### SPECIAL SECTION

**Carbon Capture and Sequestration**

#### INTRODUCTION
- 1641 Clearing the Air

#### NEWS
- 1642 Round and Round: A Guide to the Carbon Cycle
- 1644 Carbon Sequestration
- 1646 China Grapples With a Burning Question

#### REVIEW
- 1647 Carbon Capture and Storage: How Green Can Black Be?
  - R. S. Hazeldine
  >> Science Podcast

#### PERSPECTIVES
- 1652 Amine Scrubbing for CO₂ Capture
  - G. T. Rochelle
- 1654 Why Capture CO₂ from the Atmosphere?
  - D. W. Keith
- 1656 Onshore Geologic Storage of CO₂
  - F. M. Orr Jr.
- 1658 Storage of Carbon Dioxide in Offshore Sediments
  - D. P. Schrag

>> See also Editorial p. 1599

#### EDITORIAL
- 1599 Carbon Capture and Sequestration
  - Steven Chu

#### NEWS OF THE WEEK
- 1606 Obama Facing Tough Decision on Whether to Keep Aiming for the Moon
- 1607 Grants ‘Below Payline’ Rise to Help New Investigators
- 1609 A New Biology to Mend Society’s Woes
- 1609 From Science’s Online Daily News Site
- 1610 The Force Behind North Korea’s New Science University
- 1611 From the Science Policy Blog
- 1612 Germany: Election Heats Up Nuclear Debate
- 1613 Who Will Pay for China’s Planned X-ray Satellite?

#### LETTERS
- 1622 Preserving Starry Nights
  - W. Freedman
  - Forecast for Reproducible Data: Partly Cloudy
  - L. J. Osterweil et al.
  - Response
  - M. R. Nelson
  - Immune System: Not So Superior
  - S. M. Hedrick
- 1623 Life in Science: Having a Blast in Kenya
  - T. Parsons
- 1624 TECHNICAL COMMENTS ABSTRACTS

#### BOOKS ET AL.
- 1625 The Patent Crisis and How the Courts Can Solve It
  - D. L. Burk and M. A. Lemley, reviewed by R. S. Eisenberg
- 1626 Untangling the Double Helix
  - J. C. Wang, reviewed by A. Mondragón

#### EDUCATION FORUM
- 1627 Revising the AP Biology Curriculum
  - W. B. Wood

#### PERSPECTIVES
- 1629 Unraveling Traveling
  - C. P. Kyriacou

#### DEPARTMENTS
- 1596 This Week in Science
- 1601 Editors’ Choice
- 1602 Science Staff
- 1605 Random Samples
- 1637 AAAS News & Notes
- 1709 New Products
- 1710 Science Careers

---

**COVER**

The Hellisheiði geothermal power project in southwestern Iceland, site of a pilot study on the feasibility of sequestration of carbon dioxide in basaltic rocks. Here, carbon dioxide released from the hot water that powers the facility is dissolved in cooling water and injected below ground to a depth of 300 to 800 meters, where it can react with basalt to form new, stable minerals. See the special section beginning on page 1641.

*Photo: Haraldur Stefansson/Alamy*
Tin Takes Ethylene On—and Off
L. R. Sita
>> Report p. 1668

Emergent or Just Complex?
A. C. Balazs and I. R. Epstein

Simulating Multifunctional Structures
S. R. Phillipot and S. B. Sinnott

Evolving Cell Signals
M. O. Collins
>> Reports pp. 1682 and 1686

Oceanic Spawning Migration of the European Eel (Anguilla anguilla)
K. Aarestrup et al.
Satellite tracking technology has allowed scientists to map part of the migration route of the European eel.

Formation of ArF from LPdAr(F): Catalytic Conversion of Aryl Triflates to Aryl Fluorides
D. A. Watson et al.
A catalyst enables versatile carbon-fluorine bond formation using simple fluoride salts.

High-Detectivity Polymer Photodetectors with Spectral Response from 300 nm to 1450 nm
X. Gong et al.
Well-designed polymer photodetectors show performance comparable with the best inorganic devices.

Reversible Reactions of Ethylene with Distannynes Under Ambient Conditions
Y. Peng et al.
Ethylene reacts reversibly with triply bonded tin, contrasting with its reactivity toward carbon triple bonds.

Coordinatively Unsaturated Al³⁺ Centers as Binding Sites for Active Catalyst Phases of Platinum on γ-Al₂O₃
J. H. Kwak et al.
A combination of high-resolution spectroscopy and microscopy reveals the details of platinum binding to aluminum oxide.

Distribution of Mid-Latitude Ground Ice on Mars from New Impact Craters
S. Byrne et al.
Observations of ground ice exposed by recent impact craters probe the composition of the upper layers of the surface of Mars.

Holocene Glacier Fluctuations in the Peruvian Andes Indicate Northern Climate Linkages
J. M. Licciardi et al.
Glacial advances in the southern Peruvian Andes during the Holocene are correlated with the climate of the North Atlantic region.

Chloroquine Transport via the Malaria Parasite’s Chloroquine Resistance Transporter
R. E. Martin et al.
Chloroquine resistance in Plasmodium falciparum is due to the direct export of the drug via a mutant transporter protein.

Global Analysis of Cdk1 Substrate Phosphorylation Sites Provides Insights into Evolution
L. J. Holt et al.
The range of sites phosphorylated by a protein kinase in yeast provides clues to the evolution of such regulatory mechanisms.

