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- 1046 The Periodic Table of Videos  
*B. Haran and M. Poliakoff*

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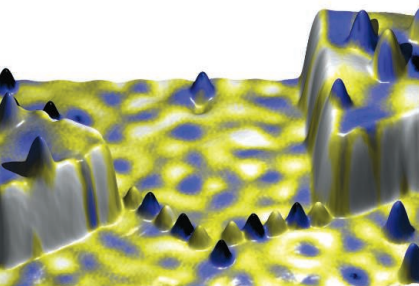
## COVER

A 1-year-old child will spend more time looking at a visual display of moving objects when what he sees is not what he expects. How young children incorporate prior probabilities with current dynamic cues to make predictions about future events can be explained by modeling the child as a Bayesian observer. See the Research Article by Téglás *et al.* on page 1054.

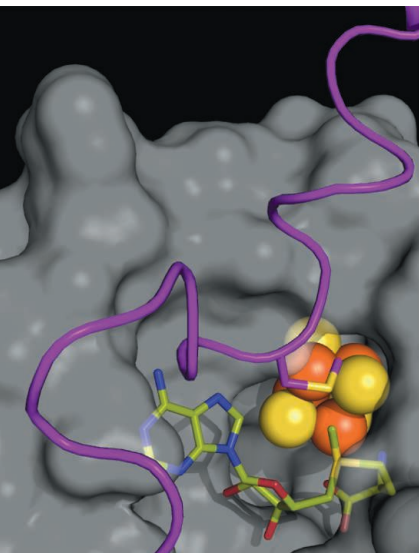
*Photo: Ryan McVay/Getty Images*

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## REVIEW

- 1049 **Dyscalculia: From Brain to Education**  
*B. Butterworth et al.*

## RESEARCH ARTICLE

- 1054 **Pure Reasoning in 12-Month-Old Infants as Probabilistic Inference**  
*E. Téglás et al.*  
Twelve-month-old infants employ Bayesian statistics.

## REPORTS

- 1059 **Experimental Repetitive Quantum Error Correction**  
*P. Schindler et al.*  
An error correction algorithm is applied multiple times to a small quantum system.
- 1062 **Realizing All-Spin-Based Logic Operations Atom by Atom**  
*A. A. Khajetoorians et al.*  
Scanning tunneling microscopy is used to assemble and read out signals from a device based on atomic spins.  
>> *Perspective p. 1039*
- 1065 **Electrically Induced Ferromagnetism at Room Temperature in Cobalt-Doped Titanium Dioxide**  
*Y. Yamada et al.*  
The magnetic properties of a magnetic insulator can be controlled by an electric field at room temperature.  
>> *Perspective p. 1040*
- 1068 **Seismic Imaging of Transition Zone Discontinuities Suggests Hot Mantle West of Hawaii**  
*Q. Cao et al.*  
Hot material upwelling from deep below Hawaii may pool up far below and to the west of the islands.
- 1071 **Computational Design of Virus-Like Protein Assemblies on Carbon Nanotube Surfaces**  
*G. Grigoryan et al.*  
Proteins are designed to bind to specific surfaces while also presenting a programmed surface superstructure.

