

SCIENCE

CONTENIDO

VOLUME 329 No. 5995, AUGUST 2010

EDITORIAL

- 996 What Is STEM Education?
Rodger W. Bybee.

NEWS OF THE WEEK

- 1000 New XMRV Paper Looks Good, Skeptics Admit — Yet Doubts Linger.
- 1001 Hard Summer for Corals Kindles Fears for Survival of Reefs.
- 1002 Astronomers Hope Their Prize Telescope Isn't Blinded by the Light.
- 1003 U. S. Physicists Eye Australia for New Site of Gravitational-Wave Detector.
- 1004 To Scientists' Dismay, Mixed-Up Cell Lines Strike Again.
- 1005 From *Science's* Online Daily News Site.
- 1006 Organizers Panned for Omitting Israelis From Meeting in Jordan.
- 1006 NSF Turns Math Earmark on Its Ear to Fund New Institute.
- 1007 From the *Science* Policy Blog.

NEWS FOCUS

- 1008 Google Earth Shows Clandestine Worlds.
>> [Science Podcast](#)
- 1010 From Pigs to People: The Emergence of a New Superbug.

LETTERS

- 1012 Dietary Restriction: Standing Up for Sirtuins.
J. A. Baur et al.
Response *L. Fontana and L. Partridge.*
Response *V. D. Longo.*

Dietary Restriction: Theory Fails to Satiates.

L. Hayflick.
Response *L. Fontana et al.*

1013 Technical Comment Abstracts.

BOOKS ET AL.

1016 Teaching Children Science.
S. G. Kohlstedt, reviewed by M. V. Barrow Jr.

1017 The Invisible Gorilla.
C. Chabris and D. Simons, reviewed by A. Oliva.

POLICY FORUM

1018 Scenario-Building for the Deepwater Horizon Oil Spill.
G. E. Machlis and M. K. McNutt.

PERSPECTIVES

1020 Fine-Scale Modeling of Global Plate Tectonics.
T. Becker.
>> [Research Article p. 1033](#)

1021 Prime, Boost, and Broaden.
R. W. Doms.
>> [Report p. 1060](#)

1022 Decisions Made Better.
M. O. Ernst.
>> [Report p. 1081](#)

1024 Microenvironment Mimicry.
M. Bhatia.
>> [Report p. 1078](#)

1025 Opening the Door to Peptide-Based Porous Solids.
P. A. Wright.
>> [Report p. 1053](#)

1026 Looking Inside Adenovirus.
S. C. Harrison.
>> [Research Article p. 1038; Report p. 1071](#)

SCIENCE PRIZE ESSAY

1028 The Universe Online.
M.J. Raddick and A. S. Szalay.

BREVIA

- 1032 CoRoT Reveals A Magnetic Activity Cycle in a Sun-Like Star.
R. A. García et al.
Observations of a distant star reveal a magnetic activity cycle similar to that of the Sun.

RESEARCH ARTICLE

- 1033 The Dynamics of Plate Tectonics and Mantle Flow: From Local to Global Scales.
G. Stadler et al.
Computational advances enable the modeling of global geophysical processes to the scale of a kilometer.
- 1038 Atomic Structure of Human Adenovirus by Cryo-EM Reveals Interactions Among Protein Networks.
H. Liu et al.
High-resolution structures provide a basis for optimizing adenovirus as a vaccine and gene-therapy vector.
>> *Perspective p. 1026; Report p. 1071*

REPORTS

- 1043 Strange Metal Transport Realized by Gauge/Gravity Duality.
T. Faulkner et al.
Black hole theory is used to develop a mathematical description of a class of metals with unusual electronic properties.
- 1047 Dynamical Instability Produces Transform Faults at Mid-Ocean Ridges.
T. Gerya.
Transform faults on the sea floor are rotated and stretched sections of the mid-ocean ridge.
- 1050 The Chlorine Isotope Composition of the Moon and Implications for an Anhydrous Mantle.
Z. D. Sharp et al.
The range of chlorine isotope values of the Moon is distinct from those of Earth and meteorites, indicating that the Moon is dry.
- 1053 An Adaptable Peptide-Based Porous Material.
J. Rabone et al.
Conformational changes in a porous material during the sorption of small molecules lead to a dynamic increase in porosity.
>> *Perspective p. 1025*
- 1057 Trapping a Diradical Transition State by Mechanochemical Polymer Extension.
J. M. Lenhardt et al.
Strained carbon rings in the backbone of a polymer can be opened by external application of shear forces.
- 1060 Induction of Broadly Neutralizing H1N1 Influenza Antibodies by

Vaccination.

C-J Wei et al.

An influenza virus vaccine elicits a broadly neutralizing, cross-protective antibody response in mice, ferrets, and nonhuman primates.

>> [Perspective p. 1021](#)

1065 Secreted Peptide Signals Required for Maintenance of Root Stem Cell Niche in *Arabidopsis*.

Y. Matsuzaki et al.

Short-range signaling by sulfated peptides maintains root stem cells.

1068 Genomic Comparison of the Ants *Camponotus Floridanus* and *Harpegnathos saltator*.

R. Bonasio et al.

Comparison reveals the epigenetic controls on caste development in ants.

>> [Science Podcast](#)

1071 Crystal Structure of Human Adenovirus at 3.5 Å Resolution.

V. S. Reddy et al.

High-resolution structures provide a basis for optimizing adenovirus as a vaccine and gene-therapy vector.

>> [Perspective p. 1026](#); [Research Article p. 1038](#)

1075 Insects Betray Themselves in Nature to Predators by Rapid Isomerization of Green Leaf Volatiles.

S. Allmann and I. T. Baldwin.

Damage caused by a caterpillar releases compounds that are transformed by the pest's saliva in to a predator attractant.

1078 Substrate Elasticity Regulates Skeletal Muscle Stem Cell Self-Renewal in Culture.

P. M. Gilbert et al.

Muscle stem cells prefer a soft substrate.

>> [Perspective p. 1024](#)

1081 Optimally Interacting Minds.

B. Bahrami et al.

Sharing choices and confidence in those choices can be an empowering experience.

>> [Perspective p. 1022](#)

1085 Phosphatidic Acid Is a pH Biosensor That Links Membrane Biogenesis to Metabolism.

B. P. Young et al.

Lipid signaling in yeast is regulated by intracellular pH.

DEPARTMENTS

995 [This Week in Science](#)

997 [Editors' Choice](#)

998	<i>Science Staff</i>
999	Random Samples
1030	AAAS News & Notes
1089	New Products
1090	<i>Science Careers</i>

COVER

Dynamic interaction of tectonic plates in the southwest Pacific Ocean Computed from a flow model of Earth's interior (arrows show predicted velocity). The computational mesh, for which color represents viscosity (yellow, softer; blue, stiffer), is refined to resolve the forces in the deep mantle that are coupled directly into the edges of plates through narrow slabs. Red lines indicate low-viscosity zones corresponding to plate boundaries. See page 1033.

Image: Georg Stadker, The University of Texas at Austin.