

EDITORIAL

- 126 Spreading the Spirit of EMBO
Maria Leptin

NEWS OF THE WEEK

- 130 U.S. Panel Favors Wider Use of Preventive Drug Treatment
- 131 2010 Science Budget Not Apocalyptic, as Feared
- 132 After Long March, Scientists Create 'Chinese NIH'
- 132 Europe's Bats Resist Fungal Scourge of North America
- 133 Fatal Fire and Tritium Poisoning Leave Nuclear Labs Searching for Answers
- 133 From *Science's* Online Daily News Site
- 133 From the *Science* Policy Blog

NEWS FOCUS

- 134 From Medfly to Moth: Raising a Buzz of Dissent
Gaps in Moth Logic
- 137 Plan to Merge Texas Schools Runs Into Faculty Opposition
- 138 Next Wave of Metamaterials Hopes to Fuel the Revolution
- 140 Virtual Archaeologists Recreate Parts of Ancient Worlds
- 142 The Next Big Beam?
>> *Science Podcast*

LETTERS

- 144 Editorial Expression of Concern
B. Alberts
Financial Conflicts of Interest Worth Knowing
K. B. Wray

- Honing the Geoengineering Strategy
B. D. Russell and S. D. Connell
- Incentives: Encouraging Adventurous Ideas
J. A. Trapani et al.
- Incentives: Stimulus Missed an Opportunity
R. Roy

BOOKS ET AL.

- 146 *Idiot Savant*
written and directed by R. Foreman,
Inside Out
T. Björfors, director,
Kepler
P. Glass, composer,
reviewed by S. Firestein

POLICY FORUM

- 148 Mountaintop Mining Consequences
M. A. Palmer et al.

PERSPECTIVES

- 150 Directing the Centromere Guardian
J.-P. Javerzat
>> *Research Article p. 172*
- 151 Deep Mantle Properties
K. Hirose
>> *Report p. 193*
- 152 Clarity on Honey Bee Collapse?
F. L. W. Ratnieks and N. L. Carreck
- 154 Valuing Common Species
K. J. Gaston
- 155 Electron Nematic Phases Proliferate
E. Fradkin and S. A. Kivelson
>> *Report p. 181*

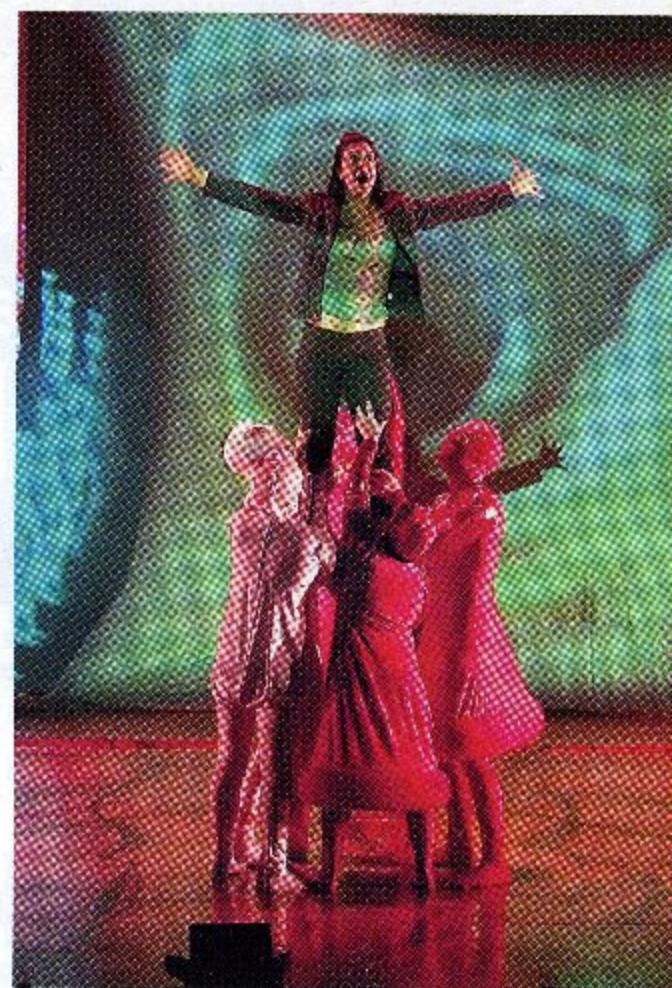
REVIEW

- 167 CRISPR/Cas, the Immune System of Bacteria and Archaea
P. Horvath and R. Barrangou

