



COVER

A montage showing three views of a 5-millimeter-long juvenile medaka, with the nervous system imaged with a digital scanned laser light sheet fluorescence microscope. This technique has been used to reconstruct embryogenesis in zebrafish. See page 1065.

Image: Philipp Keller, Lazaro Centanin, Annette Schmidt/EMBL

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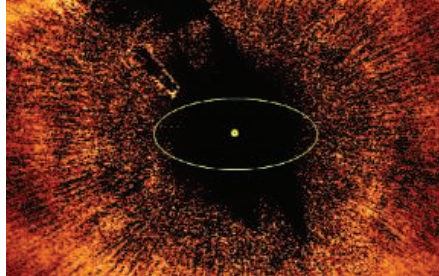
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SCIENCE EXPRESS

www.scienceexpress.org

ASTRONOMY

Optical Images of an Exosolar Planet 25 Light-Years from Earth

P. Kalas et al.

Images from the Hubble Space Telescope reveal a Jupiter-sized planet, perhaps with a surrounding dust disk, orbiting about 115 astronomical units from a nearby main sequence star.

10.1126/science.1166609

ASTRONOMY

Direct Imaging of Multiple Planets Orbiting the Star HR 8799

C. Marois et al.

Infrared images from the Keck and Gemini telescopes reveal three giant planets orbiting counterclockwise around a young star, in a scaled-up version of our solar system.

>> *Science Podcast*

10.1126/science.1166585

PERSPECTIVE: Exoplanets—Seeing Is Believing

M. S. Marley

10.1126/science.1167569

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PLANETARY SCIENCE

Comment on “Ancient Asteroids Enriched in Refractory Inclusions” 1050

D. C. Hezel and S. S. Russell

full text at www.sciencemag.org/cgi/content/full/322/5904/1050a

Response to Comment on “Ancient Asteroids Enriched in Refractory Inclusions”

J. M. Sunshine et al.

full text at www.sciencemag.org/cgi/content/full/322/5904/1050b

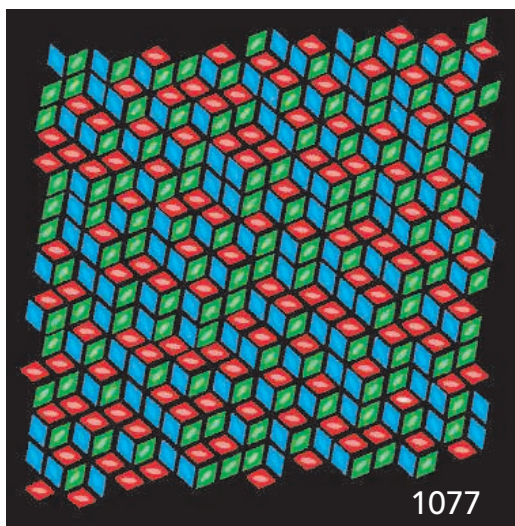
BREVIA

ECOLOGY

Physiographic Control on the Development of *Spartina* Marshes 1064

G. Fragoso and T. Spencer

Erosion of sediment is harmful to the growth of marsh grass, possibly explaining salt marsh die-back, a phenomenon thought to be a result of sea-level changes.



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MEDICINE

Genomic Loss of microRNA-101 Leads to Overexpression of Histone Methyltransferase EZH2 in Cancer

S. Varambally et al.

In some human prostate cancers, a genomic deletion eliminates a key regulatory microRNA, which results in disruption of gene silencing mechanisms.

10.1126/science.1165395

CELL BIOLOGY

A Role for the ESCRT System in Cell Division in Archaea

R. Y. Samson, T. Obita, S. M. Freund, R. L. Williams, S. D. Bell

A class of proteins required for membrane trafficking and cytokinesis in eukaryotes is also unexpectedly required in some Archaea for cell division.

10.1126/science.1165322

RESEARCH ARTICLE

DEVELOPMENTAL BIOLOGY

Reconstruction of Zebrafish Early Embryonic Development by Scanned Light Sheet Microscopy 1065

P. J. Keller, A. D. Schmidt, J. Wittbrodt, E. H. K. Stelzer

Digitized tracking of each cell during the first 24 hours of zebrafish development reveals how the body axis and germ layer are formed and provides a community resource.

