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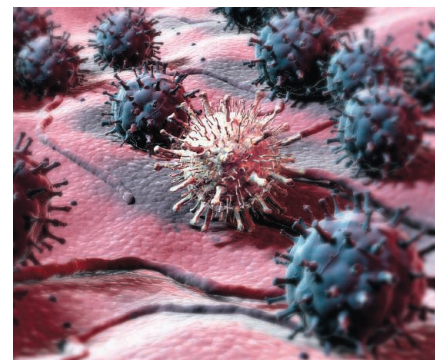
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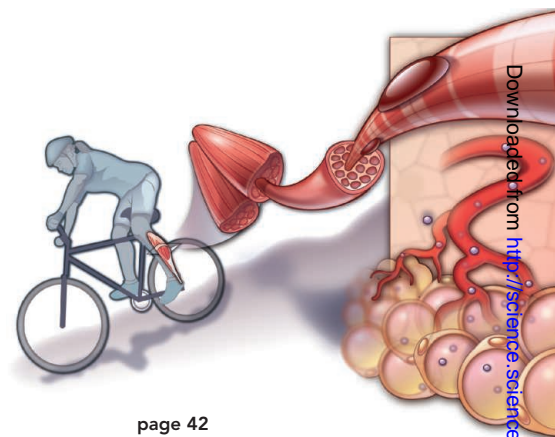
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## COVER

Polarized light micrograph of a thin section of gypsum crystals ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ). Vertical field of view ~4 millimeters. This natural and industrial mineral unexpectedly crystallizes from solution at room temperature upon a transition through a precursor, nanocrystalline bassanite ( $\text{CaSO}_4 \cdot 0.5\text{H}_2\text{O}$ ), a usually high-temperature phase. A detailed understanding of this crystallization route could lead to a new strategy to control gypsum scale and may open an alternative route for the production of "plaster of Paris" (bassanite).

Photo: Alfred Pasiaka/Photo Researchers, Inc.

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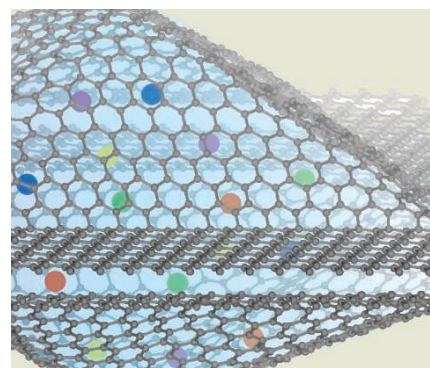
- 48 Population Genomics of Early Events in the Ecological Differentiation of Bacteria  
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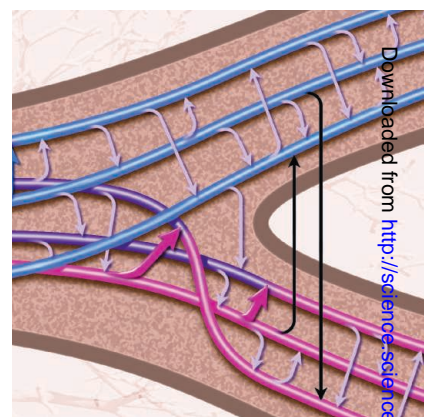
- 52 The Coexistence of Superconductivity and Topological Order in the Bi<sub>2</sub>Se<sub>3</sub> Thin Films  
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- 59 Mechanical Writing of Ferroelectric Polarization  
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- 61 High-Resolution EM of Colloidal Nanocrystal Growth Using Graphene Liquid Cells  
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- 69 The Role and Implications of Bassanite as a Stable Precursor Phase to Gypsum Precipitation  
A. E. S. Van Driessche et al.  
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- 91 Interleukin-22 Drives Endogenous Thymic Regeneration in Mice  
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- 95 Neural Mechanisms of Foraging  
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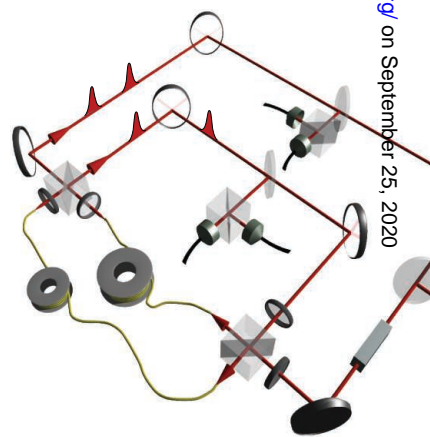
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## SCIENCEONLINE

## SCIENCEEXPRESS

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

### Magnetic Reconnection in the Near Venusian Magnetotail

*T. L. Zhang et al.*

Venus Express observations show that magnetic reconnection occurs in the magnetotail of an unmagnetized planet.

10.1126/science.1217013

### Coupling Quantum Tunneling with Cavity Photons

*P. Cristofolini et al.*

Optical coupling is used to control the tunneling of electrons between a pair of quantum wells.

10.1126/science.1219010

### A Stem Cell–Based Approach to Cartilage Repair

*K. Johnson et al.*

A chemical screen using mesenchymal stem cells identifies a small molecule, kartogenin, that can promote chondrogenesis.

