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Stem Cells

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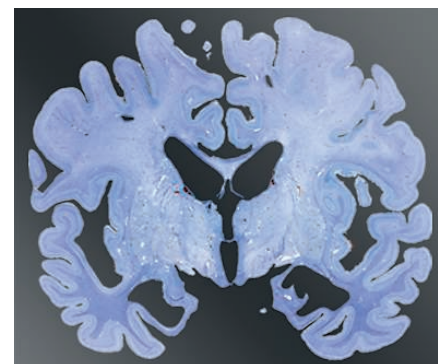
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COVER

Colonies of human embryonic stem cells with differentiating cells at their edges, growing on mouse feeder cells. Cell nuclei are stained in blue, nuclear lamina in red, and cytoplasm in green (overlapping blue and red areas appear purple). The self-renewal capacity and pluripotency of human stem cells make them valuable for modeling human disease. These cells also display potential for transplantation medicine. See the special section beginning on page 1661.

Image: Oded Kopper and Nissim Benvenisty, The Hebrew University of Jerusalem

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- 1683 **Elevated CO₂ Enhances Otolith Growth in Young Fish**
D. M. Checkley Jr. et al.
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- 1684 **Auxin-Dependent Patterning and Gamete Specification in the *Arabidopsis* Female Gametophyte**
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Scanning tunneling spectroscopy reveals strong electronic correlations in the insulating state of a cuprate superconductor.
- 1693 **High-Resolution NMR in Magnetic Fields with Unknown Spatiotemporal Variations**
P. Pelupessy et al.
A coherence transfer method overcomes disruptions to nuclear magnetic resonance spectra by magnetic field fluctuations.
- 1697 **White Phosphorus Is Air-Stable Within a Self-Assembled Tetrahedral Capsule**
P. Mal et al.
A molecular cage keeps phosphorus from igniting in air, yet releases it easily for reactions when benzene is added.
- 1699 **Trapping Molecules on a Chip**
S. A. Meek et al.
Trapping a beam of carbon monoxide molecules onto a chip should enable fundamental studies of chemical dynamics.
- 1702 **Amplified Trace Gas Removal in the Troposphere**
A. Hofzumahaus et al.
A yet undescribed pathway for hydroxyl radical production is needed to account for reaction rates of highly polluted air.

- 1705 **Postmating Sexual Selection Favors Males That Sire Offspring with Low Fitness**
T. Bilde et al.

Multiple mating in beetles may not benefit females, as sexually antagonistic evolution may be at work.

- 1707 **Dynamic Signaling Network for the Specification of Embryonic Pancreas and Liver Progenitors**
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- 1710 **MicroRNA-92a Controls Angiogenesis and Functional Recovery of Ischemic Tissues in Mice**
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- 1713 **Mitochondrial STAT3 Supports Ras-Dependent Oncogenic Transformation**
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- 1716 **Synthetic Heterochromatin Bypasses RNAi and Centromeric Repeats to Establish Functional Centromeres**
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A tethered methyltransferase induces the tight-packing of DNA, the formation of a kinetochore, and chromosome segregation.

- 1720 **Diversity and Complexity in DNA Recognition by Transcription Factors**
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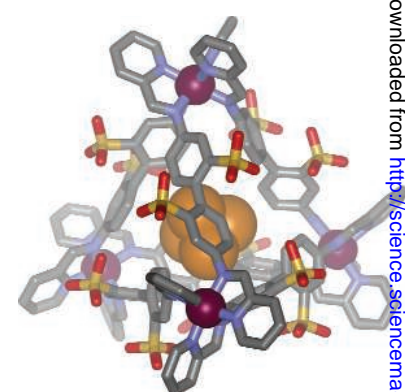
- 1724 **Genomic Footprints of a Cryptic Plastid Endosymbiosis in Diatoms**
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A growth factor involved in neuronal plasticity alters neurons in a specific area of the brain after chronic exposure to opioid drugs.

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String Theory, Quantum Phase Transitions, and the Emergent Fermi Liquid

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Mathematical methods developed in string theory to describe gravity are applied to complex condensed matter systems.

10.1126/science.1174962

Measuring the Cosmic Ray Acceleration Efficiency of a Supernova Remnant

E. A. Helder et al.

The pressure induced by cosmic rays produced by the explosion of a star exceeds the thermal pressure behind the shock wave.

10.1126/science.1173383

A Gene Network Regulating Lysosomal Biogenesis and Function

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Coordination of the genes that regulate lysosomal biogenesis occurs via a shared sequence motif and one transcription factor.

10.1126/science.1174447

An ER-Mitochondria Tethering Complex Revealed by a Synthetic Biology Screen

B. Kornmann et al.

A protein complex zippers mitochondria to endoplasmic reticulum for phospholipid transfer.

10.1126/science.1175088

DICER1 Mutations in Familial Pleuropulmonary Blastoma

D. A. Hill et al.

A rare form of lung cancer in children is associated with mutational disruption of an enzyme that generates small noncoding RNAs.

10.1126/science.1174334

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Lamprey sheds one-fifth of its genome, but no one's sure why.

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RESEARCH ARTICLE: The Kinesin Protein Kif7 Is a Critical Regulator of Gli Transcription Factors in Mammalian Hedgehog Signaling

H. O.-L. Cheung et al.

Kif7 may be the functional equivalent of the *Drosophila* kinesin-like protein Costal2.

RESEARCH ARTICLE: PKC- θ Modulates the Strength of T Cell Responses by Targeting Cbl-b for Ubiquitination and Degradation

T. Gruber et al.

PERSPECTIVE: Activation of T Cells: Releasing the Brakes by Proteolytic Elimination of Cbl-b

M. L. Schmitz

Degradation of the ubiquitin E3 ligase Cbl-b in response to T cell costimulation depends on PKC- θ .

PODCAST

A. Levchenko and A. M. VanHook

A microfluidic device enables high-throughput analysis of signaling in individual cells.

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