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## COVER

*Arachnoscelis magnifica*, a predaceous katydid (Orthoptera: Tettigoniidae), on a leaf in the San Lorenzo forest of Panama. This attractive insect is but one of the ~25,000 arthropod species likely to live in this 6000-hectare forest, confirming the formidable diversity of arthropods, which appears to be 300 times that of mammals in tropical rainforests. See page 1481.

*Photo: Maurice Laponce, Royal Belgian Institute of Natural Sciences*

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## REVIEW

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J. T. Lee  
>> Report p. 1469

## RESEARCH ARTICLE

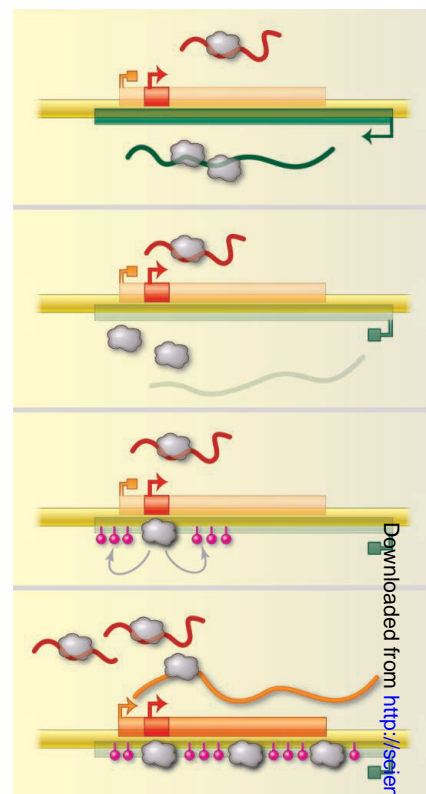
- 1440** Aggravating Genetic Interactions Allow a Solution to Redundancy in a Bacterial Pathogen  
T. J. O'Connor et al.  
Insertional mutagenesis and depletion dissects the interplay between intracellular *Legionella pneumophila* and its host.

## REPORTS

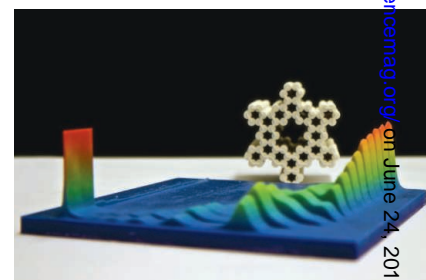
- 1445** A Universal Scaling for the Energetics of Relativistic Jets from Black Hole Systems  
R. S. Nemmen et al.  
Jets from black holes of differing masses show the same energy-dissipation efficiency, suggesting similar production mechanisms.
- 1448** Texture of Nanocrystalline Nickel: Probing the Lower Size Limit of Dislocation Activity  
B. Chen et al.  
A metal subjected to high pressures retains the activity of dislocations, even for very small grain sizes.
- 1452** Small Gold Clusters Formed in Solution Give Reaction Turnover Numbers of  $10^7$  at Room Temperature  
J. Oliver-Meseguer et al.  
Three- to ten-atom gold clusters formed from gold salts and complexes are highly active catalysts for organic reactions.  
>> Perspective p. 1434
- 1455** Enantioselective Heck Arylations of Acyclic Alkenyl Alcohols Using a Redox-Relay Strategy  
E. W. Werner et al.  
A widely used coupling reaction is adapted by pairing formation of a carbon-carbon bond with oxidation of a nearby alcohol.  
>> Perspective p. 1432

- 1458** Rapid Folding of DNA into Nanoscale Shapes at Constant Temperature  
J.-P. J. Sobczak et al.  
Complex DNA nanoscale objects may be assembled within minutes in high yields through a process resembling protein folding.
- 1462** Pheromonal Induction of Spatial Learning in Mice  
S. A. Roberts et al.  
A male sex pheromone rapidly stimulates learning of place preference that is remembered for about 2 weeks.  
>> Science Podcast
- 1465** EZH2 Oncogenic Activity in Castration-Resistant Prostate Cancer Cells Is Polycomb-Independent  
K. Xu et al.  
An epigenetic regulator positively regulates gene expression in cell-based models of hormone-resistant prostate cancer.  
>> Perspective p. 1430
- 1469** *Airn* Transcriptional Overlap, But Not Its lncRNA Products, Induces Imprinted *Igf2r* Silencing  
P. A. Latos et al.  
A very long noncoding RNA acts to silence its target gene cluster through transcriptional interference.  
>> Review p. 1435
- 1472** A Steroid Receptor-MicroRNA Switch Regulates Life Span in Response to Signals from the Gonad  
Y. Shen et al.  
The mechanism by which removal of signals from the reproductive organs promotes longevity in nematodes is elucidated.
- 1476** *Hox* Genes Regulate Digit Patterning by Controlling the Wavelength of a Turing-Type Mechanism  
R. Sheth et al.  
Mouse genetics and computer modeling suggest that a reaction-diffusion mechanism defines digit pattern.  
>> News story p. 1406
- 1481** Arthropod Diversity in a Tropical Forest  
Y. Basset et al.  
Total arthropod species richness in a tropical rainforest can be best predicted by plant diversity.  
>> Science Podcast

