A growing number of U.S. corporations are reacting to reports of poor student performance on national and international tests by contributing time and money to efforts aimed at improving math and science education in U.S. schools. To find out what they are doing and how well it’s working, see page 1030.

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Selective Blockade of MicroRNA Processing by Lin-28
S. R. Viswanathan, G. Q. Daley, R. I. Gregory
A protein necessary for reprogramming skin fibroblasts to pluripotent stem cells is an RNA-binding protein that normally inhibits microRNA processing in embryonic cells.
10.1126/science.1154040

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.
10.1126/science.1154228

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Magnetar-like Emission from the Young Pulsar in Kes 75
F. P. Gavriil et al.
A pulsar exhibits x-ray bursts like that seen only in magnetars, which have ultrahigh magnetic fields, implying that neutron stars exhibit a continuum of magnetic activity.
10.1126/science.1153465

PHYSICS
Energy Gaps and Kohn Anomalies in Elemental Superconductors
P. Aynajian et al.
High-resolution neutron scattering experiments reveal behavior in pure lead and niobium superconductors beyond that described by the standard theoretical framework.
10.1126/science.1154115

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DEVELOPMENTAL BIOLOGY
Juvenile Hormone Regulates Butterfly Larval Pattern Switches
R. Futahashi and H. Fujiwara
In swallowtail butterflies, a hormone regulates a dramatic developmental shift as the young caterpillars, which mimic bird droppings, grow into the green cryptic larva.

REPORTS
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A Photon Turnstile Dynamically Regulated by One Atom
B. Dayan et al.
A single atom interacting with an optical microresonator can convert an influx of photons into a regular output of single photons.

MATERIALS SCIENCE
The Force Needed to Move an Atom on a Surface
M. Ternes et al.
An atomic force microscope can be tuned to measure the lateral and vertical forces required to move atoms or molecules on a surface, thus probing the bond strengths.

MATERIALS SCIENCE
Bioinspired Design and Assembly of Platelet Reinforced Polymer Films
L. J. Bonderer, A. R. Studart, L. J. Gauckler
In a design borrowed from biomaterials, ceramic plates less than 1 millimeter thick are sequentially deposited between flexible organic layers to yield strong, flexible films.

MATERIALS SCIENCE
Atomic-Scale Chemical Imaging of Composition and Bonding by Aberration-Corrected Microscopy
D. A. Muller et al.
Correcting electron optical aberrations to fifth order increases the beam current of an electron microscope enough for atomic-scale mapping of chemical species and bonds.
Induction System emissions have already greatly changed caused by a previously uncharacterized human polyomavirus.

A rare, but highly aggressive, form of human skin cancer may be

H. Feng, M. Shuda, Y. Chang, P. S. Moore

Merkel Cell Carcinoma

Two similar members of the protein complex that protects the free ends of chromosomes have distinct binding sites for other complex members and accessory proteins.

Y. Chen et al.

Spike Latencies in salamanders, ganglion cells, which project from the retina to the brain, use the relative timing of single spikes in each cell to quickly encode a visual scene.

T. Galissich and M. Meister

Rapid Neural Coding in the Retina with Relative Spike Latencies

D. Marchiori and M. Warglien

Regret-Driven Neural Networks

An unexpectedly simple neural network model that includes feedback driven by regret predicts human behavior in strategic games and out-performs existing models of learning.

Predicting Human Interactive Learning by Regret-Driven Neural Networks

N. Matsuo, L. Reijmers, M. Mayford

Mushroom-shaped synaptic spines activated during learning preferentially capture newly synthesized glutamate receptors, which may contribute to memory storage.

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A Shared Docking Motif in TRF1 and TRF2 Used for Differential Recruitment of Telomeric Proteins

Y. Chen et al.

Spike Latencies

The structure of a repressor-activator complex for galactose metabolism shows that its assembly is controlled by the ratio of two cofactors that reflect the cell’s metabolism.

P. R. Kumar et al.

NADP Regulates the Yeast GAL Induction System

MOLECULAR BIOLOGY

Differential Regulation of Dynein and Kinesin Motor Proteins by Tau

R. Dixit, J. L. Ross, Y. E. Goldman, E. L. F. Holzbaur

When molecular motors move along microtubules, they encounter the bound protein tau; the dynein motor then reverses direction, whereas the kinesin motor detaches.

MOLECULAR BIOLOGY

AMPA Receptors with Learning

N. Matsuo, C. Ming, P. S. Vartanian, M. Mayford

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Kremen regulates Wnt signaling.

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PERSPECTIVE: Context-Dependent Activation or Inhibition of Wnt–β-Catenin Signaling by Kremen

C. S. Cseleényi and E. Lee

The effect of Kremen 2 on Wnt signaling depends on the presence or absence of the Wnt antagonist Dickkopf1.

PERSPECTIVE: A Cytoskeletal Platform for Local Translation in Axons

F. P. G. Van Horck and C. E. Holt

Mutual interactions between the cytoskeleton and local translation may mediate growth cone steering response.

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