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Scanning electron micrograph of the fruit fly *Drosophila melanogaster* (magnification 80×, eyes pseudo-colored). Sestrin, an evolutionarily conserved protein, helps protect fruit flies from age-related pathologies, including fat accumulation, muscle degeneration, and heart failure. See page 1223.

Image: T. Deerinck and M. Ellisman/National Center for Microscopy and Imaging Research, University of California, San Diego

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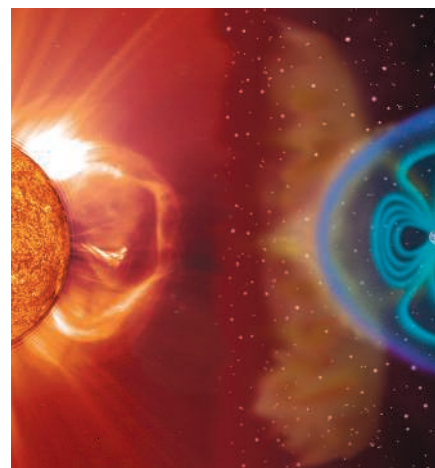
RESEARCH ARTICLES

- 1219 Contributions of Stratospheric Water Vapor to Decadal Changes in the Rate of Global Warming
S. Solomon et al.
Decreases in stratospheric water vapor after the year 2000 slowed the rate of increase in global surface temperature.
- 1223 Sestrin as a Feedback Inhibitor of TOR That Prevents Age-Related Pathologies
J. H. Lee et al.
Sestrin proteins protect fruit flies from the tissue degeneration and disruption of metabolic homeostasis that accompany aging.
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- 1228 Symmetric Inertial Confinement Fusion Implosions at Ultra-High Laser Energies
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- 1231 Charged-Particle Probing of X-ray-Driven Inertial-Fusion Implosions
C. K. Li et al.
Laser-driven temperatures and implosion symmetry are close to the requirements for inertial-fusion ignition.
>> *Perspective p. 1208*
- 1235 Deglacial Meltwater Pulse 1B and Younger Dryas Sea Levels Revisited with Boreholes at Tahiti
E. Bard et al.
A coral-based record of sea level from Tahiti defines changes in the rate of sea-level rise between 14,000 and 9000 years ago.
- 1238 Geodynamo, Solar Wind, and Magnetopause 3.4 to 3.45 Billion Years Ago
J. A. Tarduno et al.
Analysis of ancient silicate crystals indicates that Earth's magnetic field existed 3.40 to 3.45 billion years ago.
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- 1243 The Role of Sulfuric Acid in Atmospheric Nucleation
M. Sipilä et al.
Gas-phase sulfuric acid and water react fast enough to account for the concentration of atmospheric sulfuric acid particles.
- 1246 Extensive Methane Venting to the Atmosphere from Sediments of the East Siberian Arctic Shelf
N. Shakhova et al.
Methane emissions from this region of sub-sea permafrost are comparable to previous estimates for the world ocean.
>> *Perspective p. 1211; Science Podcast*
- 1250 Hippocampal Short- and Long-Term Plasticity Are Not Modulated by Astrocyte Ca^{2+} Signaling
C. Agulhon et al.
Previous reports of glial cell activity may reflect the pharmacological approaches used, and not endogenous activity.
>> *Perspective p. 1212*
- 1254 RTEL-1 Enforces Meiotic Crossover Interference and Homeostasis
J. L. Youds et al.
Crossing over between homologous chromosomes in meiosis is controlled in part by an anti-recombination enzyme.
- 1258 Spatially Ordered Dynamics of the Bacterial Carbon Fixation Machinery
D. F. Savage et al.
Tight control of the spatial arrangement of carboxysome organelles optimizes carbon fixation in cyanobacterial cells.
- 1261 Retromer Is Required for Apoptotic Cell Clearance by Phagocytic Receptor Recycling
D. Chen et al.
An intracellular membrane-sorting machinery participates in cellular corpse clearance.

