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Computer-generated models of three-dimensional nanostructures that were self-assembled from synthetic DNA strands called DNA bricks. A master collection defines a 1000-voxel “molecular canvas” with a 25-nanometer edge. By selecting subsets of bricks, Ke et al. constructed a panel of 102 distinct shapes with sophisticated surface features and intricate interior cavities and tunnels. These nanostructures may find applications ranging from biomedicine to nanoelectronics. See page 1177.

Image: Yonggang Ke
REVIEW

1172 Ice-Sheet Response to Oceanic Forcing
I. Joughin et al.

RESEARCH ARTICLES

1177 Three-Dimensional Structures
Self-Assembled from DNA Bricks
Y. Ke et al.
Stepwise assembly of 32-nucleotide DNA “bricks” can create a wide variety of nanoscale objects.
>> Perspective p. 1159

1183 A Reconciled Estimate of Ice-Sheet Mass Balance
A. Shepherd et al.
The mass balance of the polar ice sheets is estimated by combining the results of existing independent techniques.
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1190 The Imprint of the Extragalactic Background Light in the Gamma-Ray Spectra of Blazars
M. Ackermann et al.
Gamma-ray spectra obtained with the Fermi Space Telescope constrain star formation and galaxy evolution over cosmic time.
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1193 Superconducting Dome in a Gate-Tuned Band Insulator
J. T. Ye et al.
Liquid gating tunes the carrier density in molybdenum disulfide, revealing unconventional superconductivity.

1196 Formation of Regular Satellites from Ancient Massive Rings in the Solar System
A. Crida and S. Charnoz
An analytical model suggests that the terrestrial and giant planets in the solar system formed moons through a similar process.

1199 Chemically and Geographically Distinct Solid-Phase Iron Pools in the Southern Ocean
B. P. von der Heyden et al.
The distribution and composition of fine-grained marine iron particles vary strongly with location.

1202 A Large-Scale Model of the Functioning Brain
C. Eliasmith et al.
Two-and-a-half million model neurons recognize images, learn via reinforcement, and display fluid intelligence.
>> Perspective p. 1156

1206 Copy Number Variation of Multiple Genes at Rhg1 Mediates Nematode Resistance in Soybean
D. E. Cook et al.
Resistance to a damaging disease of soybean is conferred by a cluster of linked genes present in multiple copies.

1209 An Exon Splice Enhancer Primes IGF2:IGF2R Binding Site Structure and Function Evolution
C. Williams et al.
Parental genetic conflict may have exploited changes in the coding of a protein loop in a growth factor receptor.

1214 Cytoplasmic ATP Hydrolysis Powers Transport of Lipopolysaccharide Across the Periplasm in E. coli
S. Okuda et al.
Transporting lipopolysaccharide from inside the bacterial cell to the surface requires multiple molecules of adenosine triphosphate.

1217 Direct Observation of Stalled Fork Restart via Fork Regression in the T4 Replication System
M. Manosas et al.
Bacterial DNA replication machinery is able to stall, regress, and then migrate past a DNA lesion in vitro.

1220 Progenitor and Terminal Subsets of CD8+ T Cells Cooperate to Contain Chronic Viral Infection
M. A. Paley et al.
Chronic viral infections like HIV are kept in check by two functionally distinct types of T lymphocyte.

1225 Body Cues, Not Facial Expressions, Discriminate Between Intense Positive and Negative Emotions
H. Aviezer et al.
The body reveals what the face conceals.

1229 A Mutation in EGF Repeat-8 of Notch Discriminates Between Serrate/Jagged and Delta Family Ligands
S. Yamamoto et al.
A genetic screen identifies an extracellular motif in a conserved signaling receptor that confers ligand specificity.
Science 338 (6111), 1124-1233.