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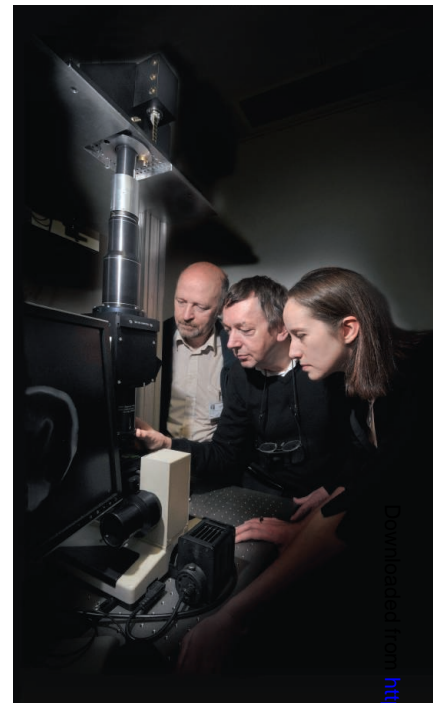
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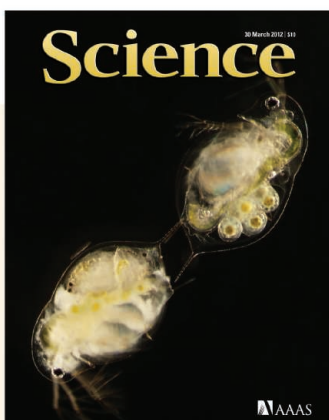


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## COVER

Two *Daphnia dentifera*, each ~2 millimeters long. The organism at bottom left is infected with a virulent yeast parasite, causing her bright white appearance. The food web in which the host-parasite interaction is embedded determines the size of the epidemic, which, in turn, determines whether the *Daphnia* population becomes more resistant or more susceptible during the epidemic. See page 1636.

Credit: Meghan A. Duffy

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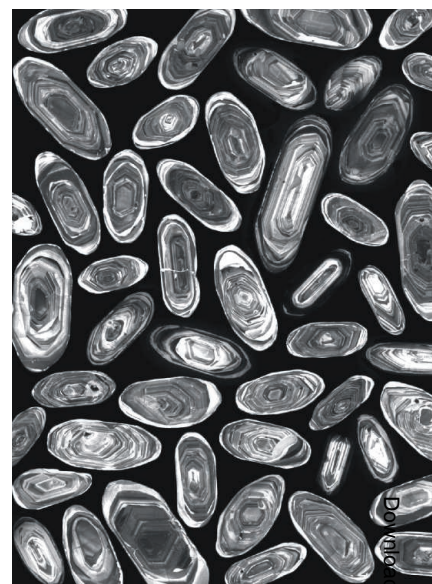
- 1596** Integrated Electromicrobial Conversion of CO<sub>2</sub> to Higher Alcohols  
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An engineered microbe transforms carbon dioxide into a prospective liquid fuel in tandem with electrical power rather than light.

