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Molecular Biology
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.

Research Articles
Physics
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
Temperature Sensing by an Olfactory Neuron in a Circuit Controlling Behavior of C. elegans
A. Kuhara et al.
An olfactory neuron in C. elegans also senses the ambient temperature and is necessary for worms’ propensity to seek out the temperature at which they were raised.
10.1126/science.1148922

Chemistry
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

Climate Change
Impact of Artificial Reservoir Water Impoundment on Global Sea Level
B. F. Chao, Y. H. Wu, Y. S. Li
Accounting for water impounded globally in artificial lakes that were filled during the past 80 years raises estimates of natural contributions to recent sea level.
**GEOL OGY**

**D e t e r m i n i n g C h o n d r i t i c I m p a c t o r S i z e f r o m t h e M a r i n e O s m i u m I s o t o p e R e c o r d**


The difference in osmium concentrations and isotopes between seawater and asteroids allows reconstruction of impact occurrence and size, including for the Cretaceous.

**CHEMISTRY**

**L i n k e d R e a c t i v i t y a t M i n e r a l-W a t e r I n t e r f a c e s**

S. V. Yanina and K. M. Rosso

A current flow through a hematite crystal couples dissolution and growth reactions at different surfaces, a finding likely relevant to a broad range of semiconducting minerals.

**ECOLOGY**

**A l i g n i n g C o n s e r v a t i o n P r i o r i t i e s A c r o s s T a x a i n M a d a g a s c a r w i t h H i g h-R e s o l u t i o n P l a n n i n g T o o l s**

C. Kremen et al.

A broad analysis of many taxa throughout Madagascar identifies regions where conservation is likely to protect the most species.

**MEDICINE**

**A n A g o n i s t o f T o l l-L i k e R e c e p t o r 5 H a s R a d i o p r o t e c t i v e A c t i v i t y i n M o u s e a n d P r i m a t e M o d e l s**

L. G. Burdelya et al.

A drug that triggers the pathway that cancer cells use to avoid death can protect healthy cells from the harmful effects of radiation treatment.

**IMMUN OLOGY**

**E v i d e n c e f o r E d i t i n g o f H u m a n P a p i l l o m a v i r u s D N A b y A P O B E C 3 i n B e n i g n a n d P r e c a n c e r o u s L e s i o n s**


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**

**S e g r e g a t i o n o f A x i a l M o t o r a n d S e n s o r y P a t h w a y s v i a H e t e r o t y p i c T r a n s-A x o n a l S i g n a l i n g**

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**

**C o n v e r g e n c e o f C a m p y l o b a c t e r S p e c i e s : I m p l i c a t i o n s f o r B a c t e r i a l E v o l u t i o n**

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.

**CELL BIOLOGY**

**L e i o m o d i n i s a n A c t i n F i l a m e n t N u c l e a t o r i n M u s c l e C e l l s**

D. Chereau et al.

A drug that triggers the pathway that cancer cells use to avoid death can protect healthy cells from the harmful effects of radiation treatment.

**B I O C H E M I S T R Y**

**D e c o n s t r u c t i o n o f I t e r a t i v e M u l t i d o m a i n P o l y k e t i d e S y n t h a s e F u n c t i o n**

J. M. Crawford et al.

A cell that couples dissolution and growth reactions at different surfaces, a finding likely relevant to a broad range of semiconducting minerals.

**E V O L U T I O N**

**V i d e o-R a t e F a r-F i e l d O p t i c a l N a n o s c o p y D i s s e c t s S y n a p t i c V e s i c l e M o v e m e n t**

V. Westphal et al.

Sequential subdiffraction resolution images of fluorescently labeled synaptic vesicles in live cells reveal that they exhibit several movement patterns.
Eph-ephrin interactions.

**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.