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BIOCHEMISTRY
Structure and Molecular Mechanism of a Nucleobase-Cation-Symport-1 Family Transporter
S. Weyand et al.
The structure of a membrane transporter in an open state suggests that in- and out-facing cavities reciprocally open and close coordinated by two transmembrane segments.
10.1126/science.1164440

ASTRONOMY
The Fermi Gamma-Ray Space Telescope Discovers the Pulsar in the Young Galactic Supernova Remnant CTA 1
G. Kanbach et al.
The Fermi Space Telescope has detected a gamma-ray pulsar associated with a young supernova remnant, implying that such stars may be unidentified gamma-ray sources.
10.1126/science.1165572

ASTRONOMY
Observation of Pulsed γ-Rays Above 25 GeV from the Crab Pulsar with MAGIC
The MAGIC Collaboration
The MAGIC telescope has detected higher-energy, pulsed gamma rays from the Crab pulsar and a threshold suggesting that they are emitted from the outer magnetosphere.
10.1126/science.1164718

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CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
Fixing Climate What Past Climate Changes Reveal About the Current Threat—and How to Counter It W. S. Broecker and R. Kunzig, reviewed by K. Caldeira
Earth: The Sequel The Race to Reinvent Energy and Stop Global Warming F. Krupp and M. Horn, reviewed by F. T. Manheim
Uncle Phil and the Atomic Bomb J. Abelson and P. H. Abelson, reviewed by C. T. Prewitt
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A New Spin on the Doppler Effect R. D. McMichael and M. D. Stiles
RNA Computing in a Living Cell E. Shapiro and B. Gil

RESEARCH ARTICLE
GENETICS
Conservation and Rewiring of Functional Modules Revealed by an Epistasis Map in Fission Yeast A. Roguev et al.

PHYSICS
Current-Induced Spin-Wave Doppler Shift V. Vlaminck and M. Bailleul
A current-induced shift in the frequency of propagating spin waves provides a simple technique to probe spin-polarized currents in engineering spintronic devices.

CHEMISTRY
Catalytic Conversion of Biomass to Monofunctional Hydrocarbons and Targeted Liquid-Fuel Classes E. L. Kunkes et al.
A set of two reactors, one that breaks down biomass sugars and a second that directs chain formation, can synthesize various hydrocarbon fuels.
REPORTS CONTINUED...

CHEMISTRY
Accurate Temperature Imaging Based on Intermolecular Coherences in Magnetic Resonance
G. Galina, R. T. Branco, E. R. Jenista, W. S. Warren
The shift of water nuclear magnetic resonance peaks relative to those of lipids provides an accurate thermometer of internal temperatures, for example, in a mouse.

CHEMISTRY
Molecular Layering of Fluorinated Ionic Liquids at a Charged Sapphire (0001) Surface
M. Mezger et al.
Reflections of high-energy x-rays reveal that when in contact with a sapphire surface, and likely other surfaces, an ionic liquid forms alternating layers of cations and anions.

MATERIALS SCIENCE
Evolution of Block Copolymer Lithography to Highly Ordered Square Arrays
C. Tong et al.
The addition of hydrogen bonding units to two block copolymers leads to a template with square patterns that can be used for manufacturing integrated circuits.

PLANETARY SCIENCE
The Extreme Kuiper Belt Binary 2001 QW₃₂₂
J.-M. Petit et al.
Two small, weakly bound objects in the outer solar system orbit each other more than 100,000 kilometers apart, a distance that challenges ideas for how such binaries form.

GENETICS
Species-Specific Transcription in Mice Carrying Human Chromosome 21
M. D. Wilson et al.
An aneuploid mouse carrying a human chromosome shows that genetic sequence can dominate epigenetic, cellular, and organismal effects in determining transcriptional regulation and gene expression.

BIOCHEMISTRY
Surface Sites for Engineering Allosteric Control in Proteins
J. Lee et al.
Two allosterically regulated proteins can be engineered to interact so that when light activates one, it triggers the enzymatic output (dihydrolipoate reductase) of the other.