- 1076 **Impact of Antarctic Circumpolar Current Development on Late Paleogene Ocean Structure**  
*M. E. Katz et al.*  
The modern four-layered ocean structure developed during the early Oligocene, when Antarctica developed permanent ice cover.
- 1079 **Early Warnings of Regime Shifts: A Whole-Ecosystem Experiment**  
*S. R. Carpenter et al.*  
High-frequency monitoring of manipulated and reference lakes enabled early detection of subsequent catastrophic regime shift.
- 1083 **Initiation of Proximal-Distal Patterning in the Vertebrate Limb by Signals and Growth**  
*K. L. Cooper et al.*  
Growth of limb cells in culture conditions with subsequent in vivo transplantation allows the dissection of limb patterning.
- 1086 **Diffusible Signals, Not Autonomous Mechanisms, Determine the Main Proximodistal Limb Subdivision**  
*A. Roselló-Diez et al.*  
Cells compare proximal and distal signals to set their identity along the vertebrate limb.  
>> *Perspective p. 1038*
- 1089 **Structural Basis for Methyl Transfer by a Radical SAM Enzyme**  
*A. K. Boal et al.*  
An enzyme harnesses methyl donation and reductive cleavage of its cofactor within a single active site to methylate RNA.
- 1093 **Human Cytomegalovirus Directly Induces the Antiviral Protein Viperin to Enhance Infectivity**  
*J.-Y. Seo et al.*  
Human cytomegalovirus uses a host-encoded antiviral protein to its own advantage.
- 1097 **Deciphering the Rhizosphere Microbiome for Disease-Suppressive Bacteria**  
*R. Mendes et al.*  
A common plant pathogen induces the growth of disease-suppressive microbes in local soil communities.
- 1100 **Differences Between Tight and Loose Cultures: A 33-Nation Study**  
*M. J. Gelfand et al.*  
The differences across cultures in the enforcement of conformity may reflect their specific histories.  
>> *Perspective p. 1041; Science Podcast*

## SCIENCEONLINE

## SCIENCEEXPRESS

[www.sciencexpress.org](http://www.sciencexpress.org)

### High Pre-Eruptive Water Contents Preserved in Lunar Melt Inclusions

*E. H. Hauri et al.*

Primitive magmatic melt inclusions from the Moon contain as much water as some terrestrial mid-ocean ridge magmas.

10.1126/science.1204626

### Selective Attention from Voluntary Control of Neurons in Prefrontal Cortex

*R. J. Schafer and T. Moore*

The activity of neurons with both visual and motor properties in the frontal eye field can be controlled voluntarily.

10.1126/science.1199892

### TFEB Links Autophagy to Lysosomal Biogenesis

*C. Settembre et al.*

Starvation activates a transcriptional program controlling autophagosome formation, lysosome fusion, and substrate degradation.

10.1126/science.1204592

### Phosphorylation of the Autophagy Receptor Optineurin Restricts *Salmonella* Growth

*P. Wild et al.*

Phosphorylation of an autophagy receptor restricts pathogenic cytosolic bacterial growth.

10.1126/science.1205405

## TECHNICALCOMMENTS

### Comment on "A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico"

*S. B. Joye et al.*

Full text at [www.sciencemag.org/cgi/content/full/332/6033/1033-c](http://www.sciencemag.org/cgi/content/full/332/6033/1033-c)

### Response to Comment on "A Persistent Oxygen Anomaly Reveals the Fate of Spilled Methane in the Deep Gulf of Mexico"

*J. D. Kessler et al.*

Full text at [www.sciencemag.org/cgi/content/full/322/6033/1033-d](http://www.sciencemag.org/cgi/content/full/322/6033/1033-d)

## SCIENCENOW

[www.sciencenow.org](http://www.sciencenow.org)

Highlights From Our Daily News Coverage

### Lousy Flies Explain Weird Evolution of Pigeon Pests

Hitchhiking on flies could help explain why some lice species evolve more closely with their host than others.

<http://scim.ag/lousy-flies>

### Stars With Multiple Planets Abound

The Kepler space telescope spies well more than a hundred of them.

<http://scim.ag/multiple-planets>

### Brains on Jazz Feel the Music

Empathy helps listening musicians judge whether music is improvised or rehearsed.

<http://scim.ag/jazz-brains>

## SCIENCE SIGNALING

[www.sciencesignaling.org](http://www.sciencesignaling.org)

The Signal Transduction Knowledge Environment

24 May issue: <http://scim.ag/ss052411>

### RESEARCH ARTICLE: $\alpha$ -Catenin Is a Tumor Suppressor That Controls Cell Accumulation by Regulating the Localization and Activity of the Transcriptional Coactivator Yap1

*M. R. Silvis et al.*

## PODCAST

*J. F. Martin et al.*

A cell-cell adhesion protein suppresses skin carcinoma development by attenuating the signaling of a transcriptional coactivator in the Hippo pathway.

