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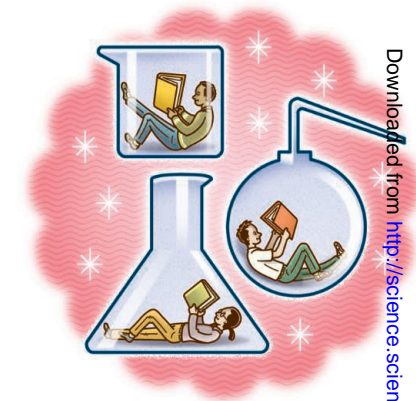
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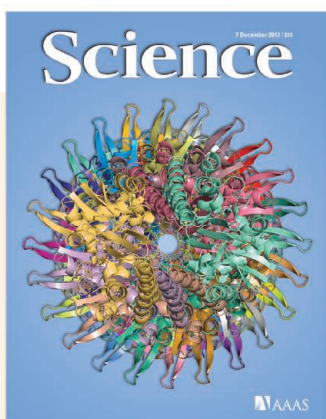


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## COVER

End-on view of the atomic model of the bacterial actinlike ParM protein double-helical filament, generated from an electron microscopic reconstruction. A bipolar spindle of antiparallel ParM filaments pushes plasmids to the cell poles, constituting the simplest known apparatus for the segregation of genetic information. The loops on the outside of the 8- to 9-nanometer-thick filaments are involved in spindle formation. See page 1334.

*Image: Jan Löwe*

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A. P. Tøttrup et al.  
A severe drought in the Horn of Africa delayed the spring arrival in Europe of two migratory species.

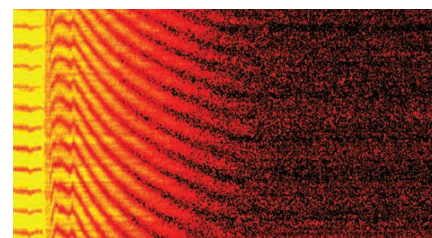
## RESEARCH ARTICLE

- 1308 Crystal Structure of the Calcium Release-Activated Calcium Channel Orai**  
X. Hou et al.  
The unusual architecture of this ion-channel pore regulates the flow of calcium into cells.

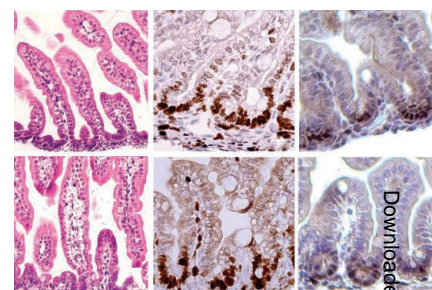
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- 1317 Mapping Local Charge Recombination Heterogeneity by Multidimensional Nanospectroscopic Imaging**  
W. Bao et al.  
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- 1321 Robust Photogeneration of H<sub>2</sub> in Water Using Semiconductor Nanocrystals and a Nickel Catalyst**  
Z. Han et al.  
A photoreduction system combining nanoparticulate light absorbers with a soluble molecular catalyst proves stable for weeks.
- 1324 Taming of Fluoroform: Direct Nucleophilic Trifluoromethylation of Si, B, S, and C Centers**  
G. K. S. Prakash et al.  
Proper choice of base and solvent renders fluoroform a useful reagent to introduce trifluoromethyl groups into a range of compounds.  
>> *Perspective p. 1298*
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>> *Perspective p. 1300*
- 1330 Phase Transformations and Metallization of Magnesium Oxide at High Pressure and Temperature**  
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- 1334 A Bipolar Spindle of Antiparallel ParM Filaments Drives Bacterial Plasmid Segregation**  
P. Gayathri et al.  
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- 1337 Kinetic Responses of  $\beta$ -Catenin Specify the Sites of Wnt Control**  
A. R. Hernández et al.  
Reducing the rate of phosphorylation of  $\beta$ -catenin leads to an increase in the steady-state level of the unmodified form.
- 1340 Tuning the Electronic Absorption of Protein-Embedded All-*trans*-Retinal**  
W. Wang et al.  
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>> *Perspective p. 1299*
- 1344 Identity and Function of a Large Gene Network Underlying Mutagenic Repair of DNA Breaks**  
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The complete set of proteins required for a mutagenic DNA-repair pathway is defined in *Escherichia coli*.
- 1348 Platelet Factor 4 and Duffy Antigen Required for Platelet Killing of *Plasmodium falciparum***  
B. J. McMorran et al.  
Interaction of a platelet protein and a red cell protein enables platelets to attack malarial parasites inside red cells.  
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- 1353 Acute Inflammation Initiates the Regenerative Response in the Adult Zebrafish Brain**  
N. Kyritsis et al.  
An inflammatory response to traumatic injury promotes neurogenesis and repair in the zebrafish brain.  
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Y. Liu et al.  
Androgen-driven changes in receptor expression disrupt a neuronal signaling pathway and de-innervation.
- 1360 Mice Lacking a *Myc* Enhancer That Includes Human SNP rs6983267 Are Resistant to Intestinal Tumors**  
I. K. Sur et al.  
A human genetic variant, identified in genome-wide association studies as increasing cancer risk, alters tumorigenesis in mice.  
>> *Perspective p. 1301*
- 1363 Evolution of an MCM Complex in Flies That Promotes Meiotic Crossovers by Blocking BLM Helicase**  
K. P. Kohl et al.  
Minichromosome maintenance proteins have been co-opted to make meiotic recombination safe in flies.

