**COVER**

Honey bees (*Apis mellifera*), here shown on a honeycomb, form complex societies and interact with one another by means of stereotyped social behaviors. A special section beginning on page 891 explores what genetic approaches have taught us about behavior in bees and other species, including humans.

*Image: Don Farrall, Getty Images*

**EDITORIAL**

821 The “Neuro” in Neurogenetics
by Story Landis and Thomas R. Insel

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**MOLECULAR BIOLOGY**

The Air Noncoding RNA Epigenetically Silences Transcription by Targeting G9a to Chromatin

T. Nagano et al.

Air, a large noncoding RNA, interacts with chromatin at a particular promoter, recruiting a histone methyltransferase to silence gene expression in an allele-specific manner.

10.1126/science.1163802

**PLANETARY SCIENCE**

Long-Lived Volcanism on the Lunar Farside Revealed by SELENE Terrain Camera

J. Haruyama et al.

Images of the Moon by the SELENE spacecraft and revised dates of lava flows by crater counts imply that episodic volcanism on the farside lasted to 2.5 billion years ago.

10.1126/science.1163382

**MOLECULAR BIOLOGY**

Photoexcited CRY2 Interacts with CIB1 to Regulate Transcription and Floral Initiation in Arabidopsis

H. Liu, X. Yu, K. Li, J. Kleijnor, H. Yang, D. Listiero, C. Lin

Blue light triggers the association of a photoreceptor, transcription factor, and DNA site, thus inducing expression of the gene FT (flowering time) and initiating flowering.

10.1126/science.1163927

**LETTERS**

Epigenomics: A Roadmap to Chromatin

S. Henikoff et al.

Bacteria by the Book

E. Tabor

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Environmental Agencies: Lessons Learned


Homing In on a SIDS Model

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Comment on “Whole-Genome Shotgun Sequencing of Mitochondria from Ancient Hair Shafts”

R. Debruyne, C. Schwarz, H. Poinar

Response to Comment on “Whole-Genome Shotgun Sequencing of Mitochondria from Ancient Hair Shafts”

M. T. P. Gilbert, W. Miller, S. C. Schuster

**BOOKS ET AL.**

A Passion for Nature

The Life of John Muir

D. Worster, reviewed by J. Farmer

Imperial Nature

Joseph Hooker and the Practices of Victorian Science

J. Endersby, reviewed by J. C. Waller

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The Human Variome Project

R. G. H. Cotton et al.

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Burn Fat, Live Longer

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Reconstructing Earth History in Three Dimensions

B. Steinberger

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Plasmonics Applied

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Overcoming Inhibitions

W.-Y. Kim and W. D. S. Snider

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Going Global on Ubiquitin

C. Grabbe and I. Dikic

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**ESSAY**

Eppendorn Winner: Switching Memories ON and OFF

M. Costa-Mattioli

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**REVIEWS**

NEUROSCIENCE

Consciousness and Anesthesia

M. T. Alkire, A. G. Hudetz, G. Tononi

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GENETICS

Genetic Mapping in Human Disease

D. Altshuler, M. J. Daly, E. S. Lander

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**BREVIA**

BIOCHEMISTRY

Bioactive Contaminants Leach from Disposable Laboratory Plasticware

G. R. McDonald et al.

A lipid molecule and a quaternary ammonium biocide that are used in making plastic labware can contaminate common enzyme and binding assays, altering the results.

**RESEARCH ARTICLES**

CELL BIOLOGY

Global Protein Stability Profiling in Mammalian Cells

H.-C. S. Yen, Q. Xu, D. M. Chou, Z. Zhao, S. J. Elledge

Identification of SCF Ubiquitin Ligase Substrates by Global Protein Stability Profiling

H.-C. S. Yen and S. J. Elledge

A method that determines the half lives of all cellular proteins has been used to identify targets of a ubiquitin ligase, which controls the cell cycle through protein degradation. >> Perspective p. 872

**REPORTS**

APPLIED PHYSICS

Slow Electron Cooling in Colloidal Quantum Dots

A. Pandey and P. Guyot-Sionnest

The lifetime of excited states of electron-hole pairs in CdSe quantum dots can be extended to nanosecond time scales with an electron-insulating ZnSe coating.
REPORTS CONTINUED...

