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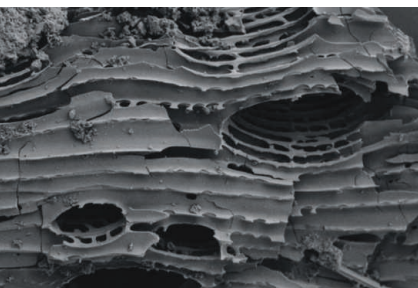
## COVER

Scanning electron micrograph of a female *Anopheles stephensi* mosquito, a transmitter of malaria (proboscis length: ~0.6 millimeters). To drive malaria eradication, new medicines that target all stages of the malaria life cycle are needed. In their study, Meister *et al.* used thousands of *A. stephensi* mosquitos to identify chemical classes with activity against the silent malaria liver stage. See page 1372.

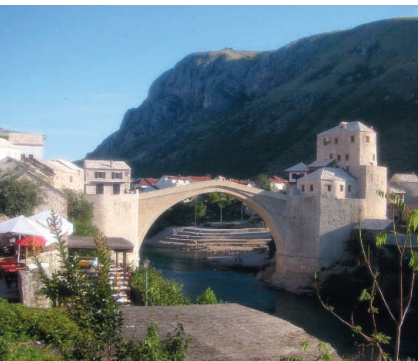
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## DEPARTMENTS

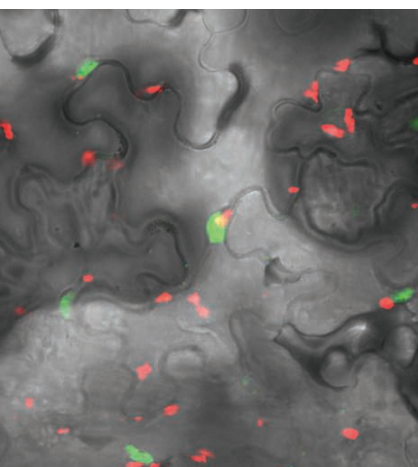
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## RESEARCH ARTICLES

- 1367** Calibrating the End-Permian Mass Extinction  
*S. Shen et al.*  
High-precision geochronologic dating constrains probable causes of Earth's largest mass extinction.
- 1372** Imaging of *Plasmodium* Liver Stages to Drive Next-Generation Antimalarial Drug Discovery  
*S. Meister et al.*  
Imidazolopiperazine compounds inhibit liver-stage malaria parasites with one oral dose in mice.
- 1398** Perceived Predation Risk Reduces the Number of Offspring Songbirds Produce per Year  
*L. Y. Zanette et al.*  
Fear itself reduces reproductive success in song sparrows.  
>> *Perspective p. 1353*
- 1401** *Arabidopsis* EDS1 Connects Pathogen Effector Recognition to Cell Compartment-Specific Immune Responses  
*K. Heidrich et al.*
- 1405** Pathogen Effectors Target *Arabidopsis* EDS1 and Alter Its Interactions with Immune Regulators  
*S. Bhattacharjee et al.*  
Coordination of different defense pathways across cell compartments produces a fully effective innate immune response.  
>> *Perspective p. 1354*