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## ONLINE HIGHLIGHTS

## SCIENCEEXPRESS

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

Publication Ahead of Print

Gravity Field of the Moon from the Gravity Recovery and Interior Laboratory (GRAIL) Mission

*M. T. Zuber et al.*

10.1126/science.1231507

The Crust of the Moon as Seen by GRAIL

*M. A. Wieczorek et al.*

10.1126/science.1231530

Ancient Igneous Intrusions and Early Expansion of the Moon Revealed by GRAIL Gravity Gradiometry

*J. C. Andrews-Hanna et al.*

10.1126/science.1231753

>> *News story p. 1272*

Neural Basis of a Pollinator's Buffet: Olfactory Specialization and Learning in *Manduca sexta*

*J. A. Riffell et al.*

10.1126/science.1225483

Suppression of Oxidative Stress by  $\beta$ -Hydroxybutyrate, an Endogenous Histone Deacetylase Inhibitor

*T. Shimazu et al.*

10.1126/science.1227166

JNK Expression by Macrophages Promotes Obesity-Induced Insulin Resistance and Inflammation

*M. S. Han et al.*

10.1126/science.1227568

Germline DNA Demethylation Dynamics and Imprint Erasure Through 5-Hydroxymethylcytosine

*J. A. Hackett et al.*

10.1126/science.1229277

## SCIENCE NOW

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

Highlights From Our Daily News Coverage

The First Signs of Ancient Life on Mars?

The Curiosity rover has detected organic matter, but it may never have been alive.

<http://scim.ag/Life-Mars>

Why Old People Get Scammed

The anterior insula may make us less suspicious as we age.

[http://scim.ag/Brain\\_Region](http://scim.ag/Brain_Region)

Read My Hips

Intense emotions are easier to read in the body than in the face.

[http://scim.ag/Intense\\_Emotions](http://scim.ag/Intense_Emotions)

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

4 December issue: <http://scim.ag/ss120412>

RESEARCH ARTICLE: RNF4-Dependent Hybrid SUMO-Ubiquitin Chains Are Signals for RAP80 and Thereby Mediate the Recruitment of BRCA1 to Sites of DNA Damage

*C. M. Guzzo et al.*

DNA repair proteins find sites of damage marked by hybrid SUMO-ubiquitin chains.

RESEARCH ARTICLE: G Protein-Coupled Receptor-Mediated Activation of p110 $\beta$  by G $\beta\gamma$  Is Required for Cellular Transformation and Invasiveness

*H. A. Dbouk et al.*

Loss of the phosphatase PTPN22 enhances the functions of both effector and regulatory T cells.

PERSPECTIVE: Cdc42 Oscillations in Yeasts

*F. O. Bendezú and S. G. Martin*

Oscillations in the localization of active Cdc42 govern polarized cell growth in yeasts.

PRESENTATION: SCF-Mediated Degradation of p100 (NF- $\kappa$ B2): Mechanisms and Relevance in Multiple Myeloma

*L. Busino et al.*

Degradation of an inhibitor of noncanonical NF- $\kappa$ B signaling promotes cell survival.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

5 December issue: <http://scim.ag/stm120512>

FOCUS: The Goldilocks Effect

*M. Boothby and C. L. Williams*

RESEARCH ARTICLE: Overexpression of Methyl-CpG Binding Protein 2 Impairs T<sub>H</sub>1 Responses

*T. Yang et al.*

MECP2 gene duplication causes immune dysregulation by suppressing IFN- $\gamma$  production from T helper cells.

FOCUS: Creating a Space for Innovative Device Development

*M. McMurry-Heath and M. A. Hamburg*

The FDA announces a nonprofit partnership to advance regulatory science for medical technology development.

RESEARCH ARTICLE:  $\alpha$ -Synuclein-Induced Down-Regulation of Nurr1 Disrupts GDNF Signaling in Nigral Dopamine Neurons

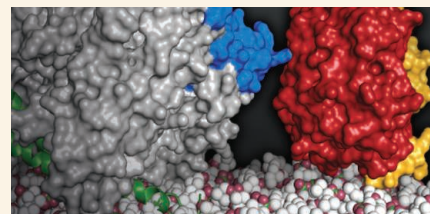
*M. Decressac et al.*

Nurr1 mediates protection of dopamine neurons by GDNF in response to  $\alpha$ -synuclein-mediated toxicity.

RESEARCH ARTICLE: Decreased Tonic Inhibition in Cerebellar Granule Cells Causes Motor Dysfunction in a Mouse Model of Angelman Syndrome

*K. Egawa et al.*

Ube3a deficiency causes decreased cerebellar tonic inhibition by preventing degradation of GAT1 in Angelman syndrome.



SCIENCE SIGNALING

Targeting the interaction site.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

<http://scim.ag/SciCareers7December2012>

Getting Back Your Mojo

*M. Price*

Psychologists share tips for figuring out what is sapping your enthusiasm—and how to get it back.

Taken for Granted: How Not to Attract Minorities to STEM

*B. L. Benderly*

Research shows that large admissions preferences stymie studies in science and technical subjects.

myIDP: What Do You Care About?

*B. Lindstaedt et al.*

Analyzing and prioritizing your deeply held values are crucial steps in choosing a scientific career.

## SCIENCE PODCAST

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