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**COVER**

Three Neandertal bone fragments, approximately 40,000 years old, from Vindija Cave, Croatia (shown to scale). DNA extracted from these bones was used to generate a draft sequence of the Neandertal genome, which was then compared to the genomes of five present-day humans. See page 710 and www.sciencemag.org/special/neandertal/.

Photo: Christine Verna/Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology

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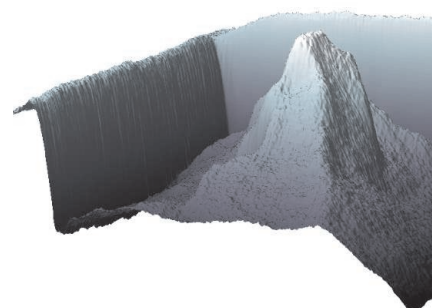
- 710 **A Draft Sequence of the Neandertal Genome**
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 Gene flow has occurred from Neandertals to humans of Eurasian descent, but not to Africans.
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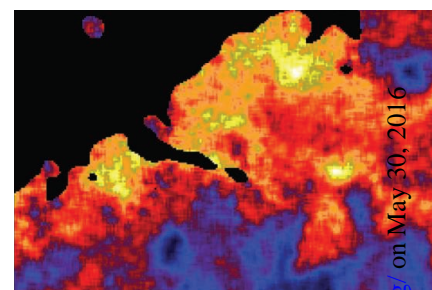
- 723 **Targeted Investigation of the Neandertal Genome by Array-Based Sequence Capture**
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- 736 **Visualizing the Electron Scattering Force in Nanostructures**
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- 740 **Viscosity of MgSiO₃ Liquid at Earth's Mantle Conditions: Implications for an Early Magma Ocean**
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- 760 **Dynamic Ca²⁺-Dependent Stimulation of Vesicle Fusion by Membrane-Anchored Synaptotagmin 1**
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 A synaptic vesicle protein must be membrane-anchored to stimulate fusion in vitro at physiological Ca²⁺ concentrations.

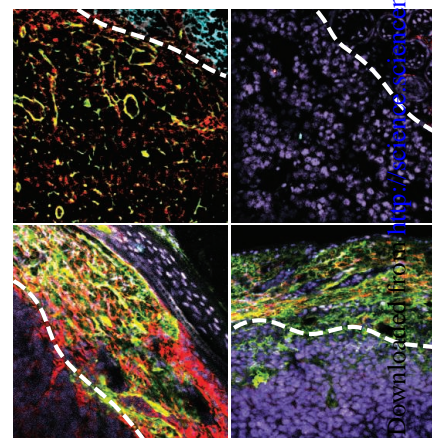
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A Novel miRNA Processing Pathway Independent of Dicer Requires Argonaute2 Catalytic Activity
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The unusual secondary structure of a precursor microRNA determines its noncanonical processing.
10.1126/science.1190809

Cyclooxygenase-2 Controls Energy Homeostasis in Mice by de Novo Recruitment of Brown Adipocytes
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In mice, the development of energy-burning brown fat is regulated by an enzyme that is critical for prostaglandin synthesis.
10.1126/science.1186034

Beige Can Be Slimming
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FCHo Proteins Are Nucleators of Clathrin-Mediated Endocytosis
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Membrane-sculpting proteins nucleate clathrin-coated pits during endocytosis.
10.1126/science.1188462

Dlg1-PTEN Interaction Regulates Myelin Thickness to Prevent Damaging Peripheral Nerve Overmyelination
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To prevent too much myelin from causing trouble, two proteins act to limit insulation of axons.
10.1126/science.1187735

The Fusogen EFF-1 Controls Sculpting of Mechanosensory Dendrites
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In developing *Caenorhabditis elegans* during neuronal arborization, excess neurite branches are retracted and fuse.
10.1126/science.1189095

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Scientists Resurrect Mammoth Hemoglobin
Woolly mammoth 'blood sample' reveals how the creature adapted to the cold.

New Madrid Quakes May Not Have Been So Colossal

Analysis downgrades the notorious 19th-century Midwestern temblors.

Bald Eagle Comeback Could Come at Expense of Other Species

Reintroduction to California's Channel Islands threatens the native fox population.

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RESEARCH ARTICLE: Loops Govern SH2 Domain Specificity by Controlling Access to Binding Pockets

T. Kaneko et al.

Selective blocking of binding pockets by surface loops defines the specificity of a phosphotyrosine-binding domain.

RESEARCH ARTICLE: In Vivo Identification of Regulators of Cell Invasion Across Basement Membranes

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A *Caenorhabditis elegans* screen provides insight into cell invasion and metastasis.

PERSPECTIVE: "Complementing" Toll Signaling
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A common oral pathogen uses the C5a receptor to selectively inhibit some TLR2 responses.

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C. H. Eng et al.

Ammonia induces autophagy, which may help cancer cells survive stressful conditions.

SCIENCE CAREERS

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MITIGATING CLIMATE CHANGE

Researching Carbon-Neutral Buildings

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Research in building technology aims to boost energy efficiency and reduce carbon emissions.

Examining Carbon Capture and Storage

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Carbon dioxide generated by power plants could be captured and stored underground.

Assessing the Impacts of Geoengineering

E. Pain

Research is under way on the controversial idea of manipulating Earth's climate.

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COMMENTARY: Institutional Review Boards, Professionalism, and the Internet

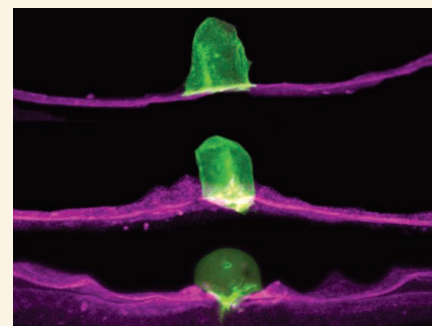
R. Martensen

Researchers and review boards must work to improve protocol design, approval procedures, and subject recruitment for clinical trials.

COMMENTARY: Driving Drug Discovery—The Fundamental Role of Academic Labs

M. B. Silber

Researchers at academic labs make almost all of the basic science discoveries that underlie the creation of innovative new medicines.



SCIENCE SIGNALING

Cell crossing the basement membrane.

RESEARCH ARTICLE: Rapid Emergence of Protease Inhibitor Resistance in Hepatitis C Virus
L. Rong et al.

Computational modeling suggests that the rapid emergence of resistance to drugs against hepatitis C virus is a result of preexisting resistant virus.

SCIENCE PODCAST

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Download the 7 May *Science* Podcast to hear about the Neandertal genome, washing away past decisions, traces of our early solar system in Antarctica, and more.

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www.sciencemag.org/special/neandertal/feature/

THE NEANDERTAL GENOME

A special presentation with video commentary highlighting the sequencing and analysis of the Neandertal genome.

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Editor's Summary

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