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Fluorescence microscopy image showing fragmentation of chromosomal DNA (green) during programmed cell death or apoptosis in a Caenorhabditis elegans embryo. Chromosomes are stained blue and nuclear envelopes red. During apoptosis, the ribonuclease Dicer, known for its role in gene silencing, is converted to a deoxyribonuclease and initiates this DNA fragmentation process. See page 327.
Image: Jay Parrish/University of Colorado
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342 A Fast Soluble Carbon-Free Molecular Water Oxidation Catalyst Based on Abundant Metals
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Fluorescently labeled sperm allow direct visualization of their activity within the female reproductive tract of flies.

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Suppressive T cells repurpose inflammatory signaling pathways to promote their suppressive functions.
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pH Sensing by Intracellular Salmonella Induces Effector Translocation
X.-J. Yu et al.
Intracellular Salmonella senses host cytosolic pH, resulting in degradation of a regulatory complex and effector translocation.
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Genome-Wide Evolutionary Analysis of Eukaryotic DNA Methylation
A. Zemach et al.
Analysis of DNA methylation in 17 species suggests a path for the evolution of this epigenetic mark.
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Structural Insights into the Assembly and Function of the SAGA Deubiquitinating Module
N. L. Samara et al.
Structures give insight into how a regulator of eukaryotic gene expression achieves one of its chromatin-modifying functions.
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The Equation of State of a Low-Temperature Fermi Gas with Tunable Interactions
N. Navon et al.
A Fermi gas is characterized along the crossover regime between its weak and strongly interacting limits.
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Lopsided Growth of Earth’s Inner Core
M. Monneaux et al.
The asymmetry of the inner core is explained by iron crystallization on one side and melting on the other.
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Regional Variation of Inner-Core Anisotropy from Seismic Normal-Mode Observations
A. Deuss et al.
Seismic data from the inner core reveal that anisotropic regions overlap with gravitational anomalies.
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TECHNICAL COMMENTS

Comment on “Modafinil Shifts Human Locus Coeruleus to Low-Tonic, High-Phasic Activity During Functional MRI” and “Homeostatic Sleep Pressure and Responses to Sustained Attention in the Suprachiasmatic Area”
S. V. Astafiev et al.
full text at www.sciencemag.org/cgi/content/full/328/5976/309-a

Response to Comment on “Modafinil Shifts Human Locus Coeruleus to Low-Tonic, High-Phasic Activity During Functional MRI”
M. J. Minzenberg et al.
full text at www.sciencemag.org/cgi/content/full/328/5976/309-b

Response to Comment on “Homeostatic Sleep Pressure and Responses to Sustained Attention in the Suprachiasmatic Area”
C. Schmidt et al.
full text at www.sciencemag.org/cgi/content/full/328/5976/309-c

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RESEARCH ARTICLE: Identification of the miR-106b–25 microRNA Cluster as a Proto-Oncogenic PTEN-Targeting Intron That Cooperates with its Host Gene MCM7 in Transformation
L. Poliseno et al.
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L. Milenkovic and M. P. Scott
Protein kinase A orchestrates Hedgehog signaling from the base of the primary cilium.

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Conventions of Scientific Authorship
V. Venkatraman
The rules and conventions of authorship are ever-changing and rarely clear.

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E. Pain
Begaña Vitoriano Villanueva uses her math skills to help aid organizations respond to disasters.

Tooling Up: Clear and Succinct Rules the Day
D. Jensen
The job search is immeasurably aided by good, transparent writing.

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PERSPECTIVE: Optimal Control of Blood Glucose—The Diabetic Patient or the Machine?
L. Brown and E. R. Edelman
Diabetic patients may benefit from a device that uses a computer algorithm to deliver proper amounts of insulin and glucagon.

PERSPECTIVE: Challenges in Using Stem Cells for Cardiac Repair
C. L. Mummery et al.
Stem cell–derived cardiomyocytes offer promise for treating damage caused by heart attacks.

RESEARCH: A Bi-Hormonal Closed-Loop Artificial Pancreas for Type 1 Diabetes
F. H. El-Khatib et al.
An algorithm continuously delivers appropriate insulin and glucagon doses to diabetic patients, maintaining their blood glucose at normal values, even after high-carbohydrate meals.

T. Janowitz and D. K. Menon
The methods and devices used in the clinical management of neurological patients can provide data to facilitate progress in treating brain trauma.

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