10.1126/science.1215157

### Transcription-Independent Function of Polycomb Group Protein PSC in Cell Cycle Control

*A. Mohd-Sarip et al.*

A Polycomb group protein regulates the cell cycle by promoting cyclin B ubiquitylation and degradation.

10.1126/science.1215927

## SCIENCE NOW

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

Highlights From Our Daily News Coverage

### Quest for Fire Began Earlier Than Thought

A new study indicates that humans tamed the flame at least 1 million years ago.

[http://scim.ag/Quest\\_Fire](http://scim.ag/Quest_Fire)

### How Facebook ‘Contagion’ Spreads

A study finds surprising incentive for people to join the social-networking site.

[http://scim.ag/Facebook\\_Contagion](http://scim.ag/Facebook_Contagion)

### A Reality Check for Personal Genomes

Having one’s genome sequenced will not be very useful for most people, a new study concludes.

[http://scim.ag/Personal\\_Genomes](http://scim.ag/Personal_Genomes)

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

**3 April issue:** <http://scim.ag/ss040312>

### RESEARCH ARTICLE: Astrocytes Modulate Neural Network Activity by Ca<sup>2+</sup>-Dependent Uptake of Extracellular K<sup>+</sup>

*F. Wang et al.*

Astrocytes modulate synaptic activity by changing the local concentration of extracellular K<sup>+</sup>.

### RESEARCH ARTICLE: Receptor-Selective Diffusion Barrier Enhances Sensitivity of Astrocytic Processes to Metabotropic Glutamate Receptor Stimulation

*M. Arizono et al.*

An mGluR5-selective diffusion barrier enriches mGluR5 in astrocytic processes, enabling compartmentalized calcium signaling.

### RESEARCH ARTICLE: A Large Bioactive BMP Ligand with Distinct Signaling Properties Is Produced by Alternative Proconvertase Processing

*T. Akiyama et al.*

### PERSPECTIVE: You’re Going to Need a Bigger (Glass Bottom) Boat

*A. J. Peterson and M. B. O’Connor*

Alternative processing of ligands in the transforming growth factor- $\beta$  family may fine-tune signaling outputs.

## PODCAST

*J. A. Baur et al.*

Rapamycin’s effects on longevity and insulin sensitivity are mediated by different molecular targets.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

**4 April issue:** <http://scim.ag/stm040412>

### COMMENTARY: ADITEC—Joining Forces for Next-Generation Vaccines

*R. Rappuoli and D. Medaglini*

Through the Advanced Immunization Technologies project, scientists join forces to fashion next-generation vaccines with technologies that no lab can master alone.

### RESEARCH ARTICLE: Preclinical Development and Clinical Translation of a PSMA-Targeted Docetaxel Nanoparticle with a Differentiated Pharmacological Profile

*J. Hrkach et al.*

A targeted nanoparticle containing docetaxel displays antitumor activity in animals and differentiated pharmacological properties in patients with advanced solid tumors.

### RESEARCH ARTICLE: A Noncoding RNA Antisense to Moesin at 5p14.1 in Autism

*T. Kerin et al.*

An antisense RNA, transcribed from an autism-associated region on chromosome 5, is highly expressed in autism brains and could regulate the developmental brain protein moesin.

### RESEARCH ARTICLE: Serotonin Neuron Loss and Non-Motor Symptoms Continue in Parkinson’s Patients Treated with Dopamine Grafts

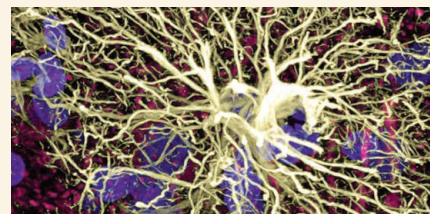
*M. Politis et al.*

Dopamine-rich fetal tissue grafts relieve motor but not nonmotor symptoms in PD patients requiring additional therapeutic interventions to treat continuing serotonergic denervation.

### RESEARCH ARTICLE: T Cell Receptor $\alpha\beta$ Diversity Inversely Correlates with Pathogen-Specific Antibody Levels in Human Cytomegalovirus Infection

*G. C. Wang et al.*

CD8<sup>+</sup> T cell diversity may be more important than T cell abundance in limiting the negative consequences of cytomegalovirus persistence.



SCIENCE SIGNALING  
Astrocyte signals.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

### Taken for Granted: What the Doctors Ordered

*B. L. Bendorly*

Medical practice has changed to meet the needs of female physicians. How likely is academic science to make a similar adjustment?

[http://scim.ag/TFG\\_WomenDoctors](http://scim.ag/TFG_WomenDoctors)

### Perspective: Troubled by Interdisciplinarity?

*S. Pfirman and M. Beggs*

If you choose an interdisciplinary research career, it is up to you to create a context in which you can succeed.

<http://scim.ag/InterdisciplinaryTrouble>

## SCIENCE PODCAST

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

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On the 6 April Science Podcast: the genetics of antimalarial resistance, exploring flexoelectricity, a Nobel Prize fight, and more.

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Science Policy News and Analysis

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