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COVER

Corals such as this 150-million-year-old colony of *Thecosmilia trichotoma* (with oyster *Actinostreon* attached) from southern Germany formed reefs during most of the Phanerozoic eon. These reefs harbored tremendous biodiversity that was subsequently exported to non-reef habitats. See page 196.

Photo: Antje Dittmann and Carola Radke/Museum für Naturkunde, Berlin

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Phosphorylation of the chromatin protein histone H2A plays a critical role in chromosome segregation during cell division.
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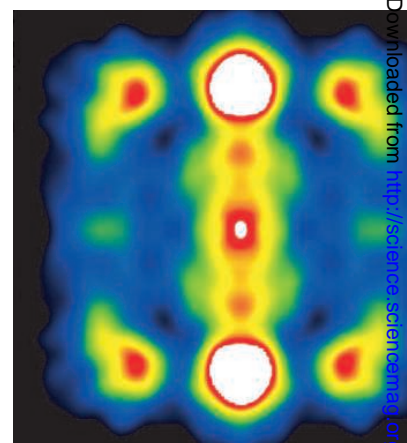
- 177 Quantum Criticality in an Ising Chain: Experimental Evidence for Emergent E_8 Symmetry
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- 181 Nematic Electronic Structure in the "Parent" State of the Iron-Based Superconductor $\text{Ca}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$
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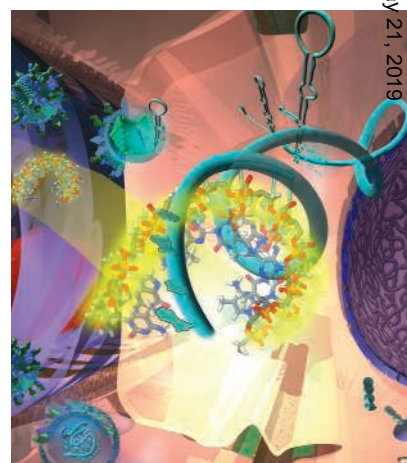
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**Kepler Planet-Detection Mission:
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W. J. Borucki et al.

Initial observations confirm the existence of planets with densities lower than those predicted for gas giant planets.

10.1126/science.1185402

**Gamma-Ray Emission from the Shell
of Supernova Remnant W44 Revealed
by the Fermi LAT**

A. A. Abdo et al.

Satellite observations suggest that protons are accelerated in the shell of a supernova remnant.

10.1126/science.1182787

**A Composite of Multiple Signals Distinguishes
Causal Variants in Regions of Positive Selection**

S. R. Grossman et al.

Combining statistical methods detects signals of selection with increased sensitivity and a lower false-positive rate.

10.1126/science.1183863

**Axon Extension Occurs Independently
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M. Stiess et al.

Neuronal polarization and axon regeneration depend on decentralized microtubule assembly rather than a functional centrosome.

10.1126/science.1182179

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Highlights From Our Daily News Coverage

**Five New Exoplanets Run the Gamut
From Styrofoam to Ice**

'Fluffy' Jupiters and a Neptune-like world bring astronomers closer to an extrasolar Earth.

Mosquitoes: Love at First Buzz

Insects mate only with those that can sing with them in perfect harmony.

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Robot submersible captures rare creatures in the act of devouring sea anemones.

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EDITORIAL GUIDE: 2009—

Signaling Breakthroughs of the Year

E. M. Adler

The signaling breakthroughs of 2009 emphasize the importance of looking beyond linear signaling pathways.

**RESEARCH ARTICLE: Impaired $\alpha_{IIb}\beta_3$ Integrin
Activation and Shear-Dependent Thrombus
Formation in Mice Lacking Phospholipase D1**

M. Elvers et al.

In the absence of PLD1, platelets do not form stable aggregates under high shear conditions.

**PERSPECTIVE: New Endogenous Regulators
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Extracellular stimuli can elicit alterations in gene transcription through regulation of histone deacetylases by sphingosine-1-phosphate.

PODCAST

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Chief Scientific Editor Michael Yaffe reviews the year in *Science Signaling*.

SCIENCE CAREERS

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**Taken for Granted: A Shot at Transforming
America's Energy Future**

B. L. Benderly

A postdoc's new company wins one of the 37 coveted first-round ARPA-E grants.

Generating Science and Public Interest

E. Pain

Portuguese cellular biologist Mónica Bettencourt Dias sees promoting science communication as an integral part of her job.

**MySciNet: Sell Yourself—Refining the Personal
Statement**

B. Rybarczyk

A career adviser offers tips on writing a critical piece of your graduate school application.

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**COMMENTARY: Biotechnology—
Delivering on the Promise**

J. C. Greenwood

Biotechnology offers concrete hope for biomedical innovation.

**PERSPECTIVE: Antisense Gets a Grip
on miR-122 in Chimpanzees**

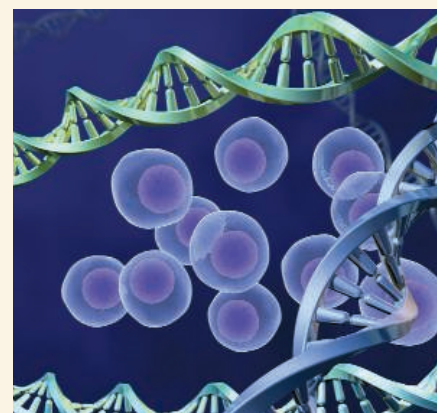
A. D. Branch and C. M. Rice

MicroRNAs may serve as prime targets for new life-saving therapies for patients with liver disease.

**RESEARCH ARTICLE: Modeling an Anti-Amyloid
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V. W. Chow et al.

Simultaneous reduction of two enzymes involved in Alzheimer's disease ameliorates symptoms in aged mice.



SCIENCE TRANSLATIONAL MEDICINE
Policy changes that buoy biotechnology.

**RESEARCH ARTICLE: Elafin Is a Biomarker
of Graft Versus Host Disease of the Skin**

S. Paczesny et al.

Plasma elafin levels correlate with graft versus host disease of the skin and long-term survival.

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