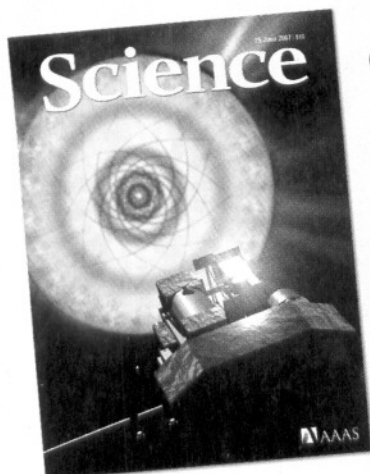




COVER

Artist's view of the Sun's core, showing gravity waves inferred from observations with the Global Oscillation at Low Frequency instrument aboard the Solar and Heliospheric Observatory. These signatures of solar gravity provide clues about the rotation rate of the solar core. See page 1591.

Image: G. Pérez, SMM/IAC

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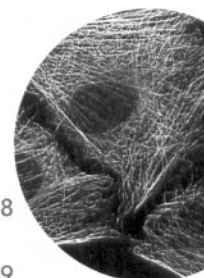
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www.sciencexpres.org

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Reciprocal Th-17 and Regulatory T Cell Differentiation Mediated by Retinoic Acid

D. Mucida et al.

During development, a metabolite of vitamin A directs progenitor immune cells to become cells that prevent inflammation rather than ones that promote it.

10.1126/science.1145697

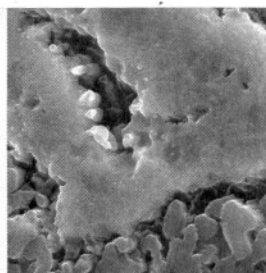
DEVELOPMENTAL BIOLOGY

Noise in Gene Expression Determines Cell Fate in *Bacillus subtilis*

H. Maamar, A. Raj, D. Dubnau

Bacteria that show more random fluctuations in gene expression are more likely to switch to an alternative phenotype in which they can take up foreign genetic material.

10.1126/science.1140818



GEOCHEMISTRY

Remnants of the Early Solar System Water Enriched in Heavy Oxygen Isotopes

N. Sakamoto et al.

Material extremely enriched in the heavy isotopes of oxygen is abundant in the matrix of a primitive meteorite, identifying a distinct water reservoir in the early solar system.

10.1126/science.1142021

PERSPECTIVE: Strange Water in the Solar System

E. D. Young

10.1126/science.1145055

CLIMATE CHANGE

Four Climate Cycles of Recurring Deep and Surface Water Destabilizations on the Iberian Margin

B. Martrat et al.

Alternating penetration of deep ocean waters from southern and northern poles into low latitudes drove century-to-millennial climate changes for at least the past 400,000 years.

10.1126/science.1139994

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Comment on "Carbon-Negative Biofuels from Low-Input High-Diversity Grassland Biomass"

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M. P. Russelle et al.

full text at www.sciencemag.org/cgi/content/full/316/5831/1567b

Response to Comment on "Carbon-Negative Biofuels from Low-Input High-Diversity Grassland Biomass"

D. Tilman, J. Hill, C. Lehman

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The Macroecological Contribution to Global Change Solutions

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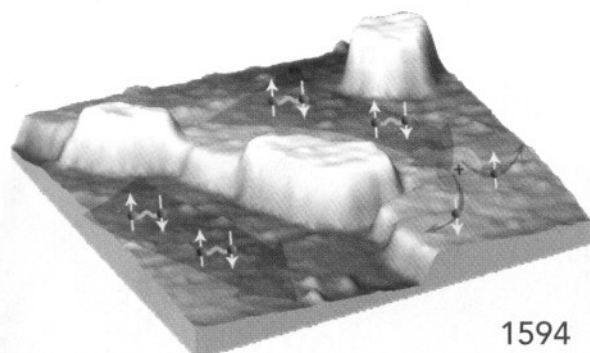
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The Mass of Dwarf Planet Eris

1585

M. E. Brown and E. L. Schaller

Observations of the orbit of dwarf planet Eris' satellite *Dysnomia* indicates that Eris has a density similar to Pluto's, but is about 1.27 times as large.



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The Release 5.1 Annotation of *Drosophila melanogaster* Heterochromatin

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C. D. Smith, S. Shu, C. J. Mungall, G. H. Karpen

DNA near the centromeres of *Drosophila* chromosomes is repetitive and consists of transposons, tandem and satellite repeats, and over 200 coding and noncoding genes. >> Report p. 1625

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Tracking Solar Gravity Modes: The Dynamics of the Solar Core

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R. A. García et al.

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Tuning the Quantum Stability and Superconductivity of Ultrathin Metal Alloys

1594

M. M. Özer et al.

Incorporating small amounts of bismuth into thin lead films adds extra electrons to the film, allowing control of its mechanical stability and superconducting behavior.

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Metal Chlorides in Ionic Liquid Solvents Convert Sugars to 5-Hydroxymethylfurfural

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H. Zhao, J. E. Holladay, H. Brown, Z. C. Zhang

A chromium catalyst efficiently converts glucose, which can be obtained renewably, to a versatile intermediate feedstock usually derived from petroleum.

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J. W. Moreau et al.

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Neural Mechanisms of Visual Attention: How Top-Down Feedback Highlights Relevant Locations 1612

Y. B. Saalmann, I. N. Pigarev, T. R. Vidyasagar

As visual information flows from the retina to the cortex, feedback to neurons farther down the pathway increases activity in specific upstream areas to enable focused spatial attention.

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α -Klotho as a Regulator of Calcium Homeostasis 1615

A. Imura

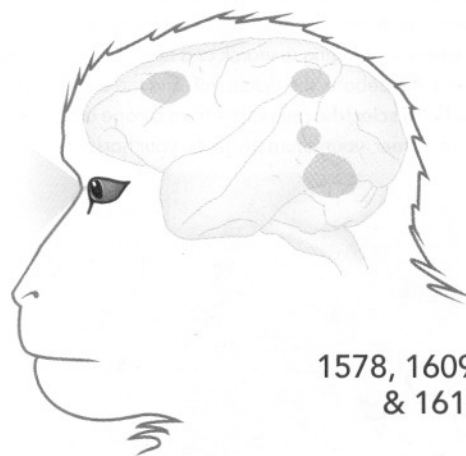
A protein with several reported functions may also influence calcium metabolism by modulating the abundance of the sodium-potassium pump at the plasma membrane.

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J. Bilić et al.

Large, ribosome-sized protein complexes containing receptor and adapter proteins assemble at cell membranes to detect and transduce a critical developmental signal.



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DNA near the centromeres of *Drosophila* chromosomes is repetitive and consists of transposons, tandem and satellite repeats, and over 200 coding and noncoding genes. >> Research Article p. 1586

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The structure of a membrane protein bound to bacterial lipopolysaccharide reveals the first step in how the innate immune system senses the presence of invading bacteria.

>> Perspective p. 1574



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