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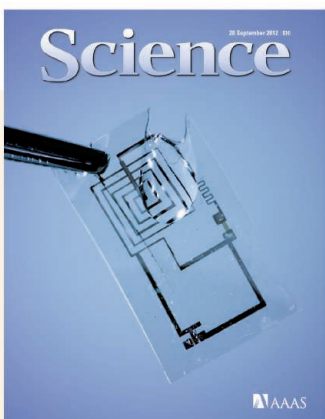


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## COVER

A biodegradable integrated circuit (length: ~2.54 centimeters) shown partially dissolved by a droplet of water. This demonstration system includes transistors; diodes; inductors and capacitors, with magnesium for the electrodes/interconnects; magnesium oxide for the gate/interlayer dielectrics; silicon nanomembranes for the semiconductor; and silk as a thin, flexible substrate. The dissolution characteristics can be tuned to address applications such as bioresorbable implants, biodegradable environmental monitors, and compostable consumer electronics. See page 1640.

*Image: Beckman Institute, University of Illinois, and Tufts University*

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- 1634** Parallel Molecular Evolution in an Herbivore Community  
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Parallel mutations in the alpha subunit of the sodium pump allow insects to specialize on host plants that produce ouabain.

## REPORTS

- 1638** The Precise Solar Shape and Its Variability  
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A platform of materials and fabrication methods furnishes resorbable electronic devices for in vivo use.  
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- 1644** Gold-Catalyzed Direct Arylation  
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- 1648** Synthesis and Characterization of a Rhodium(I)  $\sigma$ -Alkane Complex in the Solid State  
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Hydrogenation of a crystalline precursor enables structural characterization of a commonly evoked reaction intermediate.
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A case study shows that controlling conflict depends on local institutions.  
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- 1654** Adaptive Sleep Loss in Polygynous Pectoral Sandpipers  
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>> *Perspective p. 1610*

- 1658** Mutations in the *neverland* Gene Turned *Drosophila pachea* into an Obligate Specialist Species  
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Near-complete reconstruction of the genomes of 21 widespread uncultured environmental bacteria reveals metabolic novelties.
- 1665** Disulfide Rearrangement Triggered by Translocon Assembly Controls Lipopolysaccharide Export  
S.-S. Chng et al.  
Protein-protein interactions promote oxidative protein folding during assembly of a bacterial lipopolysaccharide exporter.
- 1668** Sedlin Controls the ER Export of Procollagen by Regulating the Sar1 Cycle  
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Sedlin, the product of the gene mutated in spondyloepiphyseal dysplasia tarda, acts to expand cargo containers to fit bulky procollagen.
- 1672** Radical SAM-Dependent Carbon Insertion into the Nitrogenase M-Cluster  
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The carbon atom in the middle of a large metal cluster originates from the one-carbon donor S-adenosylmethionine.  
>> *Perspective p. 1617*
- 1675** Evidence of Abundant Purifying Selection in Humans for Recently Acquired Regulatory Functions  
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Diversity in human-specific regions of the genome has been reduced by functional constraints.
- 1678** An Immunosurveillance Mechanism Controls Cancer Cell Ploidy  
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## SCIENCEONLINE

## SCIENCEEXPRESS

[www.scienceexpress.org](http://www.scienceexpress.org)

Publication Ahead of Print

Status and Solutions for the World's Unassessed Fisheries

C. Costello et al.

10.1126/science.1223389

Coagulation Factor X Activates Innate Immunity to Human Species C Adenovirus

K. Doronin et al.

10.1126/science.1226625

Gene Loops Enhance Transcriptional Directionality

S. M. Tan-Wong et al.

10.1126/science.1224350

The APC/C Inhibitor XErp1/Emi2 Is Essential for *Xenopus* Early Embryonic Divisions

T. Tischer et al.

10.1126/science.1228394

Jet-Launching Structure Resolved Near the Supermassive Black Hole in M87

S. S. Doeleman et al.

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## TECHNICALCOMMENTS

Comment and Response on "The Geometric Structure of the Brain Fiber Pathways"

Comment: M. Catani et al.

<http://dx.doi.org/10.1126/science.1223425>

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<http://dx.doi.org/10.1126/science.1223493>

## SCIENCENOW

[www.sciencenow.org](http://www.sciencenow.org)

Highlights From Our Daily News Coverage

Compared With Chimps, Humans Slow to Insulate Nerve Fibers

Prolonged development may make our brains more malleable—and more susceptible to illness.

