

EDITORIAL

- 1646 Shovel-Ready Science?
Alice P. Gast

NEWS OF THE WEEK

- 1654 Madagascar's Coup Endangers Science and Scientists
- 1655 Arctic Summer Sea Ice Could Vanish Soon But Not Suddenly
- 1656 OSTP, NOAA Chiefs Finally Get a Chance to Lead
- 1656 Koonin Tapped at DOE, Which Lays Out New Spending
- 1657 U.K. Funder Accused of 'Blacklisting' Repeatedly Unsuccessful Applicants
- 1657 From *Science's* Online Daily News Site
- 1658 Twins May Think Alike Too, MRI Brain Study Suggests
>> Report p. 1737
- 1658 Oddly, Too Much Weirdness Slows a Quantum Computer Down
- 1659 Hughes Backs Institute at Epicenter of HIV and Resistant TB
- 1660 CIRM Close-Hauled, Seeks Bonds to Sustain Headway
- 1660 Most State Stem Cell Efforts Staying Afloat
- 1661 From the *Science* Policy Blog

NEWS FOCUS

- 1662 Are You Ready to Become a Number?
- 1665 California's Water Crisis: Worse to Come?
- 1666 Can a Shotgun Wedding Help NASA and ESA Explore the Red Planet?
- 1668 *Piled Higher and Deeper: The Everyday Life of a Grad Student*
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- 1671 Sauropods Kept Their Heads Down
R. S. Seymour
Response
P. M. Sander et al.
Specimens Versus Sequences
G. Zhang
Response
B. J. Strasser

BOOKS ET AL.

- 1673 *Endless Forms: Charles Darwin, Natural Science and the Visual Arts*
D. Donald and J. Munro, Curators and Eds., reviewed by H. Ritvo
- 1674 *Emerging Model Organisms*
Cold Spring Harbor Laboratory Press, reviewed by J. M. W. Slack
- 1675 Browsings

EDUCATION FORUM

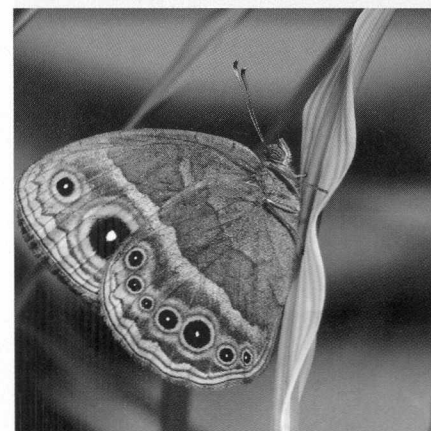
- 1676 Professional Science Master's Programs Merit Wider Support
R. R. Colwell
>> *Science Podcast*

PERSPECTIVES

- 1678 The Art of Making an Exit
F. Carlsson and E. J. Brown
>> Report p. 1729
- 1679 Through a Mirror, Differently
J. A. Sheps
>> Report p. 1718
- 1680 Producing Transportation Fuels with Less Work
D. Hildebrandt et al.
- 1682 Pressurized Viruses
W. M. Gelbart and C. M. Knobler
- 1683 Dangers In and Out
M. E. Bianchi and A. A. Manfredi
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BREVIA

- 1687 Queen Succession Through Asexual Reproduction in Termites
K. Matsuura et al.
Queen termites produce their successors asexually but use normal sexual reproduction to produce other colony members.

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COVER

False-color, aberration-corrected transmission electron microscope image of a suspended single atomic layer of graphene. When an electron beam induces ejection of an atom from the edge of an intentionally made ~3-nm hole (black), the hole enlarges; the remaining edge carbon atoms rearrange from perfect hexagons into predicted metastable configurations. See page 1705.

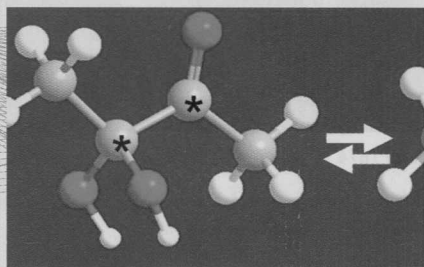
Image: Zettl Research Group and National Center for Electron Microscopy, Lawrence Berkeley National Laboratory; 3D visualization via WSxM software