REPORTS

MATERIALS SCIENCE

Kinetics of Individual Nucleation Events Observed in Nanoscale Vapor-Liquid-Solid Growth 1070

B. J. Kim et al.

Transmission electron microscopy reveals the kinetics of nucleation and growth of silicon particles from liquid gold-silicon droplets, the first step in growing nanowires.

CHEMISTRY

Spectroscopic Tracking of Structural Evolution in Ultrafast Stilbene Photoisomerization 1073

S. Takeuchi et al.

Raman spectroscopy offers a global view of how all the atoms move during the photoinduced picosecond isomerization of stilbene.

>> *Perspective p. 1056*

CHEMISTRY

Random Tiling and Topological Defects in a Two-Dimensional Molecular Network 1077

M. O. Blunt et al.

An organic molecule absorbed on graphite forms networks that represent an intermediate state between crystalline ordering and amorphous packing.

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CHEMISTRY

Observing the Creation of Electronic Feshbach Resonances in Soft X-ray-Induced O₂ Dissociation 1081

A. S. Sandhu et al.

Attosecond spectroscopy reveals that a second electron cannot be ionized from an oxygen molecule until the nuclei, which repel each other, have moved about 30 angstroms apart.

ATMOSPHERIC SCIENCE

Photosynthetic Control of Atmospheric Carbonyl Sulfide During the Growing Season 1085

J. E. Campbell et al.

The atmospheric concentration of carbonyl sulfide, a trace gas consumed by land plants along with carbon dioxide, can be used to estimate the amount of photosynthesis occurring on land.

ANTHROPOLOGY

A Female *Homo erectus* Pelvis from Gona, Ethiopia 1089

S. W. Simpson et al.

A nearly complete pelvis of an adult female *Homo erectus* reveals that its morphology had evolved in response to increasing fetal brain size, not environmental factors. >> *News story p. 1040*

BIOCHEMISTRY

Slide into Action: Dynamic Shuttling of HIV Reverse Transcriptase on Nucleic Acid Substrates 1092

S. Liu et al.

As it converts viral single-stranded RNA to double-stranded DNA, HIV reverse transcriptase shuttles between the ends of the nucleic acid, flipping its orientation. >> *Perspective p. 1059*

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Batf3 Deficiency Reveals a Critical Role for CD8 α^+ Dendritic Cells in Cytotoxic T Cell Immunity 1097

K. Hildner et al.

In mice, an identifiable subset of antigen-presenting cells is necessary for a normal immune cell response to viral infection and for efficient rejection of tumor cells.

IMMUNOLOGY

Del-1, an Endogenous Leukocyte-Endothelial Adhesion Inhibitor, Limits Inflammatory Cell Recruitment 1101

E. Y. Choi et al.

An endogenous inhibitor of immune cell adhesion dampens recruitment of immune cells to sites of inflammation.

CELL BIOLOGY

Ubiquitin-Like Protein Involved in the Proteasome Pathway of *Mycobacterium tuberculosis* 1104

M. J. Pearce et al.

A prokaryotic version of ubiquitin, a eukaryotic tag for protein degradation, is linked to lysines in prokaryotic proteins destined for destruction, a process called pupylation.

>> *Perspective p. 1062*

MICROBIOLOGY

Genome of an Endosymbiont Coupling N₂ Fixation to Cellulolysis Within Protist Cells in Termite Gut 1108

Y. Hongoh et al.

In the termite gut, an endosymbiotic bacterium fixes atmospheric nitrogen within the cells of its cellulose-digesting host protist, allowing the insect to thrive on wood.

MICROBIOLOGY

Globally Distributed Uncultivated Oceanic N₂-Fixing Cyanobacteria Lack Oxygenic Photosystem II 1110

J. P. Zehr et al.

An abundant marine cyanobacteria group fixes nitrogen but lacks the genes for carbon fixation and oxygen production, forcing a reevaluation of nitrogen and carbon cycling.

>> *Science Podcast*

PLANT SCIENCE

Arabidopsis Stomatal Initiation Is Controlled by MAPK-Mediated Regulation of the bHLH SPEECHLESS 1113

G. R. Lampard, C. A. MacAlister, D. C. Bergmann

Positive and negative developmental signals that determine the locations of gas-exchanging leaf pores converge on a specific domain within a transcription factor.