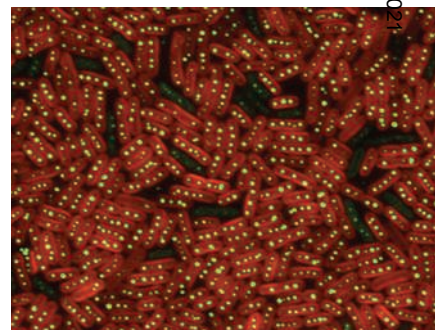
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SCIENCEONLINE

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Observation of an Antimatter Hypernucleus

The STAR Collaboration

Nuclei composed of antimatter are found to form in the high-energy collisions of gold ions.
10.1126/science.1183980

Iron-Clad Fibers: A Metal-Based Biological Strategy for Hard Flexible Coatings

M. J. Harrington et al.

Marine mussel byssal threads have an outer coating in which proteins are linked to metal ions.
10.1126/science.1181044
>> [Science Podcast](#)

Solvent-Mediated Electron Hopping: Long-Range Charge Transfer in $\text{IBr}^-(\text{CO}_2)$ Photodissociation

L. Sheps et al.

The presence of an intervening CO_2 molecule dramatically changes the electron transfer probability between two halogen atoms.
10.1126/science.1184616

Metabolic Syndrome and Altered Gut Microbiota in Mice Lacking Toll-Like Receptor 5

M. Vijay-Kumar et al.

The innate immune system may promote metabolic health through effects on gut microbes.
10.1126/science.1179721

Cryptic Sex-Ratio Bias Provides Indirect Genetic Benefits Despite Sexual Conflict

R. M. Cox and R. Calsbeek

Female lizards improve their fitness by biasing the sex ratio of their progeny on the basis of sire body size.
10.1126/science.1185550

TECHNICALCOMMENTS

Comment on "Movement Intention After Parietal Cortex Stimulation in Humans"

H.-O. Karnath et al.

full text at www.sciencemag.org/cgi/content/full/327/5970/1200-c

Response to Comment on "Movement Intention After Parietal Cortex Stimulation in Humans"

A. Sirigu et al.

full text at www.sciencemag.org/cgi/content/full/327/5970/1200-d

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Researchers say fossil represents one of the first members of the species.

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Researchers find more mundane explanation for demise of colorful amphibian.

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RESEARCH ARTICLE: Polycomb Group Proteins as Epigenetic Mediators of Neuroprotection in Ischemic Tolerance

M. Stapels et al.

Polycomb group proteins protect neurons from injury through a mechanism involving decreased potassium channel function.

RESEARCH ARTICLE: Characterization of a Domain that Transiently Converts Class 2 DYRKs into Intramolecular Tyrosine Kinases

R. Kinstrie et al.

An N-terminal region of a dual-specificity kinase temporarily enables it to phosphorylate a tyrosine rather than a serine or threonine residue.

RESEARCH ARTICLE: Crystal Structure of the α -Kinase Domain of *Dictyostelium* Myosin Heavy Chain Kinase

Q. Ye et al.

Structural analysis identifies features of atypical serine-threonine kinases that may account for their different activities when compared to those of conventional kinases.

PERSPECTIVE: Allosteric Protein Kinase Regulation by Pseudokinases—Insights from STRAD

T. Rajakulendran and F. Sicheri

A kinase becomes activated when it binds as the "substrate" of a pseudokinase.

GLOSSARY

Find out what CD4, TEM8, and SLK mean in the world of cell signaling.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

Taken for Granted: Labor Unions and Postdoc Disputes

B. L. Benderly

A former University of Massachusetts postdoc sues his college, as postdocs on three UMass campuses unionize.

Perspective: Keep Working (Even If You Don't Get Paid)

B. Allen

When you are unemployed, it is essential to keep your skills and connections fresh.

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PERSPECTIVE: Fighting Back—Peptidomimetics as a New Weapon in the Battle Against Antibiotic Resistance

A. Bragonzi

Agents that target bacterial outer-membrane synthesis effectively tackle antibiotic-resistant infections.

PERSPECTIVE: Of Mice and Men—How an Oncogene Transgresses the Limits and Predisposes to T Cell Acute Lymphoblastic Leukemia

T. Hoang

The *Lmo2* oncogene confers self-renewal potential to nonrenewing thymocyte progenitors.

RESEARCH ARTICLE: Safety and Efficacy of Subretinal Readministration of a Viral Vector in Large Animals to Treat Congenital Blindness

D. Amado et al.

After gene therapy to correct retinal degeneration in one eye, treatment of the second eye is effective—even when immunity to the vector is present.

RESEARCH ARTICLE: Blood Gene Expression Signatures Predict Invasive Candidiasis

A. K. Zaas et al.

The development and validation of a gene expression signature is shown to be effective for the diagnosis of *C. albicans* blood stream infection.

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