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## ONLINE HIGHLIGHTS

## SCIENCEEXPRESS

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

Publication Ahead of Print

**Variable Clonal Repopulation Dynamics Influence Chemotherapy Response in Colorectal Cancer**

A. Kreso et al.

10.1126/science.1227670

**Actin, Spectrin, and Associated Proteins Form a Periodic Cytoskeletal Structure in Axons**

K. Xu et al.

10.1126/science.1232251

**EF-P Is Essential for Rapid Synthesis of Proteins Containing Consecutive Proline Residues**

L. K. Doerfel et al.

10.1126/science.1229017

**Translation Elongation Factor EF-P Alleviates Ribosome Stalling at Polyproline Stretches**

S. Ude et al.

10.1126/science.1228985

**A Stringent Limit on a Drifting Proton-to-Electron Mass Ratio from Alcohol in the Early Universe**

J. Bagdonaitė et al.

10.1126/science.1224898

## SCIENCE NOW

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

Highlights From Our Daily News Coverage

**Diuretic Drug Offers Latest Hope for Autism Treatment**

In a small trial, bumetanide improves social interactions in some children with this disorder.

<http://scim.ag/Autism-Treatment>

**Tree Rings for Lobsters**

Newly discovered growth bands reveal crustacean ages for the first time.

[http://scim.ag/Crustacean\\_Ages](http://scim.ag/Crustacean_Ages)

**Turning Pull Into Push?**

One physicist puts a curious twist on the interactions of charge and surface.

[http://scim.ag/Charge\\_Surface](http://scim.ag/Charge_Surface)

## SCIENCE SIGNALING

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

The Signal Transduction Knowledge Environment

**11 December issue:** <http://scim.ag/ss121112>

**RESEARCH ARTICLE: TIM Family Proteins Promote the Lysosomal Degradation of the Nuclear Receptor NUR77**

S. Balasubramanian et al.

The TIM family of receptors attenuates cell death in kidney cells after injury.

**RESEARCH ARTICLE: Mechanism of Stretch-Induced Activation of the Mechanotransducer Zyxin in Vascular Cells**

S. S. Babu et al.

Multiple steps drive the stretch-induced nuclear translocation of the mechanotransducer zyxin.

**MEETING REPORT: Celebrating 30 Years of Wnt Signaling**

F. Verkaar et al.

Researchers gathered to share the latest findings on Wnt signaling in development and disease.

**LETTER: Comment on "Epidermal Growth Factor Receptor Is Essential for Toll-Like Receptor 3 Signaling"**

B. Burtress et al.

Targeted inhibitors used in cancer treatments may have adverse effects on immune responses.

## SCIENCE TRANSLATIONAL MEDICINE

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

Integrating Medicine and Science

**12 December issue:** <http://scim.ag/stm121212>

**FOCUS: T<sub>reg</sub> Cells in Cancer—A Case of Multiple Personality Disorder**

P. D. Bos and A. Y. Rudensky

**RESEARCH ARTICLE: Expression of ROR $\gamma$ t Marks a Pathogenic Regulatory T Cell Subset in Human Colon Cancer**

N. R. Blatner et al.

T<sub>regs</sub> that expand in human colon cancer have proinflammatory properties and contribute to tumor progression.

**PERSPECTIVE: Pluripotent Stem Cells—Immune to the Immune System?**

J. I. Pearl et al.

The immunogenicity of pluripotent stem cells will dictate the type of immunosuppression needed for cell therapy.

**RESEARCH ARTICLE: Dantrolene Enhances Antisense-Mediated Exon Skipping in Human and Mouse Models of Duchenne Muscular Dystrophy**

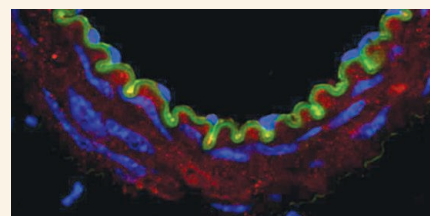
G. C. Kendall et al.

A ryanodine receptor antagonist facilitates exon skipping for treatment of Duchenne muscular dystrophy.

**RESEARCH ARTICLE: Ser<sup>1292</sup> Autophosphorylation Is an Indicator of LRRK2 Kinase Activity and Contributes to the Cellular Effects of PD Mutations**

Z. Sheng et al.

LRRK2 Ser<sup>1292</sup> autophosphorylation may be useful for screening candidate LRRK2 inhibitors.



SCIENCE SIGNALING  
Signaling arterial stretch.

## SCIENCE CAREERS

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

Free Career Resources for Scientists

<http://scim.ag/SciCareers14December2012>

**Big Hopes, Small Changes for Biomedical Workforce Training**

M. Price

In implementing the recommendations of its workforce working group, NIH decides to play it safe.

**Experimental Error: The Myth of the Well-Rounded Scientist**

A. Ruben

Despite what grad school admissions committees seem to believe, outside interests are good.

**Administrative Hurdles Delay Ph.D. Scholarships in Spain**

E. Pain

Many Spanish students have been forced to start their doctorates without financial help.

## SCIENCE PODCAST

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

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