PLANT SCIENCE

Regulatory Genes Control a Key Morphological and Ecological Trait Transferred Between Species 1116

M. Kim et al.

A key trait—asymmetric flowers with large petals—moves between flower species when a cluster of regulatory genes is transferred from a hybrid to a recipient parent.



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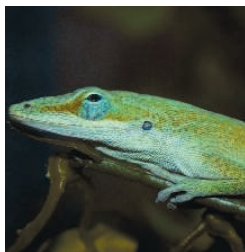
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Keratin in claws.



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HIGHLIGHTS FROM OUR DAILY NEWS COVERAGE

So That's Why Chickens Have Combs

Birds and reptiles make hair proteins, just like mammals do.

Earth's Strange Tango With the Sun

Mysterious magnetic portals link our planet to its star.

Bird Brains Split Lookout Duty

A migrating bird rests half of its brain while the other half remains alert.



Conflict of interest: A big career gamble.

SCIENCE CAREERS

www.sciencereers.org/career_development

FREE CAREER RESOURCES FOR SCIENTISTS

Conflicts of Interest and Physician-Scientists

J. B. Finkelstein

Clinician-researchers need to take threats from conflicts of interest seriously.

A Career Niche at the Interface of Academe and Industry

E. Pain

Spanish biologist David Ràfols used his technology and industry experience to create his open-innovation company.

Learning to Let Go While Trusting Your Data

S. Webb

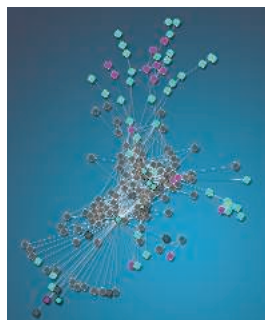
New investigators must take responsibility for the integrity of their lab's data, even as direct control over that data declines.

From the Archives: Do You Really Want Your Name on That Paper?

K. Cottingham et al.

Science Careers looks at the ethics of authorship, responsibility, and keeping careful records in the lab.

A Wnt pathway interaction.



SCIENCE SIGNALING

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RESEARCH ARTICLE: Cripto Localizes Nodal at the Limiting Membrane of Early Endosomes

M.-H. Blanchet, J. A. Le Good, V. Oorschot, S. Baflast, G. Minchiotti, J. Klumperman, D. B. Constam

Cripto facilitates ALK4 signaling by attenuating intraendosomal sorting of internalized Nodal.

RESEARCH ARTICLE: New Regulators of Wnt/ β -Catenin Signaling Revealed by Integrative Molecular Screening

M. B. Major, B. S. Roberts, J. D. Berndt, S. Marine, J. Anastas, N. Chung, M. Ferrer, X. Yi, C. L. Stoick-Cooper, P. D. von Haller, L. Kategaya, A. Chien, S. Angers, M. MacCoss, M. A. Cleary, W. T. Arthur, R. T. Moon

Integration of protein-protein interaction networks and human genome-wide RNAi screens produces mechanistic insight into Wnt/ β -catenin signaling.

PODCAST

M. B. Major, R. T. Moon, A. M. VanHook

Ben Major and Randall Moon discuss their screen for cell type-specific modifiers of Wnt signaling.

E-LETTER: Calcium-Sensing Receptor Function in the Skeleton—Alternative Interpretations

L. D. Quarles and M. Pi

E-LETTER: Response to Quarles and Pi

W. Chang, C. Tu, T.-H. Chen, D. Bikle, D. Shoback

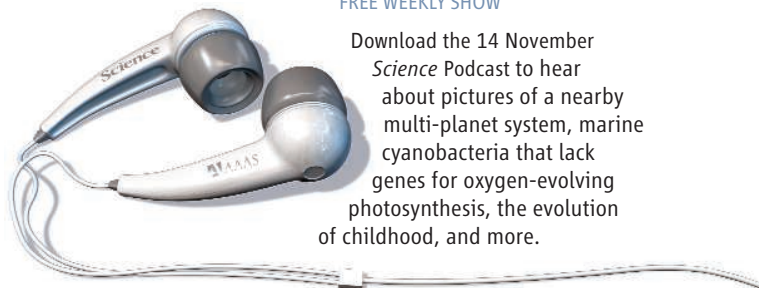
A letters exchange debates an alternative interpretation of the observations recently presented by Chang *et al.* (*Sci. Signal.* **1** (35), ra1).

SCIENCE PODCAST

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