COVER
A mouse embryo at 9 days of gestation, stained for α-fetoprotein in the liver bud and yolk sac (upper left and right green domains) and for the transcription factor Pdx-1 in the ventral and dorsal pancreas buds (upper and lower red domains). Understanding the basis for organ development can provide insights into disease and stem cell programming. See the special section beginning on page 1489.

Image: Ewa Wandzioch and Ken Zaret

SPECIAL SECTION
Organ Development

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>> News story p. 1460; for related online content, see page 1429 or go to www.sciencemag.org/organdevelopment/
Human Fetal Hemoglobin Expression Is Regulated by the Developmental Stage-Specific Repressor BCL11A
V. G. Sankaran et al.
A way to reactivate a fetal form of γ-globulin in adults—by releasing it from repression by an inhibitor—may prove useful for treating certain genetic anemias.

10.1126/science.1165409

CELL BIOLOGY
RNA Exosome Depletion Reveals Transcription Upstream of Active Human Promoters
P. Preker et al.
Highly unstable transcripts exist upstream of active human promoters.

10.1126/science.1164096

CELL BIOLOGY
The Antisense Transcriptomes of Human Cells
Y. He, B. Vogelstein, V. E. Velculescu, N. Papadopoulos, K. W. Kinzler
The abundance and nonrandom genomic origin of antisense transcripts in human cells suggest that these RNAs are an important feature of gene regulation.

10.1126/science.1163853

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Lamellar ice is used as a template to form an aluminum oxide scaffold that can be pressed and filled with a polymer, producing a tough layered structure reminiscent of nacre.

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U. Schneider et al.
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A technique based on resolving the momentum of an electron escaping from a helium atom in an elliptically polarized light field clocks tunneling at less than 34 attoseconds.

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Optical Absorption and Radiative Thermal Conductivity
Silicate Perovskite to 125 Gpa
H. Kepller, L. S. Dubrovinsky, O. Narinyin, I. Kantor
At high pressures, silicate perovskite, abundant in Earth's mantle, is not opaque to optical and infrared light, implying that radiative heat flow is important in the deep Earth.

PLANETARY SCIENCE
Quasi-Periodic Bedding in the Sedimentary Rock Record of Mars
K. W. Lewis et al.
Stereo topographic mapping on Mars shows that some large impact craters were filled with sedimentary rock sequences made up of cyclical packages of meter-scaled beds.

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Photoexcited CRY2 Interacts with CIB1 to Regulate Transcription and Floral Initiation in Arabidopsis
H. Liu, X. Yu, K. Li, J. Kleijnat, H. Yang, D. Lister, C. Lin
Blue light triggers the association of a photoreceptor, transcription factor, and DNA site, thus inducing expression for the gene FT (flowering time) and initiating flowering.

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A Stress Signaling Pathway in Adipose Tissue Regulates Hepatic Insulin Resistance
G. Sabio et al.
In mice, some detrimental effects of a diet high in fat—insulin resistance, for instance—result from hormonal signals sent from fat cells to the liver. >> Perspective p. 1483

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Inhibition of Rac by the GAP Activity of Centralspindlin Is Essential for Cytokinesis
J. C. Canman et al.
During cell division, a component of the spindle inhibits a small regulatory binding protein, allowing another regulator to constrict a ring between the separating daughter cells.

NEUROSCIENCE
Astrogial Metabolic Networks Sustain Hippocampal Synaptic Transmission
N. Rouch, A. Koulakoff, V. Abudara, K. Willecke, C. Giaume
The glial astrocytes that surround neurons supply glucose or lactate to excitatory synapses though gap junctions that open when the neurons are active.

Activation of Pannexin-1 Hemichannels Augments Aberrant Bursting in the Hippocampus
R. J. Thompson et al.
Activation of a glutamate receptor in hippocampal cells leads to secondary opening of a gap junction–like channel that can contribute to seizure-like bursting.

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Centromere-Associated Female Meiotic Drive Entails Male Fitness Costs in Monkeyflowers
L. Fishman and A. Saunders
Competition between chromosomal homologs causes non-Mendelian meiotic segregation and fitness polymorphism in a natural monkeyflower population. >> Perspective p. 1484

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Maternal Alloantigens Promote the Development of Tolerogenic Fetal Regulatory T Cells in Utero
J. E. Mold et al.
Exposure of the human fetus to maternal cells during pregnancy can prompt development of regulatory T cells that prevent responses to non-inherited maternal antigens. >> News story p. 1450; Science Podcast
It is too soon to conclude that the physiological activities of PPARγ are truly ligand-independent.

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S. W. Lee, P. P. Ongusaha, A. M. VanHook
Sam Lee and Pat Ongusaha discuss their research on the mechanisms by which ultraviolet B radiation induces cell death.

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Find out what TSC, NG2, and ASIC mean in the world of cell signaling.

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Job opportunities make a bright future for scientists with clinical degrees.

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Science is one of many priorities for the new presidential administration.

Beating the Odds
G. Sinha
Cinzia Casiraghi won €1.65 million for setting up her own lab in Germany.

December 2008 Funding News
J. Fernández
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