

## EDITORIAL

- 377 **New Views on News and Research**  
*Colin Norman and Stewart Wills*

## NEWS OF THE WEEK

- 382 **A roundup of the week's top stories**

## NEWS & ANALYSIS

- 386 **Collins Sparks Furor With Supposed NIH Reshuffling**
- 387 **Did Modern Humans Travel Out of Africa Via Arabia?**  
>> *Report p. 453*
- 388 **Despite Sensitivities, Scientists Seek to Solve Haiti's Cholera Riddle**
- 389 **Pressure Growing to Set a Date to Destroy Remaining Smallpox Stocks**
- 390 **Last-Ditch Effort to Save Embattled Ape**
- 391 **Telling Time Without Turning On Genes**

## NEWS FOCUS

- 392 **A New View of the Birth of *Homo sapiens* The Species Problem**
- 395 **Going the Distance Treading Air**  
>> *Science Podcast*

## LETTERS

- 398 **Recognizing Scientists and Technologists**  
*R. M. White*
- Genetics-Based Field Studies Prioritize Safety**  
*A. A. James*
- Origins of Biodiversity**  
*V. Rull*
- Response**  
*C. Hoorn et al.*
- 400 **CORRECTIONS AND CLARIFICATIONS**

## BOOKS ET AL.

- 401 **Honeybee Democracy**  
*T. D. Seeley, reviewed by L. Chittka and A. Mesoudi*
- 402 **A Rich Bioethics**  
*A. Briggie, reviewed by T. Lewens*
- 403 **High Society**  
*M. Jay et al., curators*

## EDUCATION FORUM

- 404 **Defeating Creationism in the Courtroom, But Not in the Classroom**  
*M. B. Berkman and E. Plutzer*

## PERSPECTIVES

- 406 **Cloud Computing—What's in It for Me as a Scientist?**  
*A. Fox*
- 407 **The Genomic View of Bacterial Diversification**  
*M. C. Enright and B. G. Spratt*  
>> *Research Article p. 430*
- 409 **A Tail of Division**  
*A. F. Cowman and C. J. Tonkin*  
>> *Report p. 473*
- 410 **Why Starving Cells Eat Themselves**  
*D. G. Hardie*  
>> *Report p. 456*
- 411 **Chemical Kinetics Under Test**  
*M. H. Alexander*  
>> *Report p. 448*

## SCIENCE PRIZE ESSAY

- 413 **Penguins and Polar Bears Integrates Science and Literacy**  
*J. Fries-Gaither and K. Lightle*

## ASSOCIATION AFFAIRS

- 416 **Presidential Address: Life on the River of Science**  
*P. Agre*

CONTENTS continued >>



page 395



page 403



## COVER

False-colored scanning electron micrograph of the bacterial pathogen *Streptococcus pneumoniae* (typical length, ~1 micrometer), a major cause of pneumonia and meningitis. On page 430, Croucher *et al.* describe the use of whole-genome sequencing to track the global spread of a rapidly recombining *S. pneumoniae* lineage as it adapts to antibiotic use and vaccine introduction.

*Image: Dennis Kunkel Microscopy, Inc./Visuals Unlimited, Inc.*

## DEPARTMENTS

- 375 **This Week in Science**
- 378 **Editors' Choice**
- 380 **Science Staff**
- 422 **AAAS News & Notes**
- 481 **New Products**
- 482 **Science Careers**



## REVIEW

- 426 **The Newest Synthesis: Understanding the Interplay of Evolutionary and Ecological Dynamics**  
T. W. Schoener

## RESEARCH ARTICLES

- 430 **Rapid Pneumococcal Evolution in Response to Clinical Interventions**  
N. J. Croucher et al.  
*Streptococcus pneumoniae* evades vaccines and drugs by high levels of recombination and rapid adaptation.  
>> *Perspective p. 407*
- 435 **The Genetic Landscape of the Childhood Cancer Medulloblastoma**  
D. W. Parsons et al.  
Genomic analysis of a childhood cancer reveals markedly fewer mutations than what is typically seen in adult cancers.

