COVER
A lined day gecko (Phelsuma lineata) from Andasibe, eastern Madagascar. This gecko is one of the 2315 species analyzed to identify optimal expansion sites for protected areas within Madagascar, as described on page 222.

Photo: Miroslav Honzák

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Endogenous siRNAs Derived from Transposons and mRNAs in Drosophila Somatic Cells

M. Ghildiyal et al.

Endogenous small interfering RNAs transcribed from both transposons and messenger RNAs are found in somatic cells of flies and may act to silence “selfish” genetic elements. 10.1126/science.1157396

IMMUNOLOGY

Innate Immune Activation Through Nalp3 Inflammasome Sensing of Asbestos and Silica

C. Dostert et al.

A large multiprotein complex detects particulate airborne pollutants that have been taken up by immune cells in the lung and initiates a potent inflammatory response. 10.1126/science.1156995

REVIEW

APPLIED PHYSICS

Magnetic Domain-Wall Racetrack Memory

S. S. P. Parkin, M. Hayashi, L. Thomas

BREVIA

PALEOCLIMATE

Amplification of Cretaceous Warmth by Biological Cloud Feedbacks

L. R. Kump and D. Pollard

The extreme warmth of the Cretaceous may have been a consequence of fewer clouds, caused by a low abundance of organic cloud nuclei from reduced ocean productivity.

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Electronic Origin of the Inhomogeneous Pairing Interaction in the High-Tc Superconductor

Bl2Sr2CaCu2O8±δ

A. N. Pasupathy et al.

Scanning tunneling microscope measurements around the superconducting transition temperature imply that electron correlations, not a proposed boson glue, pair up electrons.

NEUROSCIENCE

Surface Mobility of Postsynaptic AMPARs Tunes Synaptic Transmission

M. Heine et al.

Desensitized glutamate receptors are exchanged for functional ones through lateral movement within membranes to help maintain fast excitatory neurotransmission. >> Perspective p. 183

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Gate-Variable Optical Transitions in Graphene

F. Wang et al.

Application of electrical biases to single or double layers of graphene changes its infrared reflectivity, mimicking aspects of transistors and opening up optoelectronic applications.

APPLIED PHYSICS

Current-Controlled Magnetic Domain-Wall Nanowire Shift Register

M. Hayashi, L. Thomas, R. Moriya, C. Rettner, S. S. P. Parkin

Brief, polarized current pulses can create and shift magnetic domain walls along a magnetic nanowire, demonstrating the basis for a racetrack memory. >> News story p. 166

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Impact of Artificial Reservoir Water Impoundment on Global Sea Level

B. F. Chao, Y. H. Wu, Y. S. Li

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Aligning Conservation Priorities Across Taxa in Madagascar with High-Resolution Planning Tools
C. Kremen et al.
A broad analysis of many taxa throughout Madagascar identifies regions where conservation is likely to protect the most species.

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An Agonist of Toll-Like Receptor 5 Has Radioprotective Activity in Mouse and Primate Models
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Evidence for Editing of Human Papillomavirus DNA by APOBEC3 in Benign and Precancerous Lesions
J.-P. Vartanian, D. Guelard, M. Henry, S. Wain-Hobson
A cellular enzyme that defends against infection by causing mutations in retroviruses can also mutate the genome of a DNA virus associated with benign and precancerous cells.

NEUROSCIENCE
Segregation of Axial Motor and Sensory Pathways via Heterotypic Trans-Axonal Signaling
B. W. Gallarda et al.
In mice, axons carrying signals from spinal cord to muscle are kept separate from those going in the opposite direction by ephrin signaling between them.

EVOLUTION
Convergence of Campylobacter Species: Implications for Bacterial Evolution
S. K. Sheppard, N. D. McCarthy, D. Falush, M. C. J. Maiden
A survey of two related human pathogens shows that they are merging, probably as a result of their proximity in a new ecological niche—the intestines of farmed animals.

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D. Chereau et al.
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J. M. Crawford et al.
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CELL BIOLOGY
Video-Rate Far-Field Optical Nanoscopy Dissects Synaptic Vesicle Movement
V. Westphal et al.
Sequential subdiffraction resolution images of fluorescently labeled synaptic vesicles in live cells reveal that they exhibit several distinct movement patterns.
SCIENCE SIGNALING
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REVIEW: Eph, a Protein Family Coming of Age—More Confusion, Insight, or Complexity?
M. Lackmann and A. W. Boyd
Eph receptors and their ephrin ligands coordinate cell-positioning programs during development and oncogenesis.

JOURNAL CLUB: GABA Effects on Neurogenesis—An Arsenal of Regulation
T.-F. Yuan
γ-aminobutyric acid (GABA) regulates neurogenesis in various circumstances.

Birdseed. Friend or foe?

SCIENCE CAREERS
www.sciencecareers.org/career_development
CAREER RESOURCES FOR SCIENTISTS

Special Feature: Undergraduates
J. Austin
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The Truth About Gen Y
E. Pain
Experts consider “millennials” one of the greatest generations ever to hit the workplace.

Does Grad School Make Financial Sense?
S. Webb
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Community Colleges Fuel the Science Workforce
S. Carpenter
With minority scientists in short supply, officials turn to 2-year colleges as a source of talent.

SCIENCE PODCAST
Download the 11 April Science Podcast to hear about possible radioprotective drugs, modeling the Cretaceous supergreenhouse, new treatments for alcoholism, and more.
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