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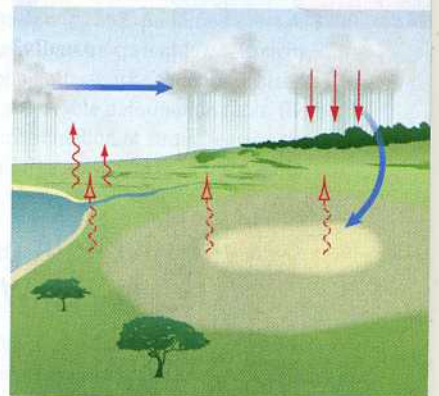
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ON THE WEB THIS WEEK

>> Science Podcast

Listen to stories on termite-inspired robots, cells with many, many genomes, and a roundup of stories from our daily news site.

>> Find More Online

Check out the latest in a series of Perspectives on Challenges in Climate Science at www.sciencemag.org/extra/climate.



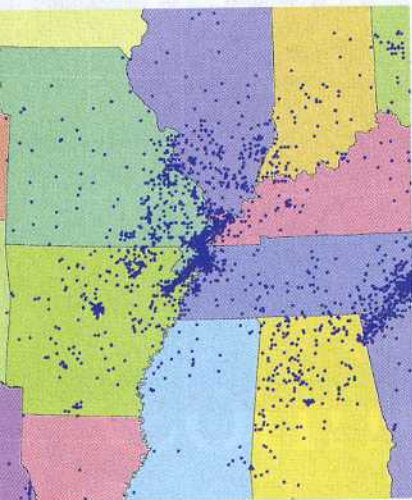
COVER

A multirobot construction system inspired by mound-building termites. Independent climbing robots with onboard sensors automatically build user-specified structures out of specialized brick-sized building material. The robots are limited to local sensing and coordinate their activity indirectly by manipulating their shared environment and reacting to what they encounter. See pages 742 and 754, as well as supplementary movies online at www.sciencemag.org/content/343/6172/754/suppl/DC1.

Photo: Eliza Grinnell, Harvard School of Engineering and Applied Sciences

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A. Pauli et al.
A conserved signal is identified that activates G protein-coupled receptors to promote zebrafish gastrulation.
Research Article Summary; for full text:
<http://dx.doi.org/10.1126/science.1248636>
- 747 **A Genetic Atlas of Human Admixture History**
G. Hellenthal et al.
Evidence of human migrations over the past 4000 years is identified in existing genomes.

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- 752 **Precise and Ultrafast Molecular Sieving Through Graphene Oxide Membranes**
R. K. Joshi et al.
Graphene oxide membranes allow only very small hydrated molecules and ions to pass with an accelerated transport rate.
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- 754 **Designing Collective Behavior in a Termite-Inspired Robot Construction Team**
J. Werfel et al.
Robots programmed with simple construction rules can work independently but collectively to build a complex structure.
>> *Perspective p. 742; Science Podcast*
- 758 **High-Energy Surface X-ray Diffraction for Fast Surface Structure Determination**
J. Gustafson et al.
High-energy x-rays incident at grazing angles allow for rapid collection of surface diffraction beams.
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- 762 **The New Madrid Seismic Zone: Not Dead Yet**
M. T. Page and S. E. Hough
Statistical modeling of aftershock occurrences shows that the central United States is still active, despite low active deformation rates.
- 764 **Evolutionarily Dynamic Alternative Splicing of GPR56 Regulates Regional Cerebral Cortical Patterning**
B. Bae et al.
Development of surface folds of the human brain is controlled in sections.
>> *Perspective p. 744*
- 769 **Origin and Spread of de Novo Genes in Drosophila melanogaster Populations**
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Novel genes derived from ancestral noncoding sequences are polymorphic among fruit fly strains.

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F. Brette et al.
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- 791 **Somites Without a Clock**
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- 795 **An Antifreeze Protein Folds with an Interior Network of More Than 400 Semi-Clathrate Waters**
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The crystal structure of an antifreeze protein shows a polyhedral network of water in the protein core.
>> *Perspective p. 743*

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