly understood. *Science* offers this user's guide to the carbon cycle.
[Summary](#) » [Full Text](#) » [PDF](#) »

Carbon Sequestration
Science 25 September 2009: 1644-1645.
Science has created a map showing some of the major carbon capture and storage projects around the world, either completed, in operation, or scheduled for the near future.
[Summary](#) » [Full Text](#) » [PDF](#) »

China Grapples With A Burning Question
Josh Fenn
Science 25 September 2009: 1646.
Two new projects, one in Inner Mongolia and the other in Tianjin, mark the coal-hungry country's first major steps toward trapping carbon emissions.
[Summary](#) » [Full Text](#) » [PDF](#) »

Perspectives

Amine Scrubbing for CO₂ Capture
Gary T. Rochelle
Science 25 September 2009: 1652-1654.
[Abstract](#) » [Full Text](#) » [PDF](#) »

Why Capture CO₂ from the Atmosphere?
David W. Keith
Science 25 September 2009: 1654-1655.
[Abstract](#) » [Full Text](#) » [PDF](#) »

Onshore Geologic Storage of CO₂
Franklin M. Orr, Jr.
Science 25 September 2009: 1656-1658.
[Abstract](#) » [Full Text](#) » [PDF](#) »

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- Storage of Carbon Dioxide in Offshore Sediments**
Daniel P. Schrag
Science 25 September 2009: 1658-1659.
[Abstract »](#) [Full Text »](#) [PDF »](#)

Review

- Carbon Capture and Storage: How Green Can Black Be?**
R. Stuart Haszeldine
Science 25 September 2009: 1647-1652.
[Abstract »](#) [Full Text »](#) [PDF »](#) [Podcast Interview »](#)

ContentsFor all checked items [VIEW ABSTRACTS »](#) [SAVE TO MY FOLDERS »](#)**This Week in Science**

Editor summaries of this week's papers.
Science 25 September 2009: 1596.
[Full Text »](#)

 EDITORIAL:

Carbon Capture and Sequestration
Steven Chu
Science 25 September 2009: 1599.
[Summary »](#) [Full Text »](#) [PDF »](#)

Editors' Choice

Highlights of the recent literature.
Science 25 September 2009: 1601.
[Full Text »](#)

 Science Podcast

Science 25 September 2009: 1709.

The show includes challenges to carbon capture and storage, human correspondence patterns, linking nutrition to violent behavior, and more.

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

 New Products

Science 25 September 2009: 1709.

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

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

News of the Week HUMAN EXPLORATION

Obama Facing Tough Decision on Whether to Keep Aiming for the Moon

Andrew Lawler

Science 25 September 2009: 1606-1607.

Last week, the chair of a presidential panel on human space flight told two congressional panels that NASA doesn't have enough money to carry out the current plan to build a big rocket to take humans back to the moon and that the United States should consider other destinations and launchers.

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

 NATIONAL INSTITUTES OF HEALTH

Grants 'Below Payline' Rise to Help New Investigators

Jocelyn Kaiser

Science 25 September 2009: 1607.

A new analysis of the grantsmaking process at the National Institutes of Health lifts the veil on how many grant proposals are funded even though they fall below a cutoff based on peer-review scores.

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

 LIFE SCIENCES

A New Biology to Mend Society's Woes

Jocelyn Kaiser

Science 25 September 2009: 1609.

Many science advocates were pleased last week when a National Academies panel called for a multidisciplinary initiative to address four major societal problems involving food, energy, the environment, and health.

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

 SCIENCENOW.ORG

From Science's Online Daily News Site

Science 25 September 2009: 1609.

Highlights from ScienceNOW this week include antplant ants that branch out, the solar system's coldest spot, gene therapy that gives monkeys color vision, and a magnetized gas that points to new physics.

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

 PROFILE: KIM CHIN-KYUNG

The Force Behind North Korea's New Science University

Richard Stone

Science 25 September 2009: 1610-1611.

Last week, a ceremony in Pyongyang commemorated completion of the \$35 million Pyongyang University of Science and Technology, which after 4 years of delays is expected to open in November to the crème de la crème of North Korea's science graduate students.

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FEATURED JOBS

Featured Jobs

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Hinxton

Hinxton-ne-
England

2. [Staff Scientist / Staff Clinician](#)

NIH (National
Institute of
Health)

Bethesda-MD-
United States

3. [Staff Scientist / Staff Clinician](#)

NIH (National
Institute of
Health)

Bethesda-MD-
United States

4. [Research fellow](#)

SCIENCEINSIDER

From the *Science* Policy Blog
Science 25 September 2009: 1611.

