

COVER

The surface of the Sun shows rapidly changing patterns due to convection, as well as global oscillations of very low amplitude. The CoRoT (Convection Rotation and Planetary Transits) satellite, launched in December 2006, has now measured both phenomena in other stars. See page 558.

Image: Thomas Berger; ISP/Royal Swedish Academy of Sciences

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SCIENCE EXPRESS

www.scienceexpress.org

EVOLUTION

Variation in Evolutionary Patterns Across the Geographic Range of a Fossil Bivalve

M. Grey, J. W. Haggart, P. L. Smith

Within a fossil bivalve genus, evolution tended to occur as a random walk at the highest latitudes and to be in stasis mode in deep marine environments.

10.1126/science.1162046

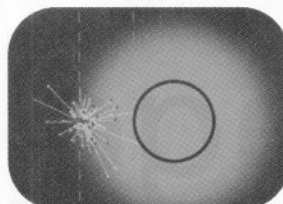
CELL BIOLOGY

De Novo Formation of a Subnuclear Body

T. E. Kaiser, R. V. Intine, M. Dundr

The Cajal body, a nuclear structure for small ribonucleoprotein metabolism, can self-assemble from any one of its components immobilized on a substrate.

10.1126/science.1165216



CELL BIOLOGY

Regulation of Microtubule Dynamics by Reaction Cascades Around Chromosomes

C. A. Athale, A. Dinarina, M. Mora-Coral, C. Pugieux, F. Nedelec, E. Karsenti

A reaction-diffusion model involving regulatory molecules and a microtubule-stabilizing phosphoprotein predicts the spatial distribution of microtubules during cell division.

10.1126/science.1161820

PLANETARY SCIENCE

Lack of Exposed Ice Inside Lunar South Pole Shackleton Crater

J. Haruyama et al.

A view into the permanently shaded Shackleton crater from the SELENE (KAGUYA) spacecraft now orbiting the Moon shows that it lacks large visible water-ice deposits.

10.1126/science.1164020

BREVIA

EVOLUTION

Genetic Compatibility Affects Queen and Worker Caste Determination

T. Schwander and L. Keller

Although environmental signals regulate whether female ants become sterile workers or queens, genetic interactions between their parental genomes also influence the phenotype.

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RESEARCH ARTICLE

BIOCHEMISTRY

The Structure of a Transcribing T7 RNA Polymerase in Transition from Initiation to Elongation

K. J. Durniak, S. Bailey, T. A. Steitz

In order to accommodate the elongating RNA transcript, a viral RNA polymerase rotates on its DNA binding promoter to expand the active site.

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REPORTS

ASTROPHYSICS

CoRoT Measures Solar-Like Oscillations and Granulation in Stars Hotter Than the Sun

E. Michel et al.

Satellite measurements of pulsations in three stars similar to but hotter than the Sun show that they are oscillating more vigorously and have a finer-scale granulation.

>> Perspective p. 536; Science Podcast

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ASTROPHYSICS

A Large Excess in Apparent Solar Oblateness Due to Surface Magnetism

M. D. Fivian, H. S. Hudson, R. P. Lin, H. J. Zahid

Satellite measurements indicate that the Sun is more oblate than previous measurements suggested, a shape resulting from the combined effects of rotation and magnetism.

>> Perspective p. 535

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PHYSICS

Complete Characterization of Quantum-Optical Processes

M. Lobino et al.

A method requiring only the light from a laser as an input yields a full characterization of quantum optical processes by probing its effect on classical states.

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Detection of First-Order Liquid/Liquid Phase Transitions in Yttrium Oxide–Aluminum Oxide Melts

G. N. Greaves et al.

Entropy changes induce a levitated oxide melt to undergo an unusual transition between two disordered liquid states in which atomic rearrangements reflect additional unmixing.

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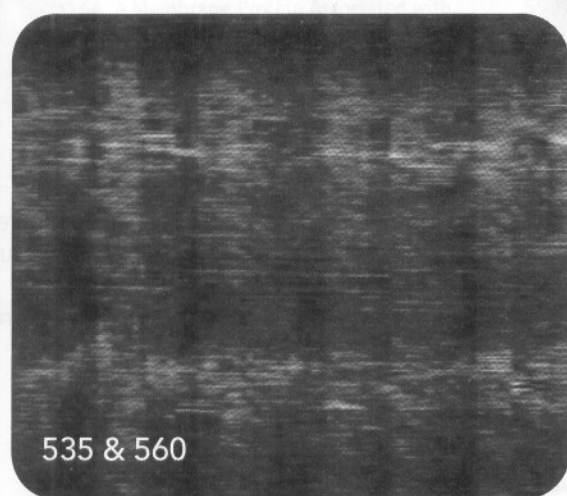
CHEMISTRY

Direct Imaging of Reconstructed Atoms on TiO₂ (110) Surfaces

N. Shibata et al.

Profile views of titania, a widely used material, with a transmission electron microscope show that interstitial sites with a lower oxygen stoichiometry produce its reduced surface.

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X. Wang et al.

The study of controlled collisions between chlorine atoms and molecular hydrogen clarifies that excited electronic states play only a minor role in the formation of hydrochloric acid.

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- Midbody Targeting of the ESCRT Machinery by a Noncanonical Coiled Coil in CEP55** 576

H. H. Lee et al.

As daughter cells separate, final cleavage of the membranes requires a protein with a coiled coil built around an unusual charged core, which recruits other constituents.

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- Functional Traits and Niche-Based Tree Community Assembly in an Amazonian Forest** 580

N. J. B. Kraft, R. Valencia, D. D. Ackerly

Even in a diverse Amazonian forest, trees show particular leaf characteristics that indicate that they are subtly specialized for habitat and growth strategy.

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- White Fat Progenitor Cells Reside in the Adipose Vasculature** 583

W. Tang et al.

Adipocytes (fat cells) originate from precursor cells that reside within the walls of the blood vessels that feed fat tissue.

>> *Perspective p. 542*

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G. Yang et al.

Hydrogen sulfide gas regulates blood pressure and blood vessel function in mice.

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A. Caputo et al.

A transmembrane protein induced in cytokine-treated bronchial epithelial cells seems to be a long-sought primary carrier of a voltage- and calcium-dependent chloride current.

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I. De Smet et al.

A membrane kinase regulates the number of stem cells in the main tip of the root, as well as the de novo generation of stem cells in new laterally projecting roots.

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S. Nagai et al.

The damaged regions of DNA are recruited to the periphery of the nucleus by a complex of nuclear-pore and ubiquitin-modifying proteins, where they are repaired.

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E. H. Bayne et al.

In fission yeast, RNA splicing factors unexpectedly participate in the silencing of centromeric DNA by RNA interference derived from centromeres.

PSYCHOLOGY

- Experiencing Physical Warmth Promotes Interpersonal Warmth** 606

L. E. Williams and J. A. Bargh

When people are given a warm rather than a cold drink, they are more likely to show generous behavior toward others.

>> *Science Podcast*



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