BIOCHEMISTRY
A Stochastic Single-Molecule Event Triggers Phenotype Switching of a Bacterial Cell
P. J. Choi, L. Cai, K. Frieda, X. S. Xie
A stochastic process, in which a regulatory repressor dissociates from either one or two DNA sites, determines which of two phenotypes is seen in genetically identical bacteria.

BIOCHEMISTRY
Remeasuring the Double Helix
R. S. Mathew-Fenn, R. Das, P. A. B. Harbury
Pieces of DNA in solution are much softer than DNA under tension and unexpectedly stretch large amounts over several helical turns.

NEUROSCIENCE
Relation Between Obesity and Blunted Striatal Response to Food Is Moderated by TaqIA A1 Allele
E. Stice, S. Spoor, C. Bohon, D. M. Small
Individuals whose reward centers of the brain respond sluggishly after eating prefer calorie-dense foods, which may account for their greater propensity to gain weight. >> Science Podcast

CELL BIOLOGY
Phosphorylation Networks Regulating JNK Activity in Diverse Genetic Backgrounds
C. Bakal et al.
Data from an RNA interference screen, combined with genetic interaction analysis, allow construction of a comprehensive kinase cellular signaling network in Drosophila.

CELL BIOLOGY
Higher-Order Cellular Information Processing with Synthetic RNA Devices
M. N. Win and C. D. Smolke
The intrinsic ribosome of a simple RNA-based Boolean logic device that can be engineered into cells is activated when it is bound by two particular molecules. >> Perspective p. 387

IMMUNOLOGY
Innate Immunity in Caenorhabditis elegans Is Regulated by Neurons Expressing NPR-1/GPCR
K. L. Styer et al.
In the worm Caenorhabditis elegans, sensory neurons surprisingly can inhibit innate immune responses, in part through the mitogen-activated protein kinase (MAPK) signaling pathway.

Cellular Immune Responses to Food
S. F. Hildeman et al.
Innate immune responses to food are regulated by sensory neurons expressing neuropeptide receptor genes in Drosophila.

Innate Immunity in Caenorhabditis elegans Is Regulated by Neurons Expressing NPR-1/GPCR
K. L. Styer et al.
In the worm Caenorhabditis elegans, sensory neurons surprisingly can inhibit innate immune responses, in part through the mitogen-activated protein kinase (MAPK) signaling pathway.
VILIP1 interacts with P2X2 receptors in dendrites.

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Pitch of a woman’s voice rises during ovulation.

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RESEARCH ARTICLE: Regulation of P2X2 Receptors by the Neuronal Calcium Sensor VILIP1
S. Chaumont, V. Compan, E. Toulme, E. Richler, G. D. Housley, F. Rassendren, B. S. Khakh
Optics and electrophysiology reveal the dynamics of an ATP-gated ion channel signaling complex.

RESEARCH ARTICLE: BDNF Selectively Regulates GABA<sub>A</sub> Receptor Transcription by Activation of the JAK/STAT Pathway
Brain-derived neurotrophic factor regulates a GABA receptor subunit through the repressor ICER.

PERSPECTIVE: Acetylation of MKP-1 and the Control of Inflammation
H. Chi and R. A. Flavell
Toll-like receptor signaling is inhibited by acetylated MKP-1, a mitogen-activated protein kinase phosphatase.

PREVIEW
Get a sneak peek at articles coming up in the 21 October issue related to this week’s Science special issue on cell signaling.

>> Cell Signaling section p. 389 and www.sciencemag.org/cellsignaling08/

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E. Pain
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Synthetic biology offers new opportunities for scientists willing to challenge their ways of thinking and doing research.

A Multidisciplinary Approach to Life
E. Pain
A microbiologist, a mechanical engineer, and a chemist tell Science Careers how they ended up in synthetic biology.

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K. Travis
Hear three scientists talk about their career paths and the future of synthetic biology research.

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