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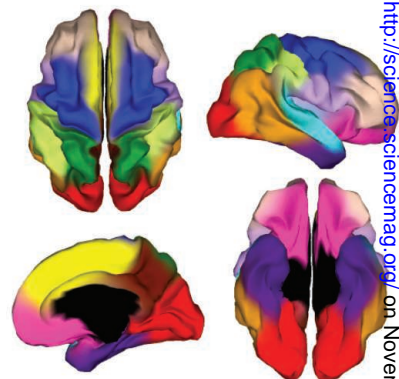
- 1597** Emerging Chirality in Artificial Spin Ice  
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- 1600** Disentangling the Electronic and Phononic Glue in a High-*T<sub>c</sub>* Superconductor  
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A time-resolved optical technique resolves the influence of lattice dynamics on electron pairing in a cuprate.
- 1603** Coherent Sensing of a Mechanical Resonator with a Single-Spin Qubit  
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The spin of a nitrogen vacancy defect in diamond is used to sense the motion of a magnetized microresonator.  
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- 1606** Hydrocarbon Separations in a Metal-Organic Framework with Open Iron(II) Coordination Sites  
*E. D. Bloch et al.*  
Tighter binding of olefins to iron centers in a sorbent facilitates their efficient separation from saturated hydrocarbons.
- 1610** <sup>238</sup>U/<sup>235</sup>U Systematics in Terrestrial Uranium-Bearing Minerals  
*J. Hiess et al.*  
Highly variable uranium isotope ratios highlight the need for a revised approach to radiometric dating.  
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- 1614** A Shorter <sup>146</sup>Sm Half-Life Measured and Implications for <sup>146</sup>Sm-<sup>142</sup>Nd Chronology in the Solar System  
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- 1617** Control of Sleep by Cyclin A and Its Regulator  
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- 1621** Cotranscriptional Role for *Arabidopsis* DICER-LIKE 4 in Transcription Termination  
*F. Liu et al.*  
An *Arabidopsis* protein that functions in gene silencing is shown to be involved in nascent RNA cleavage as well.
- 1624** Gap Junctions Compensate for Sublinear Dendritic Integration in an Inhibitory Network  
*K. Vervaeke et al.*  
Synaptic charge spreads into the dendrites of neighboring interneurons via dendritic gap junctions.
- 1628** The Geometric Structure of the Brain Fiber Pathways  
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The macroscopic pathways of human brain nerve fibers are organized according to a single, highly curved three-dimensional grid.  
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- 1634** Hierarchical Genetic Organization of Human Cortical Surface Area  
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Human brain structure is genetically controlled in a hierarchical, modular, and symmetric fashion.  
>> *Perspective p. 1582*
- 1636** Ecological Context Influences Epidemic Size and Parasite-Driven Evolution  
*M. A. Duffy et al.*  
When the physiological cost of host resistance to a disease damages reproductive output, disease susceptibility can evolve.
- 1638** Rapamycin-Induced Insulin Resistance Is Mediated by mTORC2 Loss and Uncoupled from Longevity  
*D. W. Lamming et al.*  
The effect of the drug rapamycin on life span can be separated from its effects on metabolism.  
>> *Perspective p. 1578*
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A nuclear protein measures the length of newly made RNAs and sorts them into distinct pathways for export.

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## SCIENCEONLINE

## SCIENCEEXPRESS

[www.sciencexpress.org](http://www.sciencexpress.org)

### Neonicotinoid Pesticide Reduces Bumble Bee Colony Growth and Queen Production

*P. R. Whitehorn et al.*

Bumble bee colonies produce many fewer queens after exposure to a widely used insecticide.  
10.1126/science.1215025

### A Common Pesticide Decreases Foraging Success and Survival in Honey Bees

*M. Henry et al.*

Honey bees cannot find their way home after exposure to sublethal doses of a widely used insecticide.  
10.1126/science.1215039

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### GBP5 Promotes NLRP3 Inflammasome Assembly and Immunity in Mammals

*A. R. Shenoy et al.*

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10.1126/science.1217141

### Organic Synthesis via Irradiation and Warming of Ice Grains in the Solar Nebula

*F. J. Ciesla and S. A. Sandford*

A mechanism for production of carbon compounds in the interstellar medium could also operate in protoplanetary disks.  
10.1126/science.1217291

### Complex Protostellar Chemistry

*J. A. Nuth III and N. M. Johnson*

10.1126/science.1219709

### Carbon Isotope Constraints on the Deglacial CO<sub>2</sub> Rise from Ice Cores

*J. Schmitt et al.*

The stable isotopic composition of the carbon in carbon dioxide over the last 24,000 years illuminates past carbon cycle behavior.  
10.1126/science.1217161

### The Ice Age Carbon Puzzle

*E. Brook*

10.1126/science.1219710

## TECHNICAL COMMENTS

Comments and Response on "Disentangling the Drivers of  $\beta$  Diversity Along Latitudinal and Elevational Gradients"

Comment: *H. Qian et al.*

Full text at [www.sciencemag.org/cgi/content/ful/335/6076/1573-b](http://www.sciencemag.org/cgi/content/ful/335/6076/1573-b)

Comment: *H. Tuomisto and K. Ruokolainen*

Full text at [www.sciencemag.org/cgi/content/ful/335/6076/1573-c](http://www.sciencemag.org/cgi/content/ful/335/6076/1573-c)

Response: *N. J. B. Kraft et al.*

Full text at [www.sciencemag.org/cgi/content/ful/335/6076/1573-d](http://www.sciencemag.org/cgi/content/ful/335/6076/1573-d)

## SCIENCE NOW

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Highlights From Our Daily News Coverage

