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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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.
Precipitation source regions for western North America changed substantially over the last deglaciation.

1634 Parallel Molecular Evolution in an Herbivore Community
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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Sedlin, the product of the gene mutated in spondyloepiphyseal dysplasia tarda, acts to expand cargo containers to fit bulky procollagen.

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Comment and Response on “The Geometric Structure of the Brain Fiber Pathways”  
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Response: V. J. Wedeen et al.  
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