Structure of the Wnt signaling molecule (red) in complex with the Frizzled ligand-binding domain (yellow), schematically depicted as connected to the cell surface. A key feature of this structure is the visualization of a lipid group (blue) on Wnt directly engaging Frizzled. The Wnt/Frizzled mode of binding paves the way for the design of Wnt-based therapeutics. See page 59.
RESEARCH ARTICLES

54  Eddy-Driven Stratification Initiates North Atlantic Spring Phytoplankton Blooms  
A. Mahadevan et al.  
Oceans eddies can trigger springtime plankton blooms previously attributed to surface heating.  
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59  Structural Basis of Wnt Recognition by Frizzled  
C. Y. Janda et al.  
The structure of the morphogen Wnt bound to its receptor provides a basis for understanding Wnt’s functional pleiotropy.  
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64  Evolution and Functional Impact of Rare Coding Variation from Deep Sequencing of Human Exomes  
J. A. Tennessen et al.  
Most functionally consequential variants in protein-coding genes are rare and, thus, difficult to find.  
>> Perspective p. 39; Report p. 100

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P. André et al.  
Observations by millimeter-wave interferometry reveal a substellar object not massive enough to sustain hydrogen fusion.  
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72  Heralded Entanglement Between Widely Separated Atoms  
J. Hofmann et al.  
Heralded entanglement between single atoms 20 meters apart is a promising step toward long-distance quantum communication.  
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75  Cavity Cooling Below the Recoil Limit  
M. Wolke et al.  
Rubidium atoms are heated and cooled by single-photon absorption and emission in a narrow-bandwidth optical cavity.

78  Large Volcanic Aerosol Load in the Stratosphere Linked to Asian Monsoon Transport  
A. E. Bourassa et al.  
Even moderate volcanic eruptions can inject sulfur dioxide into the stratosphere with the help of the Asian monsoon.

81  ENSO Drove 2500-Year Collapse of Eastern Pacific Coral Reefs  
L. T. Toth et al.  
A 6000-year record captures the influence of the El Niño–Southern Oscillation on coral reefs off the coast of Panama.  
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V. S. Sompanshi et al.  
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93  Identification and Functional Expression of the Mitochondrial Pyruvate Carrier  
S. Herzig et al.  
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96  A Mitochondrial Pyruvate Carrier Required for Pyruvate Uptake in Yeast, Drosophila, and Humans  
D. K. Bricker et al.  
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104  Recurrent Hemizygous Deletions in Cancers May Optimize Proliferative Potential  
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Northeastern soils are recovering but still show signs of damage. http://scim.ag/Acid-Rain

Ancient Hunter-Gatherers Kept in Touch
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RESEARCH ARTICLE: Perinuclear Mitochondrial Clustering Creates an Oxidant-Rich Nuclear Domain Required for Hypoxia-Induced Transcription
A.-B. Al-Mehdi et al. Hypoxia triggers a transcriptional response initiated by mitochondria.

RESEARCH RESOURCE: Quantitative Imaging of Epithelial Cell Scattering Identifies Specific Inhibitors of Cell Motility and Cell-Cell Dissociation
D. Loecke et al. Imaging analysis tools identify drugs that inhibit different aspects of cell scattering.

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A. Hamai and P. Codogno Yeast and mammals use protein acetylation to promote the formation of the autophagosome.

PODCAST
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O. Cooper et al. iPSC-derived neural cells from Parkinson’s disease patients provide insights into this neurodegenerative disorder.

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D. Issadore et al.
PERSPECTIVE: Circulating Tumor Cells—Getting More from Less
J. M. Lang et al. A microfluidic/semiconductor chip analyzes single tagged ovarian cancer cells in tissue samples.

RESEARCH ARTICLE: Targeted Expression of Mutated ALK Induces Neuroblastoma in Transgenic Mice
L. C. Heukamp et al. ALK inhibitors induce complete tumor regression in a mouse model of ALK-driven neuroblastoma.