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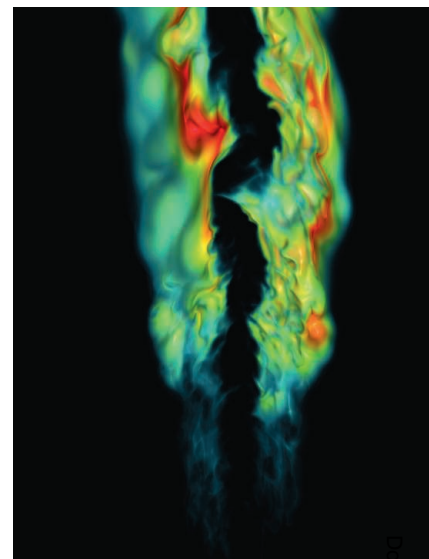
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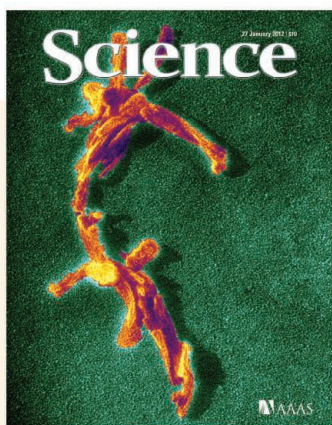
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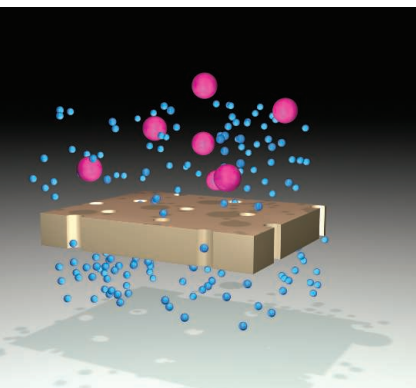
COVER

False-colored transmission electron micrograph of a prion [average dimensions: ~150 nanometers (nm) long, 10 nm thick], the infectious protein responsible for deadly brain diseases in animals and humans. Although cross-species prion transmission may show no detectable sign of disease in the brain, lymphoid tissue is much more susceptible to infection. This discovery may be relevant when assessing the public health risks of exposure to animal prions and silent carriers of prion disease. See page 472.

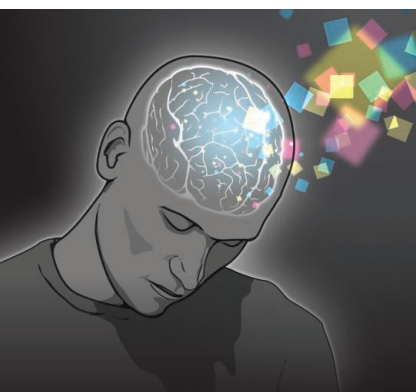
Image: Eye of Science/Photo Researchers, Inc.

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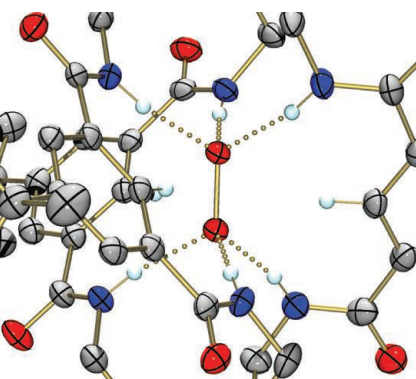
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444 Ultrafast Viscous Permeation of Organic Solvents Through Diamond-Like Carbon Nanosheets
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447 An All-Silicon Passive Optical Diode
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467 Heavy Livestock Grazing Promotes Locust Outbreaks by Lowering Plant Nitrogen Content
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High-protein plants inhibit locust swarming, which explains why grazed systems are more prone to outbreaks.

>> *Science Podcast*

469 Depth Perception from Image Defocus in a Jumping Spider
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475 Asymmetric Segregation of Polarized Antigen on B Cell Division Shapes Presentation Capacity
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SCIENCEONLINE

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Lithium Isotope History of Cenozoic Seawater: Changes in Silicate Weathering and Reverse Weathering

S. Misra and P. N. Froelich

Historical changes in the lithium isotope ratio in seawater imply episodes of tectonic uplift and carbon dioxide drawdown.

10.1126/science.1214697

Mountains, Weathering, and Climate

A. Paytan

10.1126/science.1218342

Epithelial Nitration by a Peroxidase/NOX5 System Mediates Mosquito Antiplasmodial Immunity

G. de Almeida Oliveira et al.

Expression of nitric oxide synthase followed by peroxidase activity makes *Plasmodium* visible to the insect's complement system.