Evolution of a Novel Phenolic Pathway for Pollen Development
M. Matsuno et al.
Gene copying and positive Darwinian selection promoted the emergence of a phenolic pathway in Brassicaceae.

Creating Bacterial Strains from Genomes That Have Been Cloned and Engineered in Yeast
C. Lartigue et al.
A Mycoplasma mycoides genome was engineered in yeast and then transplanted into M. capricolum cells to produce a new strain.

On Universality in Human Correspondence Activity
R. D. Malmgren et al.
Affinity toward a particular life-style affects the communication patterns between people.

Antennal Circadian Clocks Coordinate Sun Compass Orientation in Migratory Monarch Butterflies
C. Merlin et al.
Monarch butterfly antennae contain the timing mechanism for time-compensated Sun compass orientation.

Optimizing Influenza Vaccine Distribution
J. Medlock and A. P. Galvani
Age-related transmission patterns should be incorporated into vaccine distribution policy to minimize the impact of epidemics.
And the Solar System’s Coldest Spot Is ...
Scientists reveal chilly findings—and uncertain prospects for future astronauts.

Gene Therapy Gives Monkeys Color Vision
Finding may point to future treatments for human colorblindness.

Dynamics Are Regulated by Orexin
Finding may point to future treatments for human colorblindness.

Temporal and Spatial Variability of Lunar Hydration as Observed by the Deep Impact Spacecraft
J. M. Sunshine et al.
Space-based spectroscopic measurements provide evidence for water or hydroxyl (OH) on the surface of the Moon.

A Lunar Waterworld
P. G. Lucey
10.1126/science.1178105

Character and Spatial Distribution of OH/H2O on the Surface of the Moon
Seen by M3 on Chandrayaan-1
C. M. Pieters et al.

Detection of Adsorbed Water and Hydroxyl on the Moon
R. N. Clark
10.1126/science.1178058

Detection of Gamma Rays from a Starburst Galaxy
F. Acerò et al.
Detection of our nearest starburst galaxy at very high energies confirms this galaxy-type as a new class of gamma-ray emitter.

The transmembrane domain of any of the 58 human receptor tyrosine kinases is sufficient to mediate dimerization.

The transmembrane domain of any of the 58 human receptor tyrosine kinases is sufficient to mediate dimerization.

**PERSPECTIVE: Integrin Proteomes Reveal a New Guide for Cell Motility**
E. H. J. Danen
A proteomics analysis of integrin-associated complexes establishes an unexpected connection to cell migration.

**PERSPECTIVE: Human-Specific Genes May Offer a Unique Window into Human Cell Signaling**
P. D. Stahl and M. J. Wainselboim
Analysis of human-specific genes may reveal, at the molecular level, what makes humans human.

**Glossary**
Find out what APR, NHEJ, and SLAM mean in the world of cell signaling.

**SCIENCE CAREERS**
www.sciencecareers.org/career_magazine
Free Career Resources for Scientists

**Special Feature: Careers in Humanitarian Science**
E. Pain
Scientists are applying their skills to relieve hunger, disease, and human-rights violations.

**Serving Human Rights and Humanitarian Needs**
E. Pain
Three passionate scientists describe their careers dealing with human rights.

**Helping Feed the World**
S. McLoone
Scientists are helping to increase and maintain food supplies where food is scarce.

**Gene Therapy Gives Monkeys Color Vision**
Finding may point to future treatments for human colorblindness.

**A Lunar Waterworld**
P. G. Lucey
10.1126/science.1181471

**Temporal and Spatial Variability of Lunar Hydration as Observed by the Deep Impact Spacecraft**
J. M. Sunshine et al.
Space-based spectroscopic measurements provide evidence for water or hydroxyl (OH) on the surface of the Moon.

**Character and Spatial Distribution of OH/H2O on the Surface of the Moon**
Seen by M3 on Chandrayaan-1
C. M. Pieters et al.

**Detection of Adsorbed Water and Hydroxyl on the Moon**
R. N. Clark
10.1126/science.1178058

**Detection of Gamma Rays from a Starburst Galaxy**
F. Acerò et al.
Detection of our nearest starburst galaxy at very high energies confirms this galaxy-type as a new class of gamma-ray emitter.

**PERSPECTIVE: Integrin Proteomes Reveal a New Guide for Cell Motility**
E. H. J. Danen
A proteomics analysis of integrin-associated complexes establishes an unexpected connection to cell migration.

**PERSPECTIVE: Human-Specific Genes May Offer a Unique Window into Human Cell Signaling**
P. D. Stahl and M. J. Wainselboim
Analysis of human-specific genes may reveal, at the molecular level, what makes humans human.

**Glossary**
Find out what APR, NHEJ, and SLAM mean in the world of cell signaling.

**SCIENCE CAREERS**
www.sciencecareers.org/career_magazine
Free Career Resources for Scientists

**Special Feature: Careers in Humanitarian Science**
E. Pain
Scientists are applying their skills to relieve hunger, disease, and human-rights violations.

**Serving Human Rights and Humanitarian Needs**
E. Pain
Three passionate scientists describe their careers dealing with human rights.

**Helping Feed the World**
S. McLoone
Scientists are helping to increase and maintain food supplies where food is scarce.