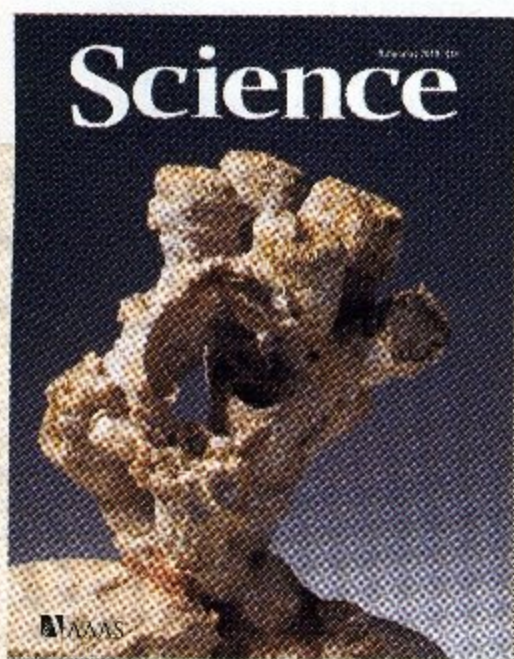
CONTENTS continued >>



page 134



page 146



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

DEPARTMENTS

- 123 This Week in *Science*
- 127 Editors' Choice
- 128 *Science* Staff
- 129 Random Samples
- 221 New Products
- 222 *Science* Careers

BREVIA

- 171 **Punishers Benefit From Third-Party Punishment in Fish**
N. J. Raihani et al.
In cleaner fish, punishment of foraging partners who cheat a client benefits punishers by increasing future cooperation.
>> *Science Podcast*

RESEARCH ARTICLES

- 172 **Phosphorylation of H2A by Bub1 Prevents Chromosomal Instability Through Localizing Shugoshin**
S. A. Kawashima et al.
Phosphorylation of the chromatin protein histone H2A plays a critical role in chromosome segregation during cell division.
>> *Perspective p. 150*

REPORTS

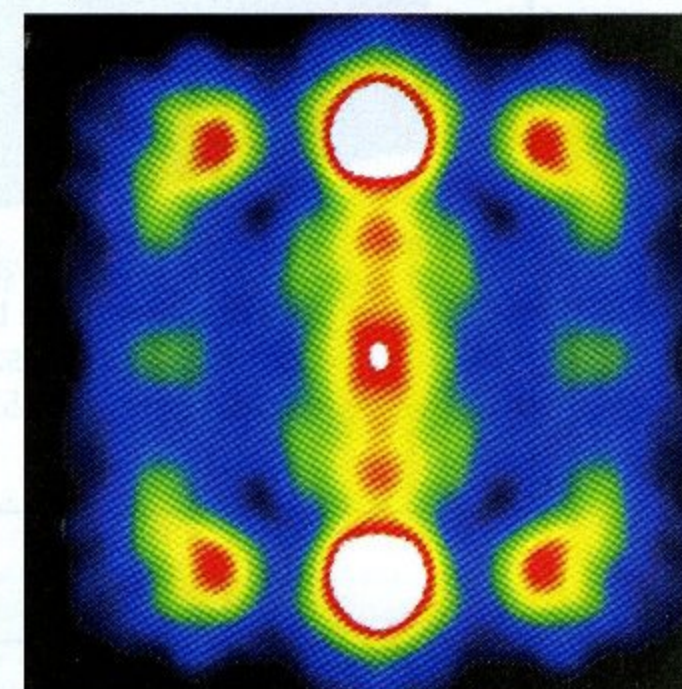
- 177 **Quantum Criticality in an Ising Chain: Experimental Evidence for Emergent E_8 Symmetry**
R. Coldea et al.
A long-predicted hidden symmetry in spin ordering has been observed experimentally at temperatures near absolute zero.
- 181 **Nematic Electronic Structure in the "Parent" State of the Iron-Based Superconductor $\text{Ca}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$**
T.-M. Chuang et al.
Unusual electronic ordering was observed in surface measurements of an underdoped phase of a ferropnictide superconductor.
>> *Perspective p. 155*
- 185 **Energy-Conversion Properties of Vapor-Liquid-Solid-Grown Silicon Wire-Array Photocathodes**
S. W. Boettcher et al.
The use of copper catalysts helps to increase charge-carrier mobilities in silicon microwire growth.
- 188 **Two White Dwarfs with Oxygen-Rich Atmospheres**
B. T. Gänsicke et al.
Two white dwarfs may have evolved from intermediate-mass stars that avoided exploding as supernovae.
- 190 **E-Type Asteroid (2867) Steins as Imaged by OSIRIS on Board Rosetta**
H. U. Keller et al.
Incident sunlight probably caused this asteroid to spin, which redistributed its mass and smoothed its surface.

