COVER
The mirror-like surface of Anish Kapoor's sculpture "Cloud Gate" reflects the cityscape of Chicago. The theme of the AAAS Annual Meeting in Chicago, 12 to 16 February 2009, acknowledges the 150th anniversary of Charles Darwin's *On the Origin of Species*, and the meeting starts on his 200th birthday. See the preliminary program beginning on page 762.
*Image: Paul Sampson*

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Time-Resolved Dynamics in N$_2$O$_4$ Probed Using High Harmonic Generation
W. Li et al.
Electrons can be ejected from multiple orbitals of N$_2$O$_4$ by exploiting different stages in its excited vibrations, yielding an attosecond light probe of molecular dynamics.
10.1126/science.1163077

BIOCHEMISTRY
Structural Evidence for Common Ancestry of the Nuclear Pore Complex and Vesicle Coats
S. G. Brohawn et al.
The protein complex that controls entry and exit from the cell nucleus shares a structural element with vesicle coat proteins, suggesting that it is built around a lattice-like scaffold.
10.1126/science.1165886

LETTER: European Union and NIH Collaborate
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R. E. Mistlberger et al.
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Response to Comment on “Differential Rescue of Light- and Food-Entrainable Circadian Rhythms”
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B. K. McFarland, J. P. Farrell, P. H. Bucksbaum, M. Gühr
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Aneuploidy Affects Proliferation and Spontaneous Immortalization in Mammalian Cells
B. R. Williams et al.
Mouse cell lines carrying extra copies of one of four chromosomes all show less cell proliferation and higher gene expression, but vary in how fast they become cancer-like cells. >> Perspective p. 692

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Structure and Molecular Mechanism of a Nucleobase–Cation–Symport-1 Family Transporter
S. Weyand et al.
The structure of a membrane transporter in an open state suggests that in- and out-facing cavities reciprocally open and close coordinated by two transmembrane segments.

PLANETARY SCIENCE
Magnetism on the Angrite Parent Body and the Early Differentiation of Planetesimals
B. P. Weiss et al.
A type of primitive meteorite from the earliest small bodies in the solar system preserves remnant magnetism, implying that these planetesimals had a convecting metallic core.

PHYSICS
The Role of Impulse on the Initiation of Particle Movement Under Turbulent Flow Conditions
P. Diplas et al.
Entrainment of sediment grains from, say, a stream bed, by turbulent flow depends not just on the magnitude of the applied fluid forces but also on their duration.

MATERIALS SCIENCE
Molecular Confinement Accelerates Deformation of Entangled Polymers During Squeeze Flow
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Experimental Evidence for Spatial Self-Organization and Its Emergent Effects in Mussel Bed Ecosystems
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Interactions among individual mussels result in large-scale spatial patterns in mussel beds that are beneficial to the population—by promoting secondary production, for example.

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Natal Homing and Connectivity in Atlantic Bluefin Tuna Populations
J. R. Rooker et al.
Isotopes in the ear bones of tuna reveal that two populations—from the Gulf of Mexico and the Mediterranean—mingle in the Atlantic as adolescents but return home to breed.

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Glia Are Essential for Sensory Organ Function in C. elegans
T. Bacaj, M. Tevlin, Y. Lu, S. Shaham
Nonneural glial cells are required for the normal operation of the main sensory organ of a nematode, influencing neuronal shape and function, as well as behavior. >> Perspective p. 693

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J. Zhao, B. K. Sun, J. A. Erwin, J.-J. Song, J. T. Lee
A small RNA cleaved from a larger precursor recruits silencing proteins to the X chromosome to inactivate it in female mammals, which have an extra copy.

IMMUNOLOGY
Deletion of Trpm7 Disrupts Embryonic Development and Thymopoiesis Without Altering Mg²⁺ Homeostasis
J. Jin et al.
A cation channel that conducts both Ca²⁺ and Mg²⁺ is unexpectedly required for normal mouse development, specifically for proper maturation of the thymus and T cells.
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RESEARCH ARTICLE: Essential Role of DAP12 Signaling in Macrophage Programming into a Fusion-Competent State
Signaling through the DAP12 adaptor triggers a gene expression profile that makes macrophages competent to fuse and form multinucleated giant cells.

PROTOCOL: High-Resolution Imaging of Redox Signaling in Live Cells Through an Oxidation-Sensitive Yellow Fluorescent Protein
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JOURNAL CLUB: The HIF-1α-C/EBPα Axis
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