## REPORTS

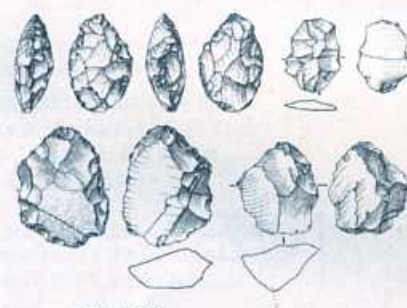
- 439 **Rotational Symmetry Breaking in the Hidden-Order Phase of URu<sub>2</sub>Si<sub>2</sub>**  
R. Okazaki et al.  
The mysterious hidden-order phase of a heavy-fermion compound may be an electronic nematic state.
- 442 **High-Gain Backward Lasing in Air**  
A. Dogariu et al.  
Focused ultraviolet light creates a distant "lasing spark" in air that can then be used for remote detection.
- 445 **Magnetic Bistability of Molecules in Homogeneous Solution at Room Temperature**  
S. Venkataramani et al.  
A photoresponsive ligand is used to reversibly modulate the magnetic properties of a nickel compound.
- 448 **Kinetic Isotope Effects for the Reactions of Muonic Helium and Muonium with H<sub>2</sub>**  
D. G. Fleming et al.  
Calculated reaction rates for two hydrogen isotopes, one 36 times heavier than the other, agree with experiments at 500 kelvin.  
>> *Perspective p. 411*
- 450 **Enhanced Modern Heat Transfer to the Arctic by Warm Atlantic Water**  
R. F. Spielhagen et al.  
Water flow from the Atlantic Ocean into the Arctic through the Fram Strait is warmer than at any time in the past 2000 years.

- 453 **The Southern Route "Out of Africa": Evidence for an Early Expansion of Modern Humans into Arabia**  
S. J. Armitage et al.  
Artifacts in eastern Arabia dating to 100,000 years ago imply that modern humans left Africa early, as climate fluctuated.  
>> *News & Analysis p. 387*
- 456 **Phosphorylation of ULK1 (hATG1) by AMP-Activated Protein Kinase Connects Energy Sensing to Mitophagy**  
D. F. Egan et al.  
A protein kinase links energy stores to control of autophagy.  
>> *Perspective p. 410*
- 461 **Effects of Experimental Seaweed Deposition on Lizard and Ant Predation in an Island Food Web**  
J. Pivovia-Scott et al.  
In a simple island ecosystem, a rare pulse of resource input alters the interaction between predator species.
- 463 **Metagenomic Discovery of Biomass-Degrading Genes and Genomes from Cow Rumen**  
M. Hess et al.  
Metagenomic sequencing of biomass-degrading microbes from cow rumen reveals new carbohydrate-active enzymes.
- 468 **Cleavage of NIK by the API2-MALT1 Fusion Oncoprotein Leads to Noncanonical NF-κB Activation**  
S. Rosebeck et al.  
An oncogenic fusion protein promotes lymphomagenesis by activating a noncanonical signaling pathway.
- 473 **Intramembrane Cleavage of AMA1 Triggers *Toxoplasma* to Switch from an Invasive to a Replicative Mode**  
J. M. Santos et al.  
Membrane proteins govern a change from invasion to replication of an intracellular parasite.  
>> *Perspective p. 409*
- 477 **Big and Mighty: Preverbal Infants Mentally Represent Social Dominance**  
L. Thomsen et al.  
Infants use size as a predictor in judging which contestant will win.  
>> *Science Podcast*

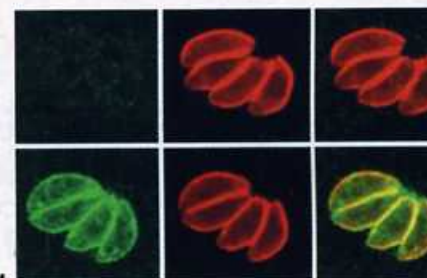
CONTENTS continued &gt;&gt;



page 413



pages 387 &amp; 453



pages 409 &amp; 473