CHEMISTRY
Reactivity-Driven Restructuring of Rh-Pd and Pt-Pd Core-Shell Nanoparticles
F. Tao et al.
Reducing or oxidizing conditions segregates rhenium or palladium at the surface of Rh-Pd (but not Pt-Pd) nanoparticles, facilitating the tuning of their catalytic properties.

GEOPHYSICS
Reconstructing Farallon Plate Subduction Beneath North America Back to the Late Cretaceous
L. Liu, S. Spasojević, M. Gurnis
An inverse model, using seismic images of today’s mantle and sediment thicknesses through time, tracks 300 million years of mantle flow beneath western North America. >> Perspective p. 866

PLANETARY SCIENCE
Lack of Exposed Ice Inside Lunar South Pole
J. Haruyama et al.
A view into the permanently shaded Shackleton crater from the SELENE (KAGUYA) spacecraft now orbiting the Moon shows that it lacks large visible water-ice deposits.

CLIMATE CHANGE
A Test of Climate, Sun, and Culture Relationships from an 1810-Year Chinese Cave Record
P. Zhang et al.
An 1800-year-long record of the Asian Monsoon from a Chinese stalagmite shows that its strength waned, causing drought, during the end of three prominent dynasties. >> News story p. 837

GEOLOGY
Recycling of Graphite During Himalayan Erosion: A Geological Stabilization of Carbon in the Crust
V. Galy, O. Beyssac, C. France-Lanord, T. Eglington
Radioisotope carbon on Himalayan sediments show that graphite is preserved, whereas other carbon is oxidized, and that metamorphism stabilizes carbon over geologic time.

DEVELOPMENTAL BIOLOGY
Induced Pluripotent Stem Cells Generated Without Viral Integration
M. Stadtfeld et al.
Transient exposure of mouse fibroblast and liver cells to adenovirus vectors carrying factors that induce pluripotency generates stem cells without viral elements in the genome.

DEVELOPMENTAL BIOLOGY
Generation of Mouse-Induced Pluripotent Stem Cells Without Viral Vectors
K. Okita et al.
Pluripotent cells can be created by introducing transcription factor genes into mouse embryonic fibroblasts on a plasmid that does not integrate into the genome.

BIOCHEMISTRY
Insights into Translational Termination from the Structure of RF2 Bound to the Ribosome
A. Weixelbaumer et al.
The structure of a release factor bound to an RNA stop codon shows which amino acids form the binding site for U in the first position, A or G in the second, and U in the third. >> Perspective p. 863

PHYSIOLOGY
Fat Metabolism Links Germline Stem Cells and Longevity in C. elegans
M. C. Wang, E. J. O’Rourke, G. Ruvkun
Longevity in C. elegans resulting from quiescent germline stem cells or reduced insulin signaling is caused by induction of a lipase gene that promotes fat mobilization. >> Perspective p. 865

NEUROSCIENCE
Spontaneous Changes of Neocortical Code for Associative Memory During Consolidation
K. Takehara-Nishiuchi and B. L. McNaughton
Memory-specific firing patterns appear in the medial prefrontal cortex when it becomes essential for memory recall, supporting a role for this region in memory consolidation.

NEUROSCIENCE
Promoting Axon Regeneration in the Adult CNS by Modulation of the PTEN/mTOR Pathway
K. K. Park et al.
Reactivation of a key growth control pathway by experimentally deleting an inhibitor can overcome the inability of severed mouse retinal ganglion cells to regenerate. >> Perspective p. 869

NEUROSCIENCE
PirB Is a Functional Receptor for Myelin Inhibitors of Axonal Regeneration
J. K. Atwal et al.
Proteins embedded in the myelin wrappings of axons inhibit regeneration of injured nerves, in part, by binding to an immunoglobulin-like receptor on growth cones. >> Perspective p. 869

NEUROSCIENCE
"Who" Is Saying "What"? Brain-Based Decoding of Human Voice and Speech
E. Formisano, F. De Martino, M. Bonte, R. Goebel
Distinct patterns of activity elicited in auditory cortex by different vowels and different speakers allows independent identification of who is speaking and what they are saying.
NAADP elicits an initial release of calcium, which is subsequently amplified through the action of other calcium messengers.

This year’s award went to the scientists who discovered green fluorescent protein and developed it as an experimental tool.

View Awards Lectures and interviews with prominent cell biologists from the American Society for Biochemistry and Molecular Biology; in Web Broadcasts.

View seminars from the annual meeting of the American Society for Bone and Mineral Research; in Web Broadcasts.

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