COVER
Detail from The Last Automat III by Max Ferguson. Sluggish operation of the reward circuitry in the brain may lead individuals to eat calorie-dense foods (such as pie) to try to compensate, placing them at risk for obesity. See page 449.
Image: The Last Automat III, 2003 (oil on panel); Max Ferguson/Bridgeman Art Library/Getty Images

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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

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

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It’s the Sequence, Stupid!
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In Praise of Pores
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Complex Patterning by Vertical Interchange Atom Manipulation Using Atomic Force Microscopy
Y. Sugimoto et al.
Atoms of tin and silicon are reversibly and controllably exchanged between the tip of an atomic force microscope and a substrate, allowing atomic patterning of a surface.

Catalytic Conversion of Biomass to Monofunctional Hydrocarbons and Targeted Liquid-Fuel Classes
E. 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.
Podcast

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.

P. J. Choi, L. Cai, K. Frieda, X. S. Xie

Phenotype Switching of a Bacterial Cell

Two allosterically regulated proteins can be engineered to interact so that when light activates one, it triggers the enzymatic output (dihydrofolate reductase) of the other.

C. Tang et al.

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 (dihydrofolate 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 TagIQ 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.

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.
Separate and unequal.

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VILIP1 interacts with P2X2 receptors in dendrites.

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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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A Multidisciplinary Approach to Life
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Science Careers Podcast
K. Travis
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