Volume 322, Issue 5907

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

DEPARTMENTS

EDITORIAL

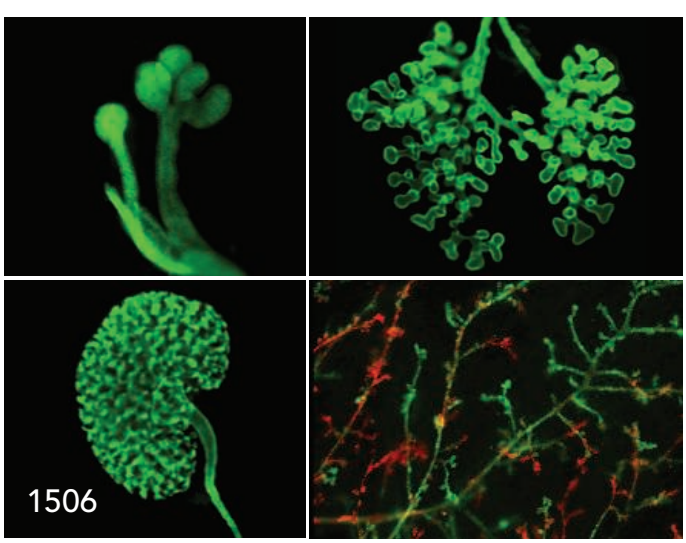
SPECIAL SECTION

Organ Development

INTRODUCTION

REVIEWS

>> News story p. 1460; for related online content, see page 1429 or go to www.sciencemag.org/organdevelopment/



NEWS OF THE WEEK

NEWS FOCUS

LETTERS

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SCIENCE EXPRESS

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DEVELOPMENTAL BIOLOGY

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

Nascent RNA Sequencing Reveals Widespread Pausing and Divergent Initiation at Human Promoters

L. J. Core, J. J. Waterfall, J. T. Lis

RNA sequencing identifies antisense transcription immediately upstream of genes with transcriptionally engaged RNA polymerase.

10.1126/science.1162228

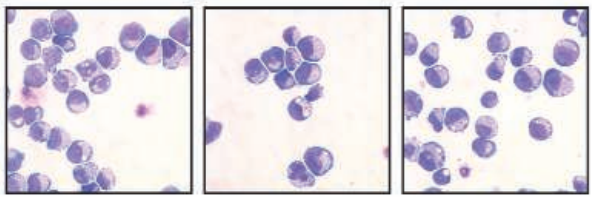
CELL BIOLOGY

Divergent Transcription from Active Promoters

A. C. Seila et al.

Active genes produce promoter-localized sense and antisense short RNAs, suggesting frequent transcription by divergently oriented RNA polymerase II complexes at mammalian promoters.

10.1126/science.1162253



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

TECHNICAL COMMENT ABSTRACTS

CLIMATE CHANGE

BOOKS *ET AL.*

POLICY FORUM

PERSPECTIVES

PERSPECTIVES *CONTINUED...*

ESSAY

BREVIA

PSYCHOLOGY

In human social groups, punishment of uncooperative behaviors increases teamwork, but the benefits of cooperation only outweigh the costs of punishment after a long time.

RESEARCH ARTICLES

CELL BIOLOGY

Cells that escape death from a chemotherapy drug express a different array of proteins than do genetically identical cells that die, which may help to inform cancer therapeutics.

MATERIALS SCIENCE

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.

PHYSICS

A cold atom cloud confined to an optical lattice can be tuned from a metal to an insulator. >> Perspective p. 1480

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REPORTS

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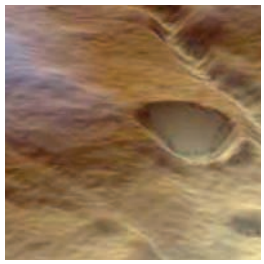

Hidden impact crater in Canada unmasked.

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New technology pinpoints previously unknown meteor impacts.

The Long Road to Modernity
Archaeological dating suggests modern humans may have inherited some fancy tools.

Most Planets May Be Seeded With Life
Discovery of RNA precursor in planet-forming cloud suggests building blocks of life are common in the universe.

How will scientists fare in the new administration?

SCIENCE CAREERS

www.sciencecareers.org/career_development

FREE CAREER RESOURCES FOR SCIENTISTS

The Job Outlook for Physician Scientists
K. Hede
Job opportunities make a bright future for scientists with clinical degrees.

Taken for Granted: Can Scientists Believe in Change?
B. L. Benderly
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
Learn about the latest in research funding, scholarships, fellowships, and internships.

Ligand-binding pocket of PPARγ.

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PERSPECTIVE: Ligand-Dependent and -Independent Regulation of PPARγ and Orphan Nuclear Receptors
H. E. Xu and Y. Li
It is too soon to conclude that the physiological activities of PPARγ are truly ligand-independent.

PODCAST
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.

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

PREVIEW
Get a sneak peek at articles coming up in the 9 December issue related to this week's *Science* special section on organ development.
>> Organ Development section p. 1489 and www.sciencemag.org/organdevelopment/

SCIENCEPODCAST

www.sciencemag.org/multimedia/podcast

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