*Science*Insider this week reported on a flurry of developments on swine flu preparations, a new report highlighting the possibility of producing power using underground coal gasification, and a new Web site where NIH-funded scientists can request approval to use human embryonic stem cell lines, among other stories.

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

 GERMANY

Election Heats Up Nuclear Debate
 Gretchen Vogel
Science 25 September 2009: 1612.

A nearly 3-decade-old telex message regarding the scientific evaluation of a disposal site for highly radioactive nuclear waste in Germany has become a prominent issue in the campaign leading up to Sunday's national elections.

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

 ASTRONOMY

Who Will Pay for China's Planned X-ray Satellite?
 Hao Xin
Science 25 September 2009: 1613.

China's first space-based observatory, the Hard X-ray Modulation Telescope, is scheduled for launch next year, but *Science* has learned that no government agency has stepped forward to pay the estimated \$146 million to build the satellite—putting the mission in jeopardy.

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

Random Samples

Science 25 September 2009: 1605.
[Full Text](#) »

News Focus
 PSYCHOLOGY

The Theory? Diet Causes Violence. The Lab? Prison
 John Bohannon
Science 25 September 2009: 1614-1616.

In a more ambitious study than any before, psychologist Bernard Gesch is leading a research team hoping to replicate controversial results showing that nutritional supplements can reduce violence among prisoners.

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

 ASTRONOMY

Exotic Telescopes Prepare to Probe Era of First Stars and Galaxies
 Daniel Clery
Science 25 September 2009: 1617-1619.

Radio telescopes that substitute antenna arrays for dishes are gearing up to look back to the brink of the "dark ages" that followed the big bang.

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

 GEOPHYSICS

Scoping Out Unseen Forces Shaping North America
 Richard A. Kerr
Science 25 September 2009: 1620-1621.

As it sweeps across America, the USArray network of seismometers is revealing an impressive but often befuddling subsurface menagerie of slabs, drips, and plumes.

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

The Gonzo Scientist

Do Scientists Like Green Porno?
 John Bohannon
Science 25 September 2009: 1620.

The Gonzo Scientist introduces a group of researchers to Green Porno, a series of cartoonlike vignettes about the sex life of animals, and asks them what they think of seeing their discoveries transformed into sexy art.

[Summary](#) » [Full Text](#) »


Letters
Preserving Starry Nights

Wendy Freedman
Science 25 September 2009: 1622.
[Full Text](#) » [PDF](#) »

Forecast for Reproducible Data: Partly Cloudy

Leon J. Osterweil, Lori A. Clarke, and Aaron M. Ellison
Science 25 September 2009: 1622.
[Full Text](#) » [PDF](#) »

Forecast for Reproducible Data: Partly Cloudy—Response

Michael R. Nelson
Science 25 September 2009: 1622-1623.
[Full Text](#) » [PDF](#) »

Immune System: Not So Superior

Stephen M. Hedrick
Science 25 September 2009: 1623-1624.
[Full Text](#) » [PDF](#) »

LIFE IN SCIENCE

Having a Blast in Kenya
Tom Parsons
Science 25 September 2009: 1623.
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Books et al. PATENT LAW

One Size Fits All, After Tailoring
Rebecca S. Eisenberg
Science 25 September 2009: 1625.
Claiming that serious problems arise from current U.S. patent law applying the same set of rules across all industries, Burk and Lemley argue for giving the courts the power to interpret and apply the law so as to treat different types of businesses differently.
[Summary »](#) [Full Text »](#) [PDF »](#)

 MOLECULAR BIOLOGY

Doing Magic with DNA
Alfonso Mondragón
Science 25 September 2009: 1626.
After providing a historical perspective on the problem of DNA entanglement, Wang discusses structural, functional, and clinical aspects of topoisomerases.
[Summary »](#) [Full Text »](#) [PDF »](#)

 Books Received

Science 25 September 2009: 1626.
A [listing of books received](#) at *Science* during the week ended 18 September 2009.
[Summary »](#)

Education Forum SCIENCE EDUCATION

Revising the AP Biology Curriculum
William B. Wood
Science 25 September 2009: 1627-1628.
Major, welcome changes to the AP biology curriculum raise questions about implementation and assessment.
[Summary »](#) [Full Text »](#) [PDF »](#)

Perspectives PHYSIOLOGY

Unraveling Traveling
Charalambos P. Kyriacou
Science 25 September 2009: 1629-1630.
The monarch butterfly uses a time-compensated clock in its antennae to calculate seasonal migration routes relative to the Sun's position.
[Summary »](#) [Full Text »](#) [PDF »](#)

