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Dislocation-Driven Nanowire Growth and Eshelby Twist
A screw dislocation drives the growth of a nanowire pine tree, in which branches regularly extend from the trunk in a spiral, confirming Eshelby’s theory of dislocations.
10.1126/science.1157131

MEDICINE
A Polymorphism Within the G6PC2 Gene Is Associated with Fasting Plasma Glucose Levels
N. Bouatia-Naji et al.
Variation in a gene for a protein in the pancreas may help explain why people have different levels of fasting blood glucose, a factor that affects disease risk.
10.1126/science.1156849

TECHNICAL COMMENT ABSTRACTS
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Comment on “Long-Lived Giant Number Fluctuations in a Swarming Granular Nematic”
I. S. Aranson, A. Snezhko, J. S. Olafsen, J. S. Urbach
full text at www.sciencemag.org/cgi/content/full/320/5876/612c
Response to Comment on “Long-Lived Giant Number Fluctuations in a Swarming Granular Nematic”
V. Narayan, S. Ramaswamy, N. Menon
full text at www.sciencemag.org/cgi/content/full/320/5876/612d

BREVIA
CLIMATE CHANGE
Fire-Derived Charcoal Causes Loss of Forest Humus
D. A. Wardle, M.-C. Nilsson, O. Zackrisson
Charcoal enhances the microbial activity in soils, which in turn decreases the amount of carbon and humus in forests over time.

RESEARCH ARTICLES
NEUROSCIENCE
A Specialized Forebrain Circuit for Vocal Babbling in the Juvenile Songbird
D. Aronov, A. S. Andalman, M. S. Fee
The babbling of young zebra finches learning to sing is produced by a brain region distinct from the adult song center, a pattern that may also apply to other motor systems.

MATERIALS SCIENCE
High-Thermoelectric Performance of Nanostructured Bismuth Antimony Telluride Bulk Alloys
B. Poudel et al.
Milling a thermoelectric alloy, which produces electricity from a thermal gradient, into a nanopowder, then pressing it into a bulk form, greatly improves its performance.

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Coherent Control of Decoherence
M. P. A. Branderhorst et al.
Iterative shaping of a laser pulse using feedback from a fluorescence signal extends the phase stability of a molecular vibration in the face of rotational jostling.

PHYSICS
Strong Interactions in Multimode Random Lasers
H. E. Türeci, L. Ge, S. Rotter, A. D. Stone
A theoretical approach describes lasing in strongly disordered media where multiple excitation modes may switch on and off to emit light over a range of wavelengths.

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Silica-on-Silicon Waveguide Quantum Circuits
Quantum circuits—in which individual photons interfere, entangle, and form logic gates—have been realized on silicon chips.

CHEMISTRY
Practical Synthesis of Prostratin, DPP, and Their Analogs, Adjuvant Leads Against Latent HIV
P. A. Wender, J.-M. Kee, J. M. Warrington
A four-step synthesis starting from an abundant natural material yields large quantities of prostratin, a scarce natural product that may be useful in combating HIV.

OCEAN SCIENCE
Marine Polyphosphate: A Key Player in Geologic Phosphorus Sequestration
J. Diaz et al.
Polyphosphates derived from diatoms may help crystallize calcium phosphate (apatite) in marine sediments globally, explaining how this large sink for phosphorus forms.

OCEAN SCIENCE
Expanding Oxygen-Minimum Zones in the Tropical Oceans
L. Stramma, G. C. Johnson, J. Sprintall, V. Mohrholz
Since the 1950s, dissolved oxygen concentrations have decreased in low-oxygen zones of the tropical Atlantic and equatorial Pacific, and the zones have expanded toward the surface.

ECOLOGY
A General Model for Food Web Structure
S. Allesina, D. Alonso, M. Pascual
A model based on likelihood analysis is able to replicate the actual structure of food web networks derived from experimental data.

MEDICINE
ROS-Generating Mitochondrial DNA Mutations Can Regulate Tumor Cell Metastasis
K. Ishikawa et al.
Mutations in mitochondrial DNA that cause enhanced production of reactive oxygen species can increase the propensity of tumor cells to metastasize.

DEVELOPMENTAL BIOLOGY
In Vivo Imaging of Membrane-Associated Glycans in Developing Zebrafish
S. T. Laughlin, J. M. Baskin, S. L. Amacher, C. R. Bertozzi
Imaging of cell-surface sugars in developing zebrafish reveals dramatic bursts of sugar production in the jaw, olfactory organ, and pectoral fin 60 to 72 hours after fertilization.

CELL SIGNALING
Phosphorylation by p38 MAPK as an Alternative Pathway for GSK3β Inactivation
T. M. Thornton et al.
A well-studied kinase is shown to be unexpectedly phosphorylated and inhibited by mitogen-activated protein kinase, and this modification activates cell-survival pathways.

CELL BIOLOGY
Asymmetric Tethering of Flat and Curved Lipid Membranes by a Golgin
G. Drin, V. Morello, J.-F. Casella, P. Gounon, B. Antonny
A long protein may tether vesicles to the Golgi apparatus by binding the positively curved vesicle membrane to its N terminus and flat membranes to its C terminus.

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. >> Perspective p. 619

IMMUNOLOGY
A Haptoglobin-Hemoglobin Receptor Conveys Innate Immunity to Trypanosoma brucei in Humans
B. Vanhollebeke et al.
A lipoprotein in human blood protects against an African parasite by binding to a parasite receptor and triggering uptake of the lipoprotein, which contains a toxic component.
Seeing the light.

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Analysis links blood-replacement products to higher risk of heart attack and death.

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PERSPECTIVE: VGF, a New Player in Antidepressant Action?
J. E. Malberg and L. M. Monteggia
The neuropeptide VGF appears to play a role in the antidepressant effects of exercise, the neurotrophic factor BDNF, and the neurotransmitter serotonin.

PERSPECTIVE: Synaptic Patterning by Morphogen Signaling
W. R. Williamson and P. R. Hiesinger
The morphogen Activin acts as a permissive and local motility restriction signal around individual photoreceptor terminals.

PODCAST
E. M. Adler and A. M. VanHook
Some glial cells can generate action potentials and are hypersensitive to ischemic injury.

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C. Wald
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B. L. Benderly
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P. Gosling
The values and culture of nonprofit organizations make them an exciting and rewarding career choice.

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J. Fernández
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