[http://scim.ag/Prolonged\\_Development](http://scim.ag/Prolonged_Development)

Korean Eunuchs Outlived Uncastrated Peers

A study of 16th to 19th century eunuchs suggests that testosterone may shorten men's lives.

<http://scim.ag/Eunuchs-Testosterone>

A Wrinkle in Slime: Cell Deaths

Form Biofilm Folds

Researchers harness the secrets of bacterial wrinkling.

[http://scim.ag/Biofilm\\_Folds](http://scim.ag/Biofilm_Folds)

## SCIENCE SIGNALING

[www.sciencesignaling.org](http://www.sciencesignaling.org)

The Signal Transduction Knowledge Environment

**25 September issue:** <http://scim.ag/ss092512>

RESEARCH ARTICLE: Superbinder SH2 Domains Act as Antagonists of Cell Signaling

T. Kaneko et al.

PERSPECTIVE: Peptide-Binding Domains—Are Limp Handshakes Safest?

N. J. Haslam and D. C. Shields

Engineered, high-affinity SH2 domains inhibit cell signaling, which may have therapeutic potential.

RESEARCH ARTICLE: Phosphorylation of Cytohesin-1 by Fyn Is Required for Initiation of Myelination and the Extent of Myelination During Development

J. Yamauchi et al.

Transgenic and knockout mice reveal a pathway that controls myelination by Schwann cells.

RESEARCH ARTICLE: The Tumor Suppressor PTEN Is Exported in Exosomes and Has Phosphatase Activity in Recipient Cells

U. Putz et al.

A tumor suppressor protein with lipid phosphatase activity travels to target cells in microvesicles.

PERSPECTIVE: Where EGF Receptors Transmit Their Signals

N. L. Lill and N. I. Sever

Trafficking of activated receptors controls the transcriptional response to epidermal growth factor.

PERSPECTIVE: Cell Responses to Growth Factors—The Role of Receptor Tyrosine Kinase Intracellular Domain Fragments

G. Carpenter and A. Pozzi

Proteolytic fragments of receptor tyrosine kinases have distinct roles in growth factor signaling.

## SCIENCE TRANSLATIONAL MEDICINE

[www.sciencetranslationalmedicine.org](http://www.sciencetranslationalmedicine.org)

Integrating Medicine and Science

**26 September issue:** <http://scim.ag/stm092612>

RESEARCH ARTICLE: Quantitative Analysis of the Human Airway Microbial Ecology Reveals a Pervasive Signature for Cystic Fibrosis

P. C. Blainey et al.

A distinctive, stereotyped microbiome is present in the lungs of cystic fibrosis patients.

RESEARCH ARTICLE: An RNA Profile Identifies Two Subsets of Multiple Sclerosis Patients Differing in Disease Activity

L. Ottoboni et al.

Multiple sclerosis patients that relapse more often show distinct mRNA profiles in blood immune cells.

RESEARCH ARTICLE: Vascular Catheters with a Nonleaching Poly-Sulfobetaine Surface Modification Reduce Thrombus Formation and Microbial Attachment

R. S. Smith et al.

A coating for catheters inhibits microbial adherence and thrombosis in vitro and in vivo.

PERSPECTIVE: Pharmacogenomics and Patient Care—One Size Does Not Fit All

K. M. Giacomini et al.

Pharmacogenomics research points to a personalized approach for prescribing and dosing medications.

REVIEW: Biomaterial-Associated Infection—Locating the Finish Line in the Race for the Surface

H. J. Busscher et al.

Infection-reducing biomaterials must balance host tissue integration and prevention of microbial attachment.

## SCIENCE CAREERS

[www.sciencereers.org/career\\_magazine](http://www.sciencereers.org/career_magazine)

Free Career Resources for Scientists

<http://scim.ag/SciCareers28September2012>

Experimental Error: The Audacity of Graduate School

A. Ruben

The overworked grad student seems to embody the most pointless aspects of graduate school.

Big Pharma Ramps Up Postdoc Programs

M. Price

After years of layoffs, drug companies are turning to the youngest Ph.D. scientists for fresh ideas.

Content Collection: Getting Your Research Published

E. Pain

Proficiently publishing scientific articles is among the attributes that determine academic success.

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