DEPARTMENTS

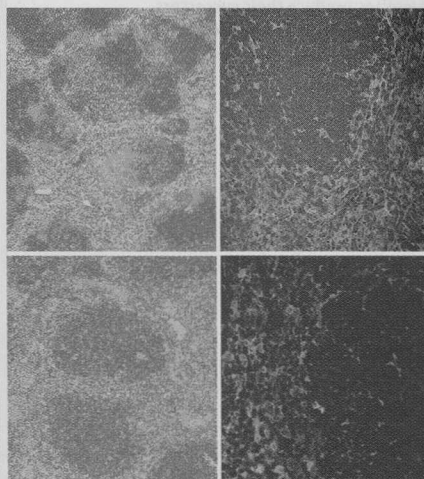
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- 1647 Editors' Choice
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RESEARCH ARTICLES

- 1688 Fermi Observations of High-Energy Gamma-Ray Emission from GRB 080916C**
The Fermi LAT and Fermi GBM Collaborations
 This highly luminous gamma-ray burst had the largest apparent energy release yet measured.
- 1693 Comprehensive Characterization of Genes Required for Protein Folding in the Endoplasmic Reticulum**
M. C. Jonikas et al.
 A nine-protein transmembrane is among several hundred genes found to be critical for protein folding in the endoplasmic reticulum.

REPORTS

- 1698 Lubrication at Physiological Pressures by Polyzwitterionic Brushes**
M. Chen et al.
 Extremely low friction coefficients under high applied pressures are reported for polymeric brushes grafted to a surface.
- 1701 Controlled Formation of Sharp Zigzag and Armchair Edges in Graphitic Nanoribbons**
X. Jia et al.
 Joule heating is used to modify the defect structure along the edges of a graphene ribbon.
- 1705 Graphene at the Edge: Stability and Dynamics**
Ç. Ö. Girit et al.
 Atom rearrangement at the edges of a hole in a sheet of graphene is observed using transmission electron microscopy.
- 1708 Reversible Interactions with para-Hydrogen Enhance NMR Sensitivity by Polarization Transfer**
R. W. Adams et al.
 The nuclear spin polarization of para-hydrogen can be transferred to organic molecules when both bind to a metal complex.
- 1711 Increasing Hyperpolarized Spin Lifetimes Through True Singlet Eigenstates**
W. S. Warren et al.
 Singlet states between strongly coupled spins can be used to enhance the magnetic resonance imaging of organic molecules.
- 1714 Greatly Expanded Tropical Warm Pool and Weakened Hadley Circulation in the Early Pliocene**
C. M. Brierley et al.
 The warm tropics of the Early Pliocene, about 4 million years ago, extended much farther toward the poles than they do today.
- 1718 Structure of P-Glycoprotein Reveals a Molecular Basis for Poly-Specific Drug Binding**
S. G. Aller et al.
 A membrane protein that removes toxins and drugs from cells is caught binding two drug molecules in a large internal cavity.
 >> *Perspective p. 1679*

- 1722 CD24 and Siglec-10 Selectively Repress Tissue Damage-Induced Immune Responses**
G.-Y. Chen et al.
 A signaling pathway involving an immune protein protects cells against the potentially fatal immune response induced by tissue damage.
 >> *Perspective p. 1683*
- 1726 Visualizing Antigen-Specific and Infected Cells in Situ Predicts Outcomes in Early Viral Infection**
Q. Li et al.
 Mapping the rate and magnitude of early events in viral infections predicts the success or failure of immune control.
- 1729 Infection by Tubercular Mycobacteria Is Spread by Nonlytic Ejection from Their Amoeba Hosts**
M. Hagedorn et al.
 Tubercular bacteria can slip undetected from host cell to host cell via specialized exit structures called ejectosomes.
 >> *Perspective p. 1678*
- 1734 Critical Population Density Triggers Rapid Formation of Vast Oceanic Fish Shoals**
N. C. Makris et al.
 A shift from disordered to highly synchronized behavior is seen in hundreds of millions of Atlantic herring at a critical population density.
- 1737 Genetic Contribution to Variation in Cognitive Function: An fMRI Study in Twins**
J. W. Koten Jr. et al.
 Analysis of identical and fraternal twins shows genetic influence on brain activation during arithmetic and memory tasks.
 >> *News story p. 1658; Science Podcast*
- 1740 Changes in Temperature Preferences and Energy Homeostasis in Dystroglycan Mutants**
K. Takeuchi et al.
 Mutation of a membrane protein alters mitochondrial metabolism and temperature preference in flies.
- 1743 Quantitative 3D Video Microscopy of HIV Transfer Across T Cell Virological Synapses**
W. Hübner et al.
 HIV uses the endocytic pathway to spread through virological synapses between immune cells.
 >> *Science Podcast*
- 1747 A Transposon-Based Genetic Screen in Mice Identifies Genes Altered in Colorectal Cancer**
T. K. Starr et al.
 A functional screen in mice uncovers genes that are likely to drive the growth of gut-specific tumors.