### RESEARCH ARTICLE: p38 $\alpha$ Signaling Induces Anoikis and Lumen Formation During Mammary Morphogenesis

*H.-C. Wen et al.*

The kinase p38 $\alpha$  may suppress breast cancer by promoting formation of the proper architecture of mammary glands.

### MEETING REPORT: Progress in the Function and Regulation of ADP-Ribosylation

*M. O. Hottiger et al.*

Scientists gathered in Zurich, Switzerland, to discuss new insights into cell, structural, and developmental biology of ADP-ribosylation.

## SCIENCE TRANSLATIONAL MEDICINE

[www.sciencetranslationalmedicine.org](http://www.sciencetranslationalmedicine.org)

Integrating Medicine and Science

25 May issue: <http://scim.ag/stm052511>

### COMMENTARY: Quality Versus Quantity—Assessing Individual Research Performance

*J.-A. Sahel*

Bibliometrics could potentially improve objective evaluation of individual researchers, if qualitative measurements are included.

### RESEARCH ARTICLE: A Therapeutic Antibody Targeting BACE1 Inhibits Amyloid- $\beta$ Production in Vivo

*J. K. Atwal et al.*

### RESEARCH ARTICLE: Boosting Brain Uptake of a Therapeutic Antibody by Reducing Its Affinity for a Transcytosis Target

*Y. J. Yu et al.*

### PERSPECTIVE: Therapeutic Antibodies for Brain Disorders

*S. M. Paul*

## PODCAST

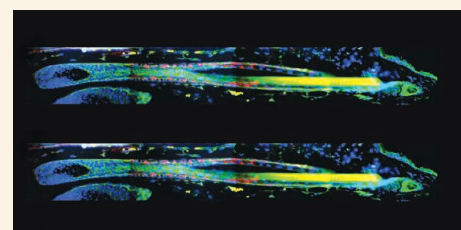
*S. M. Paul and O. M. Smith*

An enzyme implicated in Alzheimer's disease can be inhibited using a human monoclonal antibody that can cross the blood-brain barrier.

### RESEARCH ARTICLE: Indocyanine Green Enables Near-Infrared Fluorescence Imaging of Lipid-Rich, Inflamed Atherosclerotic Plaques

*C. Vinegoni et al.*

An FDA-approved fluorescence imaging agent can detect lipid-rich, inflammatory plaques in arteries.



SCIENCE SIGNALING

Hair follicles, a site of stem cells.

## SCIENCE CAREERS

[www.sciencereers.org/career\\_magazine](http://www.sciencereers.org/career_magazine)

Free Career Resources for Scientists

### Experimental Error: Fetus Don't Fail Me Now

*A. Ruben*

With his daughter still in the embryonic stage, our columnist wonders whether it is too early to steer her toward a career in science.

[http://scim.ag/ee\\_fetus](http://scim.ag/ee_fetus)

### Focus on Aging: Understanding Brain Plasticity

*E. Pain*

Neuroscientist Sara Burke investigates how aging affects the plasticity of neuronal networks and, ultimately, behavior.

[http://scim.ag/pain\\_plasticity](http://scim.ag/pain_plasticity)

## SCIENCE PODCAST

[www.sciencemag.org/multimedia/podcast](http://www.sciencemag.org/multimedia/podcast)

Free Weekly Show

On the 27 May Science Podcast: explaining cultural diversity, robots that mimic manta rays, your Letters to Science, and more.

## SCIENCE INSIDER

[news.sciencemag.org/scienceinsider](http://news.sciencemag.org/scienceinsider)

Science Policy News and Analysis

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