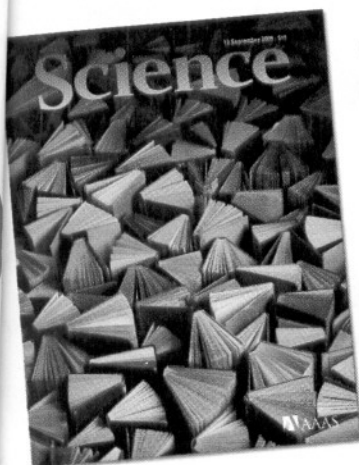




COVER

Millions of books written before the computer era are being digitized for preservation. Because the ink has faded, optical character recognition software cannot decipher many words. Through a repurposing of an existing online security technology called CAPTCHA, these words are being manually transcribed by millions of Web users. See page 1465.

Photo: Joshua Franzos

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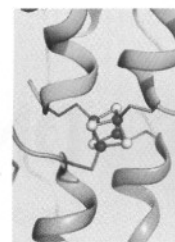
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SCIENCE EXPRESS

www.scienceexpress.org

GENETICS

Species-Specific Transcription in Mice Carrying Human Chromosome 21
M. D. Wilson et al.

An aneuploid mouse carrying a human chromosome shows that genetic sequence can dominate epigenetic, cellular, and organismal effects in determining transcriptional regulation and gene expression.

10.1126/science.1160930

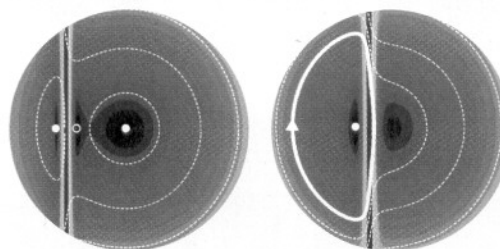
CLIMATE CHANGE

Atmospheric CO₂ and Climate on Millennial Time Scales During the Last Glacial Period

J. Ahn and E. J. Brook

A detailed gas record from the Byrd ice core from 90,000 to 20,000 years ago shows that warming episodes tracked high CO₂ levels in Antarctica but lagged by several thousands of years in Greenland.

10.1126/science.1160832



APPLIED PHYSICS

Cavity Optomechanics with a Bose-Einstein Condensate

F. Brennecke, S. Ritter, T. Donner, T. Esslinger

Coupling a Bose-Einstein condensate to an optical cavity holding a few trapped photons provides a sensitive probe of mechanical oscillations in the quantum regime.

10.1126/science.1163218

CLIMATE CHANGE

Northern Hemisphere Controls on Tropical Southeast African Climate During the Past 60,000 Years

J. E. Tierney et al.

Abrupt changes in precipitation and temperature resolved in a record spanning the past 60,000 years from Lake Tanganyika, East Africa, are coeval with Northern Hemisphere climate events.

10.1126/science.1160485

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M. R. Heath

full text at www.sciencemag.org/cgi/content/full/321/5895/1446b

Response to Comment on "A Global Map of Human Impact on Marine Ecosystems"

K. A. Selkoe et al.

full text at www.sciencemag.org/cgi/content/full/321/5895/1446c

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BREVIA

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A Mutation in Hairless Dogs Implicates *FOXI3* in Ectodermal Development 1462

C. Drögemüller et al.

Mutations in a transcription factor gene involved in ectodermal development cause a lack of hair and abnormal teeth in Chinese Crested, Mexican, and Peruvian hairless dogs.

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Enhanced Sensitivity of Photodetection via Quantum Illumination 1463

S. Lloyd

Quantum-mechanically entangled light, in which one photon is kept as a reference, can exponentially improve the imaging of an object, as compared with unentangled illumination. >> *News story p. 1433*

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reCAPTCHA: Human-Based Character Recognition via Web Security Measures 1465

L. von Ahn et al.

A security system that relies on the superior performance of humans in comparison to computers in reading distorted text can be harnessed for digitized scanned documents.

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A Rubberlike Stretchable Active Matrix Using Elastic Conductors 1468

T. Sekitani et al.

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J. S. Kim et al.

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The Magnetic Memory of Titan's Ionized Atmosphere 1475

C. Bertucci et al.

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GEOPHYSICS

Postseismic Relaxation Along the San Andreas Fault 1478 at Parkfield from Continuous Seismological Observations

F. Brenguier et al.

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ATMOSPHERIC SCIENCE

Atmospheric Warming and the Amplification of Precipitation Extremes 1481

R. P. Allan and B. J. Soden

Satellite data show that in the tropics, heavy rain events have increased in warmer months and decreased in colder months, more than predicted by climate models.

PALEONTOLOGY

Superiority, Competition, and Opportunism in the Evolutionary Radiation of Dinosaurs 1485

S. L. Brusatte, M. J. Benton, M. Ruta, G. T. Lloyd

During their early radiation, dinosaur morphology evolved at comparable rates to that of competing archosaurs, implying that opportunity, not superiority, influences their success.

ECOLOGY

Niche Partitioning Increases Resource Exploitation 1488 by Diverse Communities

D. L. Finke and W. E. Snyder

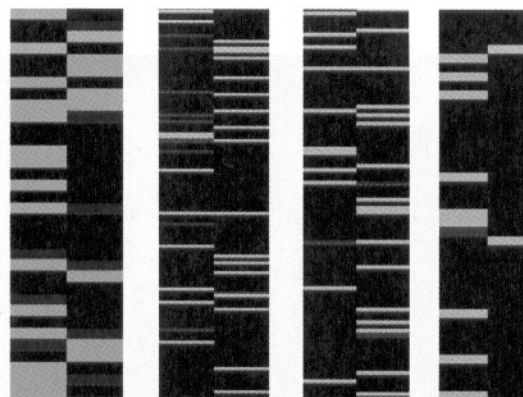
In an ecosystem comprising a parasite, an aphid, and a radish, the use of different resources by each species, not species diversity per se, increases overall consumption.

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Degradation of microRNAs by a Family of Exoribonucleases in *Arabidopsis* 1490

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C.-H. Chen et al.

A compound that activates the mitochondrial enzyme aldehyde dehydrogenase-2 reduces the extent of heart damage in a rodent model of heart attack. >> *Science Podcast*

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Dual Origin of Tissue-Specific Progenitor Cells in *Drosophila* Tracheal Remodeling 1496

M. Weaver and M. A. Krasnow

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>> *Perspective p. 1450*

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FBXW7 Targets mTOR for Degradation and Cooperates with PTEN in Tumor Suppression 1499

J.-H. Mao et al.

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Unsupervised Natural Experience Rapidly Alters Invariant Object Representation in Visual Cortex 1502

N. Li and J. J. DiCarlo

Neurons in the most complex area of the brain's visual cortex can respond to a particular object in any orientation by rapidly learning to associate multiple views of that object.

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Conformational Switch of Syntaxin-1 Controls Synaptic Vesicle Fusion 1507

S. H. Gerber et al.

The synaptic vesicle protein that mediates membrane fusion during exocytosis also regulates the rate and extent of this process by controlling vesicle tethering.



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