

Science

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Materials for Electronics

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Materials for Electronics

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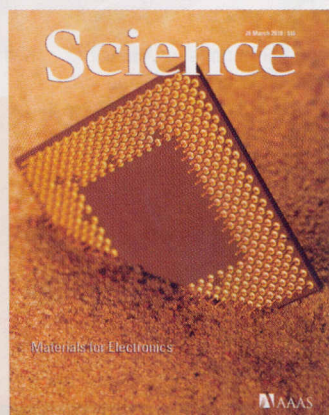
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COVER

Sunset for silicon? The push toward electronics that are smaller, faster, and more flexible requires either new inorganic and organic materials or new functionality for silicon and new transistor designs. See the special section beginning on page 1595.

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- 1613 A Southern Tyrant Reptile
R. B. J. Benson et al.
Fossil evidence indicates that tyrannosaurs also inhabited the southern continents in the late Early Cretaceous period.

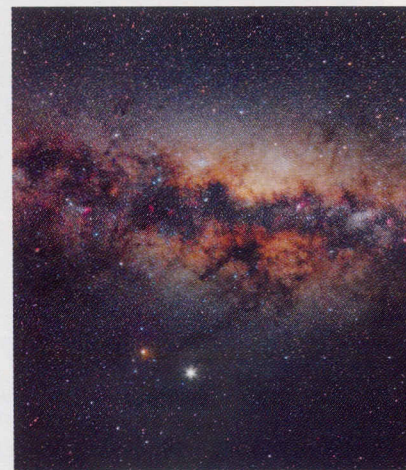
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- 1614 Doc2b Is a High-Affinity Ca^{2+} Sensor for Spontaneous Neurotransmitter Release
A. J. Groffen et al.
Spontaneous synaptic vesicle fusion is triggered by soluble proteins that compete with synaptotagmins to induce membrane curvature.

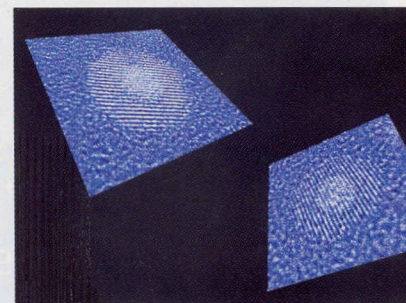
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The CDMS II Collaboration
Details of possible, but unlikely, detection events produced by dark matter are reported.
>> Perspective p. 1582
- 1621 Anomalous Expansion of Attractively Interacting Fermionic Atoms in an Optical Lattice
L. Hackermüller et al.
Thermodynamic effects cause an ultracold potassium gas to expand unexpectedly when the attraction between atoms is increased.
- 1624 Strontium-Doped Perovskites Rival Platinum Catalysts for Treating NO_x in Simulated Diesel Exhaust
C. H. Kim et al.
An inexpensive catalyst shows promise for mitigating pollutants from diesel exhaust without the use of precious metals.
>> Perspective p. 1584
- 1627 Heme-Like Coordination Chemistry Within Nanoporous Molecular Crystals
C. G. Bezzu et al.
Metal-organic framework compounds expose iron atoms for reactions in a manner analogous to heme sites in proteins.
- 1631 Efficient Annealing of Radiation Damage Near Grain Boundaries via Interstitial Emission
X.-M. Bai et al.
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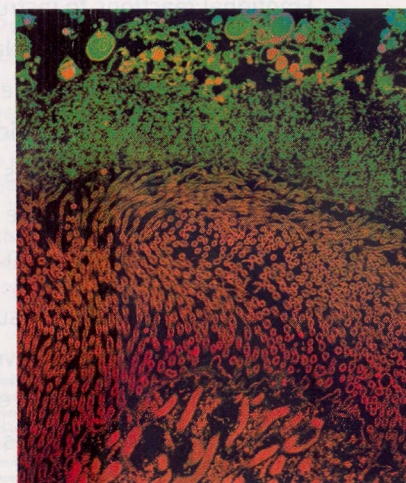
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J. Zhang et al.
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S. Miller et al.
Structural data might provide a foundation to develop specific inhibitors to this class of phosphoinositide 3-kinases.
- 1642 Evolutionary Trade-Offs in Plants Mediate the Strength of Trophic Cascades
K. A. Mooney et al.
The effect of herbivore predators on plant biomass depends on a trade-off between plant growth and resistance to herbivores.
>> Perspective p. 1583
- 1644 A Peroxidase/Dual Oxidase System Modulates Midgut Epithelial Immunity in *Anopheles gambiae*
S. Kumar et al.
Bonding between cell-surface proteins forms a physical barrier in mosquito guts to prevent microbe invasion.
- 1648 A Self-Incompatibility System Explains High Male Frequencies in an Androdioecious Plant
P. Saumitou-Laprade et al.
Male flowers persist in the olive family because males can fertilize hermaphrodites belonging to two self-incompatible groups.
- 1650 The Wnt/ β -Catenin Pathway Is Required for the Development of Leukemia Stem Cells in AML
Y. Wang et al.
The self-renewing cells that drive the growth of leukemia arise, in part, through activation of a well-known cell signaling pathway.
- 1653 β_2 -Adrenergic Receptor Redistribution in Heart Failure Changes cAMP Compartmentation
V. O. Nikolaev et al.
A change in the distribution of a signaling molecule on the surface of heart muscle cells may contribute to heart failure.
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- 1657 Loss of Rap1 Induces Telomere Recombination in the Absence of NHEJ or a DNA Damage Signal
A. Sfeir et al.
The mammalian telomere protein Rap1 prevents the ends of chromosomes from undergoing unscheduled homologous recombination.