 CHEMISTRY

A New Departure in Fluorination Chemistry
Véronique Gouverneur
Science 25 September 2009: 1630-1631.
A method for fluorinating a wide range of aromatic molecules will find immediate application in pharmaceutical research and may facilitate access to medical imaging reagents.
[Summary »](#) [Full Text »](#) [PDF »](#)

 CHEMISTRY

Tin Takes Ethylene On—and Off
Lawrence R. Sita
Science 25 September 2009: 1631-1632.
A tin analog of acetylene can perform reactions normally forbidden to acetylene: It can bind two ethylene molecules in a reversible fashion.
[Summary »](#) [Full Text »](#) [PDF »](#)

 CHEMISTRY

Emergent or Just Complex?
Anna C. Balazs and Irving R. Epstein
Science 25 September 2009: 1632-1634.
Efforts toward creating artificial cells are shedding light on how life may have emerged.
[Summary »](#) [Full Text »](#) [PDF »](#)

 MATERIALS SCIENCE

Simulating Multifunctional Structures
Simon R. Phillpot and Susan B. Sinnott
Science 25 September 2009: 1634-1635.
More powerful computers and better algorithms are making it possible to probe and engineer the atomic-level properties of nanostructures.
[Summary »](#) [Full Text »](#) [PDF »](#)

 CELL BIOLOGY

Evolving Cell Signals
Mark O. Collins
Science 25 September 2009: 1635-1636.
Cell signaling may be understood in terms of the evolution of the topology and distribution of protein phosphorylation sites.
[Summary »](#) [Full Text »](#) [PDF »](#)

Association Affairs

- AAAS News and Notes**
Science 25 September 2009: 1637-1640.
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Brevia

- Oceanic Spawning Migration of the European Eel (*Anguilla anguilla*)**
Kim Aarestrup, Finn Økland, Michael M. Hansen, David Righton, Patrik Gargan, Martin Castonguay, Louis Bernatchez, Paul Howey, Henrik Sparholt, Michael I. Pedersen, and Robert S. McKinley
Science 25 September 2009: 1660.
Satellite tracking technology has allowed scientists to map part of the migration route of the European eel.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »

Research Article

- Formation of ArF from LPdAr(F): Catalytic Conversion of Aryl Triflates to Aryl Fluorides**
Donald A. Watson, Mingjuan Su, Georgiy Teverovskiy, Yong Zhang, Jorge Garcia-Fortanet, Tom Kinzel, and Stephen L. Buchwald
Science 25 September 2009: 1661-1664.
Published online 13 August 2009 [DOI: 10.1126/science.1178239] (in *Science Express Research Articles*)
A catalyst enables versatile carbon-fluorine bond formation using simple fluoride salts.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »

