Mammalian fatty acid synthase, a multienzyme that catalyzes all steps of fatty acid biosynthesis. A blueprint of its atomic structure is shown in three views, and the extent of its functional domains is indicated by colored bars. The versatile segmental construction is also used in other members of this large family of multienzymes, which synthesize natural products such as antibiotics. See page 1315.

Image: Marc Leibundgut and Timm Maier/ETH Zurich

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Internally Generated Reactivation of Single Neurons in Human Hippocampus During Free Recall
H. Gelbard-Sagiv, R. Mukamel, M. Harel, R. Malach, I. Fried
The firing patterns of brain neurons recorded from people watching a video episode were the same as those recorded during later recall of the same show.
>> News story p. 1280; Research Article p. 1322

10.1126/science.1164685

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Merging Photoredox Catalysis with Organocatalysis: The Direct Asymmetric Alkylation of Aldehydes
D. A. Nicewicz and D. W. C. MacMillan
When irradiated by light, a ruthenium-organic catalyst creates intermediates with unpaired electrons that undergo otherwise intractable asymmetric reactions.
10.1126/science.1161976

CELL BIOLOGY
TMEM16A, A Membrane Protein Associated with Calcium-Dependent Chloride Channel Activity
A. Caputo et al.
A transmembrane protein induced in cytokine-treated bronchial epithelial cells seems to be a long-sought primary carrier of a voltage- and calcium-dependent chloride current.
10.1126/science.1163518

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An Integrated Genomic Analysis of Human Glioblastoma Multiforme
D. W. Parsons et al.
Comprehensive analysis of mutations in a brain cancer identifies previously unrecognized cancer genes and a frequently mutated protein that may serve as a therapeutic marker.
>> News story p. 1280; Science Express Research Article by S. Jones et al.
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MEDICINE
Core Signaling Pathways in Human Pancreatic Cancers Revealed by Global Genomic Analyses
S. Jones et al.
Analysis of genome alterations shows that the same 12 signaling pathways are disrupted in most pancreatic tumors, suggesting these as key to tumor development.
>> News story p. 1280; Science Express Research Article by D. W. Parsons et al.
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S. Chakraborty, M. Ahmed, T. L. Jackson, M. H. Thiemens
The anomalous variation of oxygen isotopes in early meteorites is produced by excited states during photodissociation of carbon monoxide, not by self-shielding, as was thought.
10.1126/science.1164355

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10.1126/science.1164685

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Wnt3a-Mediated Formation of Phosphatidylinositol 4,5-Bisphosphate Regulates LRP6 Phosphorylation
W. Pan et al.

The interaction of the signaling molecule Wnt to its receptor triggers accumulation of a lipid regulator, which stimulates phosphorylation of the receptor and cellular responses.

BIOCHEMISTRY
Helical Structures of ESCRT-III Are Disassembled by VPS4
S. Lata et al.

A protein responsible for the final separation of daughter cells or budding viruses forms heteromeric complexes on the inside of the membrane to regulate the abscission step.

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H. Li, J. Wang, G. Mor, J. Sklar

A chimeric messenger RNA generated in a tumor by a DNA rearrangement is also, unexpectedly, expressed in healthy cells, a result of splicing together two separate messenger RNAs.

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Germline Allele-Specific Expression of TGFBRI Confers an Increased Risk of Colorectal Cancer
L. Valle et al.

In patients with colorectal cancer, one allele of the transforming growth factor–β gene produces less messenger RNA and thus less protein, a likely contributor to disease risk.

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M. L. Santiago et al.
A resistance factor known to protect mice from retroviral infection is unexpectedly identified as Apobec3, a deoxycytidine deaminase that controls somatic hypermutation.

IMMUNOLOGY
Apobec3 Encodes Rfv3, a Gene Influencing Neutralizing Antibody Control of Retrovirus Infection
M. L. Santiago et al.

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Skeletal development requires the CaSR.

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M. B. Yaffe

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Development

RESEARCH ARTICLE: The Extracellular Calcium-Sensing Receptor (CaSR) Is a Critical Modulator of Skeletal Development

PERSPECTIVE: New Insights in Bone Biology—Unmasking Skeletal Effects of the Extracellular Calcium-Sensing Receptor
E. M. Brown and J. B. Lian

The extracellular calcium-sensing receptor (CaSR) is essential for embryonic and postnatal skeletal development.

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R. van Amerongen, A. Mikels, R. Nusse

The traditional classification of Wnts into canonical or noncanonical proteins may be misleading.

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