10.1126/science.1209678

Unique Processing During a Period of High Excitation/Inhibition Balance in Adult-Born Neurons

A. Marin-Burgin et al.

A specific set of functional properties can be attributed to immature granule cells developing in the hippocampus.

10.1126/science.1214956

Evolutionarily Assembled cis-Regulatory Module at a Human Ciliopathy Locus

J. H. Lee et al.

Mutation in either of a pair of neighboring, coordinately expressed genes causes indistinguishable human disease.

10.1126/science.1213506

Unraveling the Spin Polarization of the $\nu = 5/2$ Fractional Quantum Hall State

L. Tiemann et al.

Nuclear magnetic resonance shows that an exotic state of matter may have the properties necessary for error-free quantum computing.

10.1126/science.1216697

TECHNICALCOMMENTS

Comment on "Dynamics of Dpp Signaling and Proliferation Control"

G. Schwank et al.

Full text at www.sciencemag.org/cgi/content/ful/335/6067/401-b

Response to Comment on "Dynamics of Dpp Signaling and Proliferation Control"

O. Wartlick et al.

Full text at www.sciencemag.org/cgi/content/ful/335/6067/401-c

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Highlights From Our Daily News Coverage

Embryonic Stem Cells Appear Safe, May Help Eye Disease

The first published results for a clinical trial using stem cells give this field a boost.

<http://scim.ag/Eye-Disease>

Mapping the Psychedelic Brain

The active ingredient in magic mushrooms disrupts communication between brain regions.

<http://scim.ag/Psychedelic-Brain>

Stem Cells Build a Better Rat Penis

A new approach could help men with injuries or deformities.

<http://scim.ag/Stem-Cells>

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment

24 January issue: <http://scim.ag/ss012412>

RESEARCH ARTICLE: A Phosphorylated Pseudokinase Complex Controls Cell Wall Synthesis in Mycobacteria

C. L. Gee et al.

PERSPECTIVE: A Pseudokinase Debut at the Mycobacterial Cell Wall

D. F. Warner and V. Mizrahi

A serine-threonine kinase targets a pseudokinase to control the synthesis of the cell wall of the bacterium that causes tuberculosis.

RESEARCH ARTICLE: Extracellular Ca^{2+} Acts as a Mediator of Communication from Neurons to Glia

A. Torres et al.

PERSPECTIVE: Depletion of Extracellular Ca^{2+} Prompts Astroglia to Moderate Synaptic Network Activity

D. A. Rusakov

Local decreases in extracellular calcium trigger signaling events in astrocytes that activate inhibitory neurotransmission.

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Integrating Medicine and Science

25 January issue: <http://scim.ag/stm012512>

COMMENTARY: Triggers for Research Ethics Consultation

M. Harvard et al.

Research ethics consultation services can help scientists to address ethical and societal issues that go beyond the purview of existing regulatory frameworks.

COMMENTARY: A Virtual National Laboratory for Reengineering Clinical Translational Science

D. M. Dilts et al.

The CTSA Consortium has developed a national testbed that can be used for evaluating approaches aimed at reducing wasted efforts and speeding clinical trial completion.

RESEARCH ARTICLE: Molecular Diagnosis of Infantile Mitochondrial Disease with Targeted Next-Generation Sequencing

S. E. Calvo et al.

Applying next-generation sequencing to 42 infants with mitochondrial disease highlights both the potential and the challenge of using this technology in clinical diagnosis.

RESEARCH ARTICLE: Surgical Stress Resistance Induced by Single Amino Acid Deprivation Requires *Gcn2* in Mice

W. Peng et al.

A protein-free diet or one missing certain amino acids can protect against kidney and liver damage due to ischemia in mice.

RESEARCH ARTICLE: Teplizumab Induces Human Gut-Tropic Regulatory Cells in Humanized Mice and Patients

F. Waldron-Lynch et al.

Humanized mice can be successfully used as a preclinical testing platform to identify the mechanism of action of immunotherapies in humans.

SCIENCE CAREERS

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S. Louët

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<http://scim.ag/VoiceCoach>

HHMI's International Early-Career Scientists

E. Pain

Three awardees discuss how HHMI support will help them pursue their careers in China, Spain, and Portugal.

http://scim.ag/HHMI_International

Experimental Error: The Top 10 Worst Things About Working in a Lab

A. Ruben

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http://scim.ag/EE_WorstThings

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335 (6067)

Science **335** (6067), 377-481.

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