## REPORTS

- 1377** Carving at the Nanoscale: Sequential Galvanic Exchange and Kirkendall Growth at Room Temperature  
*E. González et al.*  
Processes used in colloidal chemistry can be jointly exploited to make complex metal alloy nanoparticles.  
>> *Perspective p. 1359*
- 1380** The Origin of OB Runaway Stars  
*M. S. Fujii and S. Portegies Zwart*  
Most of the unusually fast, young stars in our galaxy are produced in three-body encounters within dense clusters of stars.
- 1383** A Perovskite Oxide Optimized for Oxygen Evolution Catalysis from Molecular Orbital Principles  
*J. Suntivich et al.*  
An electronic property of metal oxides was used to guide development of a catalyst for prospective use in energy applications.  
>> *Perspective p. 1355*
- 1385** Climate Sensitivity Estimated from Temperature Reconstructions of the Last Glacial Maximum  
*A. Schmittner et al.*  
Last Glacial Maximum temperature reconstructions and model simulations can constrain the equilibrium climate sensitivity.  
>> *Perspective p. 1360*
- 1388** Middle Stone Age Bedding Construction and Settlement Patterns at Sibudu, South Africa  
*L. Wadley et al.*  
Early humans constructed sleeping mats from local plants, including some with insecticidal properties.
- 1392** Context Modularity of Human Altruism  
*M. Alexander and F. Christia*  
Ethnic integration enhances cooperative behavior and sanctioning of free-riders.  
>> *Perspective p. 1356*
- 1394** Capacity Building Helps Pastoral Women Transform Impoverished Communities in Ethiopia  
*D. L. Coppock et al.*  
Diversification of income-producing activities provides greater resilience to drought.
- 1408** The Competitive Advantage of a Dual-Transporter System  
*S. Levy et al.*  
Low-affinity nutrient transporters sense depletion earlier than high-affinity transporters, thus preparing cells for starvation.
- 1413** Perceptual Learning Incepted by Decoded fMRI Neurofeedback Without Stimulus Presentation  
*K. Shibata et al.*  
Even the adult primary visual cortex is sufficiently plastic to allow performance enhancement.
- 1415** Entorhinal Cortex Layer III Input to the Hippocampus Is Crucial for Temporal Association Memory  
*J. Suh et al.*  
A specific neural circuit integrates temporally dispersed stimuli into a coherent memory episode.
- 1420** Interconversion Between Intestinal Stem Cell Populations in Distinct Niches  
*N. Takeda et al.*  
Two niches with distinct characteristics work in tandem.
- 1424** Explaining Seasonal Fluctuations of Measles in Niger Using Nighttime Lights Imagery  
*N. Bharti et al.*  
Changes in human population density as measured by satellite images of nighttime lights predict measles.  
>> *Science Podcast*
- 1427** Empathy and Pro-Social Behavior in Rats  
*I. Ben-Ami Bartal et al.*  
Rats free companions from restraint, apparently motivated by empathy to end their mate's distress.  
>> *Perspective p. 1358*

## SCIENCEONLINE

## SCIENCEEXPRESS

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

### Stop Signals Provide Cross Inhibition in Collective Decision-Making by Honeybee Swarms

T. D. Seeley et al.

Scout bees bring about nest-site decisions by targeting stop signals at bees with other candidate sites.

10.1126/science.1210361

>> [Science Podcast](#)

### How Honeybees Break a Decision-Making Deadlock

J. E. Niven

10.1126/science.1216563

### A SUMOylation-Dependent Transcriptional Subprogram Is Required for Myc-Driven Tumorigenesis

J. D. Kessler et al.

An RNA interference screen identifies a "druggable" enzyme whose inhibition halts tumor cell growth.

10.1126/science.1212728

### Cytoplasmic Dynein Moves Through Uncoordinated Stepping of the AAA+ Ring Domains

M. A. DeWitt et al.

The molecular motor dynein moves each of its two heads independently along the microtubule.

10.1126/science.1215804

### Sucrose Efflux Mediated by SWEET Proteins as a Key Step for Phloem Transport

L.-Q. Chen et al.

Transporters hand off sucrose from production cell to transport cell.

10.1126/science.1213351

### Capturing Ultrasmall EMT Zeolite from Template-Free Systems

E.-P. Ng et al.

Control of the early stages of nucleation favors the synthesis of large-pore zeolite crystals ~10 nanometers in size.

10.1126/science.1214798

### Synthetic Partial Waves in Ultracold Atomic Collisions

R. A. Williams et al.

A pair of lasers is used to produce complex interactions between bosons in an ultracold gas.

