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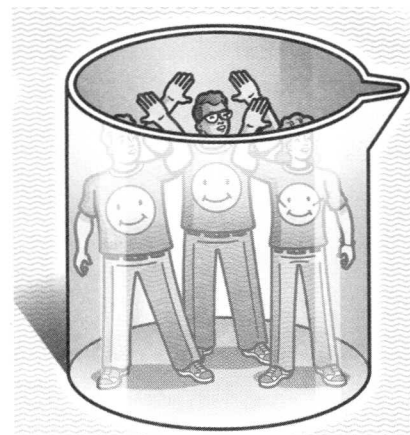
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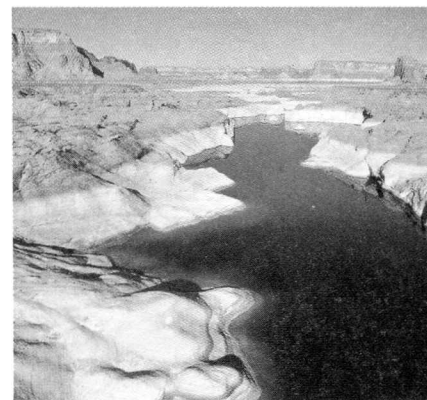
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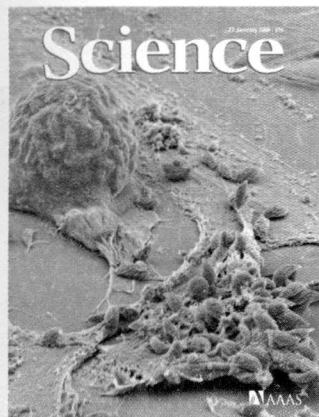


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REVIEW

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COVER

Human cells infected with the protozoan parasite *Toxoplasma gondii* visualized by scanning electron microscopy. In the foreground are parasites (yellow-green) rupturing out of a dying host cell (blue); in the background is an intact host cell containing a large parasite-filled vacuole. See page 530.

Image: Sasha Meshinchi, Michael Robinson, Bjorn Kafsack, and Vern Carruthers

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- 478 **Earth's Degassing: A Missing Ethane and Propane Source**

G. Etiope and P. Ciccioli

Natural gas seepage contributes far more methane, ethane, and propane to the atmosphere than formerly realized.

RESEARCH ARTICLE

- 479 **Language Phylogenies Reveal Expansion Pulses and Pauses in Pacific Settlement**

R. D. Gray et al.

Geographical distribution of Austronesian languages reveals the rate and direction of migrations from Taiwan 5200 years ago.

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- 483 **An Entanglement Filter**

R. Okamoto et al.

A useful tool for quantum information processing transmits entangled photons only when they have the same polarization.

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- 486 **Quantum Teleportation Between Distant Matter Qubits**

S. Olmschenk et al.

Transporting quantum states between trapped ions one meter apart may enable local storage of information in quantum memories.

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- 489 **Femtosecond XANES Study of the Light-Induced Spin Crossover Dynamics in an Iron(II) Complex**

Ch. Bressler et al.

X-ray absorption spectroscopy resolves the dynamics of spin-state interconversions, which take place in less than a picosecond, in a well-studied class of iron compounds.

- 492 **Complementary Active Sites Cause Size-Selective Reactivity of Aluminum Cluster Anions with Water**

P. J. Roach et al.

Water dissociates at similar active sites on anionic aluminum clusters that have different sizes and electronic structure.

- 495 **Brown Clouds over South Asia: Biomass or Fossil Fuel Combustion?**

Ö. Gustafsson et al.

Biomass burning accounts for at least one-half of carbon-rich aerosols in the Asian atmospheric brown cloud that forms each winter.

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- 498 **Genetic Interactions Between Transcription Factors Cause Natural Variation in Yeast**

J. Gerke et al.

Adaptive differences in yeast sporulation arise from single-nucleotide mutations in transcription factors regulating sex.

- 502 **Different T Cell Receptor Signals Determine CD8⁺ Memory Versus Effector Development**

E. Teixeira et al.

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- 505 **Secondary Replicative Function of CD8⁺ T Cells That Had Developed an Effector Phenotype**

O. Bannard et al.

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- 509 **Electron Cryomicroscopy of *E. coli* Reveals Filament Bundles Involved in Plasmid DNA Segregation**

J. Salje et al.

The actin-like filaments that power movement of DNA during bacterial cell division form small bundles of three to five filaments near the nucleoid.

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- 512 **Alternative Zippering as an On-Off Switch for SNARE-Mediated Fusion**

C. G. Giraudo et al.

A structural motif in the protein complex may act as a switch during membrane fusion.

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- 516 **Complexin Controls the Force Transfer from SNARE Complexes to Membranes in Fusion**

A. Maximov et al.

The protein complexin may act as a force-transferring switch during membrane fusion.

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- 521 **Widespread Increase of Tree Mortality Rates in the Western United States**

P. J. van Mantgem et al.

Regional warming is contributing to the recent acceleration of tree deaths seen in undisturbed forests of the western U.S.

>> News story p. 447; Science Podcast

- 524 **The Sphingolipid Transporter Spns2 Functions in Migration of Zebrafish Myocardial Precursors**

A. Kawahara et al.

Normal heart development in zebrafish requires the function of a lipid transporter in a membrane surrounding the yolk, a tissue outside of the embryo proper.

- 527 **The Peopling of the Pacific from a Bacterial Perspective**

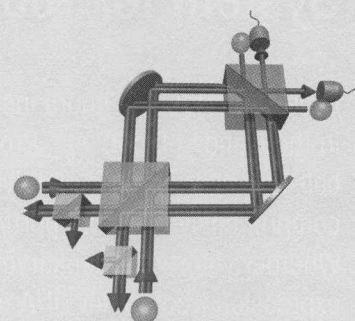
Y. Moodley et al.

The geographical distribution of strains of a specific human pathogen helps to define patterns of colonization out of Taiwan.

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- 530 **Rapid Membrane Disruption by a Perforin-Like Protein Facilitates Parasite Exit from Host Cells**

B. F. C. Kafack et al.

The human and animal parasite that causes toxoplasmosis escapes from host cells by using a perforin-like protein to make holes in the intracellular vacuole in which it resides.

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