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.

Photo illustration: Kelly Krause/Science (images: Jupiter Images; Getty)

NEWS OF THE WEEK
Once Shunned, Test for Alzheimer’s Risk Headed to Market 1022
House Panel Berates Science Adviser on 2009 ‘Shortfall’ 1023
Harvard Faculty Votes to Make Open Access Its Default Mode 1025

SCIENCESCOPE
Lawmakers Claim Great Lakes Report Was ‘Suppressed’ 1026
Microbicide Trial Adds to String of HIV Prevention Failures 1026
Tigers in Decline, Indian Survey Finds 1027
AAAS Annual Meeting 1028
How Human Intelligence Evolved—Is It Science or ‘Paleofantasy’?
Tracking and Tackling Deprivation’s Toll
Ocean CO₂ Studies Look Beyond Coral

NEWS FOCUS
A New Bottom Line for School Science
From an Idea to a School
Money Doesn’t Always Talk
Crossing the Divide 1034
Japan’s Ocean Drilling Vessel Debuts to Rave Reviews 1037

LETTERS
The Legitimacy of Genetic Ancestry Tests
T. Frudakis Response D. A. Bolnick et al.

CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
The Biology of Human Longevity Inflammation, Nutrition, and Aging in the Evolution of Lifespans C. E. Finch, reviewed by D. J. Holmes
Did My Neurons Make Me Do It? Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will N. Murphy and W. S. Brown, reviewed by T. S. Ganson

POLICY FORUM
The Demography of Educational Attainment and Economic Growth W. Lutz, J. C. Cuaresma, W. Sanderson

PERSPECTIVES
A Skin Cancer Virus?
R. P. Viscidi and K. V. Shah >> Report p. 1096
The Cutting Edge of Plasma Etching
T. Lill and O. Joubert
How to Move an Atom
O. Custance and S. Morita >> Report p. 1066
Learning with Regret
M. D. Cohen >> Report p. 1111
Bioinspired Structural Materials
C. Ortiz and M. C. Boyce >> Report p. 1069
Retrospective: Judah Folkman (1933–2008)
D. Hanahan and R. A. Weinberg
MOLECULAR BIOLOGY
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

TECHNICAL COMMENT ABSTRACTS
ECOLOGY
Comment on "International Conservation Policy Delivers Benefits for Birds in Europe"
R. Rodríguez-Muñoz, A. F. Ojanguren, T. Tregenza
full text at www.sciencemag.org/cgi/content/full/319/5866/1042b

Response to Comment on "International Conservation Policy Delivers Benefits for Birds in Europe"
P. F. Donald et al.
full text at www.sciencemag.org/cgi/content/full/319/5866/1042c

REVIEW
CHEMISTRY
Nuclear Coupling and Polarization in Molecular Transport Junctions: Beyond Tunneling to Function
M. Galperin, M. A. Ratner, A. Nitzan, A. Troisi

BREVIA
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
PHYSICS
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. >> Perspective p. 1051

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. >> Perspective p. 1053

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.
Reports continued...

**GEOPHYSICS**

**Extending Earthquakes’ Reach Through Cascading**

D. Marsan and O. Lengliné

A model of earthquake connectivity implies that small quakes may collectively trigger more quakes than larger ones and that cascades of triggered quakes are common.

**CLIMATE CHANGE**

**Human-Induced Changes in the Hydrology of the Western United States**

T. P. Barnett et al.

Combining a regional hydrologist and global climate model implies that human-caused CO₂ emissions have already greatly changed river flows and snow pack in the western United States.

**BIOCHEMISTRY**

**Atomic-Level Models of the Bacterial Carboxysome Shell**

S. Tanaka et al.

Pentameric proteins around the carboxysome, an organelle involved in carbon fixation, fit together with hexagonally packed proteins to form the organelle’s icosahedral shell.

**CELL BIOLOGY**

**Differential Regulation of Dynemin 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 dynemin motor then reverses direction, whereas the kinesin motor detaches.

**MOLECULAR BIOLOGY**

**NADP Regulates the Yeast GAL Induction System**

P. R. Kumar et al.

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.

**MOLECULAR BIOLOGY**

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

Y. Chen et al.

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.

**MEDICINE**

**Clonal Integration of a Polyomavirus in Human Merkel Cell Carcinoma**

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

A rare, but highly aggressive, form of human skin cancer may be caused by a previously uncharacterized human polyomavirus.

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**GENETICS**

**Worldwide Human Relationships Inferred from Genome-Wide Patterns of Variation**

J. Z. Li et al.

Analysis of variation in 51 human populations reveals details of European subpopulations and confirms that humans formed a chain of colonies as they radiated out from Africa.

**NEUROSCIENCE**

**Spine-Type–Specific Recruitment of Newly Synthesized AMPA Receptors with Learning**

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.

**NEUROSCIENCE**

**Rapid Neural Coding in the Retina with Relative Spike Latencies**

T. Golisch and M. Meister

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.

**PSYCHOLOGY**

**Predicting Human Interactive Learning by Regret-Driven Neural Networks**

D. Marchiori and M. Warglien

An unexpectedly simple neural network model that includes feedback driven by regret predicts human behavior in strategic games and outperforms existing models of learning. >> Perspective p. 1052
Science 319 (5866), 1005-1123.