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SCIENCEONLINE

SCIENCEEXPRESS

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Structural Basis of Preexisting Immunity to the 2009 H1N1 Pandemic Influenza Virus

R. Xu et al.

An epitope conserved between the 1918 and 2009 pandemic flu viruses explains age-related immunity to the 2009 virus.

10.1126/science.1186430

>> *News story p. 1563; Science Podcast*

Induction of Lymphoidlike Stroma and Immune Escape by Tumors That Express the Chemokine CCL21

J. D. Shields et al.

An immunotolerant microenvironment driven by chemokine expression contributes to tumor growth and spread.

10.1126/science.1185837

Protein Kinase C- θ Mediates Negative Feedback on Regulatory T Cell Function

A. Zanin-Zhorov et al.

Suppressive T cells repurpose inflammatory signaling pathways to promote their suppressive functions.

10.1126/science.1186068

Asian Monsoon Transport of Pollution to the Stratosphere

W. J. Randel et al.

Satellite observations of atmospheric hydrogen cyanide reveal that the Asian monsoon transports air deep into the stratosphere.

10.1126/science.1182274

Major Galaxy Mergers and the Growth of Supermassive Black Holes in Quasars

E. Treister et al.

Obscured and unobscured quasars represent two sequential phases of gas-rich mergers of massive galaxies.

10.1126/science.1184246

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A compound of iron and nitrogen exceeds the known limits for magnetism.

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Nano-Gadget Holds the Salt

New technology could take salt out of ocean water and provide emergency drinking water.

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment

RESEARCH ARTICLE: Gain-of-Function Enhancement of IP₃ Receptor Modal Gating by Familial Alzheimer's Disease-Linked Presenilin Mutants in Human Cells and Mouse Neurons

K.-H. Cheung et al.

PERSPECTIVE: ER Calcium and Alzheimer's Disease—In a State of Flux

M. P. Mattson

Mutations in presenilin 1 may exaggerate Ca²⁺ signaling in neurons, increasing their vulnerability.

RESEARCH ARTICLE: Regulation of Zap70 Expression During Thymocyte Development Enables Temporal Separation of CD4 and CD8 Repertoire Selection at Different Signaling Thresholds

M. Saini et al.

PERSPECTIVE: Two Receptors, Two Kinases, and T Cell Lineage Determination

B. Alarcón and H. M. van Santen

Specification of T cell lineage in the thymus is controlled by the timing and strength of signaling of the tyrosine kinase Zap70.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

A Shifting Drug Industry Means New Opportunities in Translational Research

L. Chiu

Pharmaceutical companies are hiring researchers for their early drug-development programs.

Structuring a Career Around Gallium Nitride

E. Pain

An early success has put the career of materials scientist Rachel Oliver on a fast track.

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SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

COMMENTARY: Taking Risks with Translational Research

I. Mills

Neither a purely corporate nor purely academic model is entirely appropriate to translate genetic data to understand complex diseases.



SCIENCE CAREERS

Hiring researchers for early drug development.

RESEARCH ARTICLE: Cross-Neutralization of 1918 and 2009 Influenza Viruses—Role of Glycans in Viral Evolution and Vaccine Design

C.-J. Wei et al.

>> *News story p. 1563*

PERSPECTIVE: H1N1—Can a Pandemic Cycle Be Broken?

E. C. Settembre et al.

Sites targeted by antibodies against both 1918 and 2009 influenza viruses are blocked by sugars, which could inform future vaccine design.

RESEARCH ARTICLE: A Conformal, Bio-Interfaced Class of Silicon Electronics for Mapping Cardiac Electrophysiology

J. Viventi et al.

Flexible electronics and sensors that stick to moving tissues can enable cardiac electrical activity mapping in animals.

>> *Materials for Electronics section p. 1595*

SCIENCE PODCAST

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Download the 26 March *Science* Podcast to hear about preexisting immunity to the 2009 H1N1 influenza virus, female rodents neglected in lab studies, your letters to *Science*, and more.

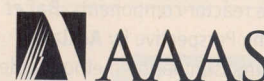
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