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 biodegradable implants, biodegradable environmental monitors, and compostable consumer electronics. See page 1640.

Image: Beckman Institute, University of Illinois, and Tufts University
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1628 Next-Generation Digital Information Storage in DNA
G. M. Church et al.
Digital information can be stored in DNA at densities higher than digital media such as flash memory or quantum holography.

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1629 Out of the Tropics: The Pacific, Great Basin Lakes, and Late Pleistocene Water Cycle in the Western United States
M. Lyle et al.
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Y. Zhen et al.
Parallel mutations in the alpha subunit of the sodium pump allow insects to specialize on host plants that produce ouabain.

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1638 The Precise Solar Shape and Its Variability
J. R. Kuhn et al.
Observations with NASA’s Solar Dynamics Observatory show that the shape of the Sun does not vary with the 11-year solar cycle.
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1640 A Physically Transient Form of Silicon Electronics
S.-W. Hwang et al.
A platform of materials and fabrication methods furnishes resorbable electronic devices for in vivo use.
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1644 Gold-Catalyzed Direct Arylation
L. T. Ball et al.
A gold catalyst can link together aromatic rings under very mild conditions.

1648 Synthesis and Characterization of a Rhodium(I) σ-Alkane Complex in the Solid State
S. D. Pike et al.
Hydrogenation of a crystalline precursor enables structural characterization of a commonly evoked reaction intermediate.

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P. Wiessner and N. Pupu
A case study shows that controlling conflict depends on local institutions.
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J. A. Lesku et al.
Male pectoral sandpipers go without sleep for days in order to mate as often as possible in the high Arctic.
>> Perspective p. 1610

1658 Mutations in the neverland Gene Turned Drosophila pachea into an Obligate Specialist Species
M. Lang et al.
A few changes made the fly Drosophila pachea reliant on the steroid precursors produced by the senita cactus.

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K. C. Wrighton et al.
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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
R. Venditti et al.
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
J. A. Wiig et al.
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
L. D. Ward and M. Kellis
Diversity in human-specific regions of the genome has been reduced by functional constraints.

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L. Senovilla et al.
Polyploid cancer cells trigger an immune response owing to proteins aberrantly exposed on their outer surfaces.
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1684 Mycobacterial Disease and Impaired IFN-γ Immunity in Humans with Inherited ISG15 Deficiency
D. Bogunovic et al.
A mutation that accounts for adverse reactions to the Bacille Calmette-Guérin vaccine against tuberculosis is identified.
Researchers harness the secrets of bacterial biofilm folding.

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Comment: M. Catani et al.

Response: V. J. Wedeen et al.

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S. M. Tan-Wong et al.

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T. Tischer et al.

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S. S. Doelemma et al.

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Comment: M. Catani et al.

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