COVER
Wealthy nations now devote billions of dollars each year to helping low- and middle-income countries confront HIV/AIDS epidemics. Investment in biomedical research has also shot up. What has come of this flood of money? And will there be enough in the future to meet increasing demands? See the special section beginning on page 511.
*Image: Kelly Krause/Science*

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P. A. Mazalli et al.
The spectra of a recent supernova evolved from that of a more energetic event to that of a less energetic one, providing a link between previous observations.
10.1126/science.1158088

MEDICINE
Human CHN1 Mutations Hyperactivate α2-Chimaerin and Cause Duane’s Retraction Syndrome
N. Miyake et al.
A signaling protein that helps nerve fibers find their correct target muscles is required for innervation of the eye muscles and, if defective, causes an eye movement disorder.
10.1126/science.1156121

ATMOSPHERIC SCIENCE
Tail Reconnection Triggering Substorm Onset
V. Angelopoulos et al.
Satellite and ground-based data show that reconnection of magnetic field lines in Earth’s magnetotail precedes dramatic aurora displays and is the source of magnetic substorms.
10.1126/science.1160495

PERSPECTIVE: The Elusive Onset of Geomagnetic Substorms
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Response to Comment on “Major Australian-Antarctic Plate Reorganization at Hawaiian-Emperor Bend Time”
J. M. Whittaker et al.
full text at www.sciencemag.org/cgi/content/full/321/5888/490d

GEOCHEMISTRY
A Quantitative Link Between Recycling and Osmium Isotopes
A. V. Sobolev et al.
Osmium isotope data and metal concentrations from Icelandic lavas show that the underlying mantle contains some recycled oceanic crust that is 1 to 2 billion years old.

RESEARCH ARTICLE
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An Argonaute Transports siRNAs from the Cytoplasm to the Nucleus
S. Guang et al.
A protein similar to one that binds small cytoplasmic RNAs transports small RNAs into the nucleus, where they participate in RNA-based nuclear silencing processes.
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BSKs Mediate Signal Transduction from the Receptor Kinase BR11 in Arabidopsis
W. Tang et al.
When a plant membrane receptor is activated by a steroid hormone, two kinases are phosphorylated that ultimately regulate gene expression and development.

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One-Third of Reef-Building Corals Face Elevated Extinction Risk from Climate Change and Local Impacts
K. E. Carpenter et al.
The viability of the world’s major coral reefs is endangered both by direct human disturbance and by disease and bleaching events brought on by climate change.

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Eco1-Dependent Cohesin Acetylation During Establishment of Sister Chromatid Cohesion
T. Rolef Ben-Shahar et al.
A molecular determinant for the establishment of sister chromatid cohesion.

BIOCHEMISTRY
ErDj5 Is Required as a Disulfide Reductase for Degradation of Misfolded Proteins in the ER
R. Ushioda et al.
A disulfide reductase found in the endoplasmic reticulum cleaves the disulfide bonds of misfolded proteins so they can be transported into the cytoplasm for degradation.

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DNA Events Manipulating the Metazoan Mitochondrial Genome with Targeted Restriction Enzymes
H. Xu, S. Z. DeLuca, P. H. O’Farrell
Flies with mutant mitochondria—generated by introduction of restriction enzymes—show many of the same phenotypes as humans with mitochondrial mutations.

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Entangling the Spatial Properties of Laser Beams
K. Wagner et al.
Combining a spatially squeezed reference laser beam with another squeezed beam quantum mechanically entangles their position and momentum.

Entangled Images from Four-Wave Mixing
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Passing light through a warm cloud of rubidium atoms creates quantum mechanically entangled twin images.

Phase Transitions of Dirac Electrons in Bismuth
L. Li et al.
Bismuth exhibits sharp phase transitions in its magnetization when subjected to high magnetic fields at low temperature.

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Did Cooling Oceans Trigger Ordovician Biodiversification? Evidence from Conodont Thermometry
J. A. Trotter et al.
About 450 million years ago, ocean temperatures dropped to values near those today after being much higher for many millions of years, coeval with a sharp jump in biodiversity.

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Enhancement of Thermoelectric Efficiency in PbTe by Distortion of the Electronic Density of States
J. P. Heremans et al.
Introduction of thallium into lead telluride improves its ability to generate electricity when heated by up to 50 percent.

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