Reports

- High-Detectivity Polymer Photodetectors with Spectral Response from 300 nm to 1450 nm**
Xiong Gong, Minghong Tong, Yangjun Xia, Wanzhu Cai, Ji Sun Moon, Yong Cao, Gang Yu, Chan-Long Shieh, Boo Nilsson, and Alan J. Heeger
Science 25 September 2009: 1665-1667.
Published online 13 August 2009 [DOI: 10.1126/science.1176706] (in *Science Express Reports*)
Well-designed polymer photodetectors show performance comparable with the best inorganic devices.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Reversible Reactions of Ethylene with Distannynes Under Ambient Conditions**
Yang Peng, Bobby D. Ellis, Xinping Wang, James C. Fettinger, and Philip P. Power
Science 25 September 2009: 1668-1670.
Ethylene reacts reversibly with triply bonded tin, contrasting with its reactivity toward carbon triple bonds.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Coordinatively Unsaturated Al³⁺ Centers as Binding Sites for Active Catalyst Phases of Platinum on γ -Al₂O₃**
Ja Hun Kwak, Jianzhi Hu, Donghai Mei, Cheol-Woo Yi, Do Heui Kim, Charles H. F. Peden, Lawrence F. Allard, and Janos Szanyi
Science 25 September 2009: 1670-1673.
A combination of high-resolution spectroscopy and microscopy reveals the details of platinum binding to aluminum oxide.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Distribution of Mid-Latitude Ground Ice on Mars from New Impact Craters**
Shane Byrne, Colin M. Dundas, Megan R. Kennedy, Michael T. Mellon, Alfred S. McEwen, Selby C. Cull, Ingrid J. Daubar, David E. Shean, Kimberly D. Seelos, Scott L. Murchie, Bruce A. Cantor, Raymond E. Arvidson, Kenneth S. Edgett, Andreas Reufer, Nicolas Thomas, Tanya N. Harrison, Liliya V. Posiolova, and Frank P. Seelos
Science 25 September 2009: 1674-1676.
Observations of ground ice exposed by recent impact craters probe the composition of the upper layers of the surface of Mars.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Holocene Glacier Fluctuations in the Peruvian Andes Indicate Northern Climate Linkages**
Joseph M. Licciardi, Joerg M. Schaefer, Jean R. Taggart, and David C. Lund
Science 25 September 2009: 1677-1679.
Glacial advances in the southern Peruvian Andes during the Holocene are correlated with the climate of the North Atlantic region.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Chloroquine Transport via the Malaria Parasite's Chloroquine Resistance Transporter**
Rowena E. Martin, Rosa V. Marchetti, Anna I. Cowan, Susan M. Howitt, Stefan Bröer, and Kieran Kirk
Science 25 September 2009: 1680-1682.
Chloroquine resistance in *Plasmodium falciparum* is due to the direct export of the drug via a mutant transporter protein.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Global Analysis of Cdk1 Substrate Phosphorylation Sites Provides Insights into Evolution**
Liam J. Holt, Brian B. Tuch, Judit Villén, Alexander D. Johnson, Steven P. Gygi, and David O. Morgan
Science 25 September 2009: 1682-1686.
The range of sites phosphorylated by a protein kinase in yeast provides clues to the evolution of such regulatory mechanisms.
[Abstract](#) » [Full Text](#) » [PDF](#) » [Supporting Online Material](#) »
- Positive Selection of Tyrosine Loss in Metazoan Evolution**
Chris Soon Heng Tan, Adrian Pasculescu, Wendell A. Lim, Tony Pawson, Gary D. Bader, and Rune Linding
Science 25 September 2009: 1686-1688.
Published online 9 July 2009 [DOI: 10.1126/science.1174301] (in *Science Express Reports*)
Evolution of tyrosine phosphorylation as a signaling mechanism may have coincided with loss of tyrosine residues to avoid noise.
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- Evolution of a Novel Phenolic Pathway for Pollen Development**
Michiyo Matsuno., Vincent Compagnon, Guillaume A. Schoch, Martine Schmitt, Delphine Debayle, Jean-Etienne Bassard, Brigitte Pollet, Alain Hehn, Dimitri Heintz, Pascaline Ullmann, Catherine Lapierre, François Bernier, Jürgen Ehling, and Danièle Werck-Reichhart
Science 25 September 2009: 1688-1692.
Gene copying and positive Darwinian selection promoted the emergence of a phenolic pathway in Brassicaceae.
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Creating Bacterial Strains from Genomes That Have Been Cloned and Engineered in Yeast

Carole Lartigue, Sanjay Vashee, Mikkel A. Algire, Ray-Yuan Chuang, Gwynedd A. Benders, Li Ma, Vladimir N. Noskov, Evgeniya A. Denisova, Daniel G. Gibson, Nancyra Assad-Garcia, Nina Alperovich, David W. Thomas, Chuck Merryman, Clyde A. Hutchison, III, Hamilton O. Smith, J. Craig Venter, and John I. Glass

Science 25 September 2009: 1693-1696.

Published online 20 August 2009 [DOI: 10.1126/science.1173759] (in *Science Express Reports*)

A *Mycoplasma mycoides* genome was engineered in yeast and then transplanted into *M. capricolum* cells to produce a new strain.

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 On Universality in Human Correspondence Activity

R. Dean Malmgren, Daniel B. Stouffer, Andriana S. L. O. Campanharo, and Luis A. Nunes Amaral

Science 25 September 2009: 1696-1700.

Affinity toward a particular life-style affects the communication patterns between people.

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

 Antennal Circadian Clocks Coordinate Sun Compass Orientation in Migratory Monarch Butterflies

Christine Merlin, Robert J. Gegear, and Steven M. Reppert

Science 25 September 2009: 1700-1704.

Monarch butterfly antennae contain the timing mechanism for time-compensated Sun compass orientation.

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

 Optimizing Influenza Vaccine Distribution

Jan Medlock and Alison P. Galvani

Science 25 September 2009: 1705-1708.

Published online 20 August 2009 [DOI: 10.1126/science.1175570] (in *Science Express Reports*)

Age-related transmission patterns should be incorporated into vaccine distribution policy to minimize the impact of epidemics.

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

Technical Comments **Comment on "Infants' Perseverative Search Errors Are Induced by Pragmatic Misinterpretation"**

John P. Spencer, Evelina Dineva, and Linda B. Smith

Science 25 September 2009: 1624.

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

 Response to Comment on "Infants' Perseverative Search Errors Are Induced by Pragmatic Misinterpretation"

József Topál, Mária Tóth, György Gergely, and Gergely Csibra

Science 25 September 2009: 1624.

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