- 193 **Iron Partitioning and Density Changes of Pyrolite in Earth's Lower Mantle**
T. Irifune et al.
Increasing the compositional complexity of mantle samples causes an electronic spin transition to occur at lower pressures.
>> *Perspective p. 151*
- 196 **Reefs as Cradles of Evolution and Sources of Biodiversity in the Phanerozoic**
W. Kiessling et al.
Analysis of fossil evidence indicates that reefs were disproportionately important in the origination of new species.
- 198 **Therapeutic Silencing of MicroRNA-122 in Primates with Chronic Hepatitis C Virus Infection**
R. E. Lanford et al.
Targeting a microRNA required for hepatitis C virus infection reduces disease symptoms in chimpanzees.
- 202 **Topology Links RNA Secondary Structure with Global Conformation, Dynamics, and Adaptation**
M. H. Bailor et al.
Topological constraints imposed by the secondary structure determine the global conformation ensemble sampled by RNA.
- 206 **Structure of an RNA Polymerase II-TFIIB Complex and the Transcription Initiation Mechanism**
X. Liu et al.
X-ray structures provide more details on the initiation of transcription.
- 210 **A Transient Niche Regulates the Specification of *Drosophila* Intestinal Stem Cells**
D. Mathur et al.
Intestinal stem cell progenitors use Notch signaling to specify a niche cell that remains undifferentiated until metamorphosis.
- 213 **Essential Role of the Histone Methyltransferase G9a in Cocaine-Induced Plasticity**
J. Maze et al.
Cocaine suppression of histone methylation in the nucleus accumbens mediates the drug's ability to enhance reward.
>> *Science Podcast*
- 217 **Overexpression of Alpha2A-Adrenergic Receptors Contributes to Type 2 Diabetes**
A. H. Rosengren et al.
Sequence variations in an adrenergic receptor gene cause reduced insulin secretion and contribute to type 2 diabetes.

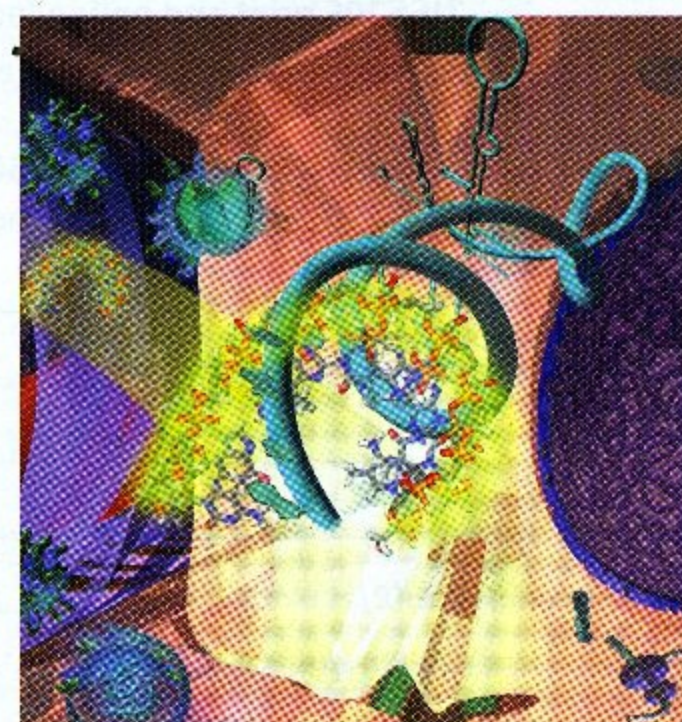
CONTENTS continued >>



page 152



pages 155 & 181



page 198