### Oil Spill's 'Frothy Gunk' Harming Corals

A 2010 disaster coated deep-sea corals with oil more than 11 kilometers from the well site.  
[http://scim.ag/Frothy\\_Gunk](http://scim.ag/Frothy_Gunk)

### Findings Cast Doubt on Moon Origins

The giant impact hypothesis struggles to explain the similarity between Earth and the Moon's composition.  
[http://scim.ag/Moon\\_Origins](http://scim.ag/Moon_Origins)

Earth Warming Faster Than Expected  
Global temperatures could be 3°C hotter by mid-century.  
[http://scim.ag/Global\\_Temperatures](http://scim.ag/Global_Temperatures)

## SCIENCE SIGNALING

[www.sciencesignaling.org](http://www.sciencesignaling.org)

The Signal Transduction Knowledge Environment

27 March issue: <http://scim.ag/ss032712>

### EDITORIAL GUIDE: Focus Issue—TOR Signaling, A Tale of Two Complexes

*N. R. Gough*

This issue highlights developments in the signaling network associated with the kinase TOR.

### RESEARCH ARTICLE: Chronic Activation of mTOR Complex 1 Is Sufficient to Cause Hepatocellular Carcinoma in Mice

*S. Menon et al.*

Aberrant activation of mTORC1 disrupts tissue homeostasis, leading to carcinogenesis.

### RESEARCH ARTICLE: A Dynamic Network Model of mTOR Signaling Reveals TSC-Independent mTORC2 Regulation

*P. Dalle Pezze et al.*

### PERSPECTIVE: Deconvolution of mTORC2 "in Silico"

*D. C. Fingar and K. Inoki*

Modeling and testing network structures reveals a distinct mechanism of mTORC2 activation by insulin.

### RESEARCH RESOURCE: Hyperplexing—A Method for Higher-Order Multiplexed Quantitative Proteomics Provides a Map of the Dynamic Response to Rapamycin in Yeast

*N. Dephoure and S. P. Gygi*

A dual-labeling strategy enables high-throughput analysis of multiple samples by mass spectrometry.

### PERSPECTIVE: Phospholipase D and mTORC1—Nutrients Are What Bring Them Together

*B. M. Wiczler and G. Thomas*

Activation of PLD1 by amino acids enables mTORC1 to respond to nutrient abundance.

## SCIENCE TRANSLATIONAL MEDICINE

[www.sciencetranslationalmedicine.org](http://www.sciencetranslationalmedicine.org)

Integrating Medicine and Science

28 March issue: <http://scim.ag/stm032812>

### SPECIAL ISSUE: CONQUERING CANCER, CLOSING THE TRANSLATIONAL GAP

EDITORIAL: *Winning the War—Science Parkour*

*B. Vogelstein and K. W. Kinzler*

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### REVIEW: Beyond PSA—The Next Generation of Prostate Cancer Biomarkers

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### REVIEW: Applying What We Know to Accelerate Cancer Prevention

*G. A. Colditz et al.*

### RESEARCH ARTICLE: Anti-Invasive Adjuvant Therapy with Imipramine Blue Enhances Chemotherapeutic Efficacy Against Glioma

*J. M. Munson et al.*

### RESEARCH ARTICLE: Colocalization of Inflammatory Response with B7-H1 Expression in Human Melanocytic Lesions Supports an Adaptive Resistance Mechanism of Immune Escape

*J. M. Taube et al.*

### RESEARCH ARTICLE: Targeting of AML1-ETO in t(8;21) Leukemia by Oridonin Generates a Tumor Suppressor–Like Protein

*T. Zhen et al.*

## SCIENCE CAREERS

[www.sciencereers.org/career\\_magazine](http://www.sciencereers.org/career_magazine)

Free Career Resources for Scientists

### Does a Professional Science Master's Degree Pay Off?

*S. Carpenter*

Data on PSM graduates' employment outcomes are scarce, but anecdotal evidence of success abounds.

[http://scim.ag/PSM\\_Payoff](http://scim.ag/PSM_Payoff)

### Plant Hunters

*E. Pain*

Plant collecting offers excitement for adventurous scientists—at some cost in comfort and security.

<http://scim.ag/PlantHunters>

### NPA Founders Find Success

*M. Price*

The founders the National Postdoctoral Association say that the experience helped their careers.

[http://scim.ag/NPA\\_Founders](http://scim.ag/NPA_Founders)

## SCIENCE PODCAST

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