10.1126/science.1212652

## SCIENCE NOW

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

Highlights From Our Daily News Coverage

### Fuel From Waste?

Genetically engineered bacteria could turn trees, grasses, and agricultural waste into gasoline.

[http://scim.ag/Fuel\\_Waste](http://scim.ag/Fuel_Waste)

### Potentially Habitable Planet Is Christmas Present for Kepler Astronomers

Temperatures on a newly discovered world could hover around 21°C.

[http://scim.ag/New\\_Planet](http://scim.ag/New_Planet)

### Tuna Stocks at Edge of Sustainability

Global analysis finds that five decades of intensive fishing have shrunk populations by 60%.

[http://scim.ag/Tuna\\_Stocks](http://scim.ag/Tuna_Stocks)

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

6 December issue: <http://scim.ag/ss120611>

### EDITORIAL GUIDE: The Complex Art of Telling It Simply

M. B. Yaffe

Computational biology studies are complex; papers describing the results should not be.

### RESEARCH ARTICLE: Neuronal Growth Cone Retraction Relies on Proneurotrophin Receptor Signaling Through RAC

K. Deinhardt et al.

Whereas nerve growth factor promotes neurite outgrowth, the precursor form triggers retraction.

### RESEARCH ARTICLE: The SH2 Domain-Containing Proteins in 21 Species Establish the Provenance and Scope of Phosphotyrosine Signaling in Eukaryotes

B. A. Liu et al.

The evolution of modular protein domains corresponds with organismal complexity.

### RESEARCH ARTICLE: Protein Kinase C $\eta$ Is Required for T Cell Activation and Homeostatic Proliferation

G. Fu et al.

T cells make specific use of different protein kinase C isoforms.

### RESEARCH ARTICLE: PDLIM2 Inhibits T Helper 17 Cell Development and Granulomatous Inflammation Through Degradation of STAT3

T. Tanaka et al.

An E3 ubiquitin ligase inhibits the development of inflammatory T cells involved in autoimmune diseases.

### ST NETWORK: Expression2Kinases (X2K)

Identify the signaling components that may mediate changes in genome-wide expression profiles.

### ST NETWORK: iBioMagazine

Explore the human side of science.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

7 December issue: <http://scim.ag/stm120711>

### FOCUS: Three Rs of Animal Testing for Regenerative Medicine Products

R. Robinson

Considerations of animal welfare have spurred the design of "smarter" preclinical studies intended to ultimately benefit patients.

### FOCUS: ROCK in a Stiff Place

D. A. Lauffenburger

### RESEARCH ARTICLE: Age-Related Intimal Stiffening Enhances Endothelial Permeability and Leukocyte Transmigration

J. Huynh et al.

Inhibiting endothelial cell contractility reverses the deleterious effects of age-related matrix stiffening on normal cell function.

### REPORT: Penetration of Tenofovir and Emtricitabine in Mucosal Tissues: Implications for Prevention of HIV-1 Transmission

K. B. Patterson et al.

Antiretroviral drugs are found at different concentrations in human mucosal tissues with implications for pre-exposure prophylaxis trials to prevent HIV transmission.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

### A Pharma Industry in Crisis

E. Pain

Scientists seeking pharma careers must adapt to sweeping changes in the industry.

<http://scim.ag/PharmaCrisis>

### Future Pharma Scientists: Start Small

M. Price

As the industry moves away from the big-pharma model, young drug-development scientists are likely to find more and better opportunities at smaller companies.

<http://scim.ag/PharmaSearch>

### Content Collection: Working in Pharma

Science Careers Staff

We present our best information and advice on working in the pharmaceuticals industry.

[http://scim.ag/CC\\_Pharma](http://scim.ag/CC_Pharma)

## SCIENCE PODCAST

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Free Weekly Show

On the 9 December Science Podcast: detecting measles outbreaks with satellite imagery, decision-making in honeybee swarms, stepping up research funding in Europe, and more.

## SCIENCE INSIDER

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

Science Policy News and Analysis

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