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Science



The Neandertal Genome

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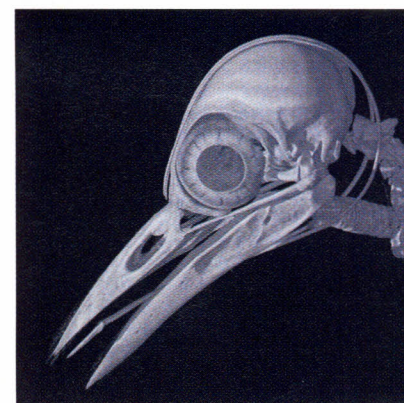
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- 709 Washing Away Postdecisional Dissonance
S. W. S. Lee and N. Schwarz
The act of scrubbing clean one's hands also removes the tendency to justify prior decisions.
>> *Science* Podcast

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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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RESEARCH ARTICLE

710 A Draft Sequence of the Neandertal Genome

R. E. Green et al.

Gene flow has occurred from Neandertals to humans of Eurasian descent, but not to Africans.

>> News story p. 680; Report p. 723

REPORTS

723 Targeted Investigation of the Neandertal Genome by Array-Based Sequence Capture

H. A. Burbano et al.

Array capture of Neandertal DNA identifies amino acid substitutions that occurred after the split between humans and Neandertals.

>> News story p. 680; Research Article p. 710

725 Fermi Gamma-Ray Imaging of a Radio Galaxy

The Fermi-LAT Collaboration

Gamma rays from a radio galaxy are relic cosmic microwave background radiation that underwent inverse Compton scattering.

729 The Equation of State of a Low-Temperature Fermi Gas with Tunable Interactions

N. Navon et al.

A Fermi gas is characterized along the crossover regime between its weak and strongly interacting limits.

732 Nanoscale Three-Dimensional Patterning of Molecular Resists by Scanning Probes

D. Pires et al.

A molecular glass can be patterned to dimensions of tens of nanometers with a heated scanning probe tip.

736 Visualizing the Electron Scattering Force in Nanostructures

C. Tao et al.

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740 Viscosity of MgSiO₃ Liquid at Earth's Mantle Conditions: Implications for an Early Magma Ocean

B. B. Karki and L. P. Stixrude

The behavior of the liquid mantle during Earth's earliest stages was controlled by the viscosity of silicate melts.

742 Extreme Deuterium Excesses in Ultracarbonaceous Micrometeorites from Central Antarctic Snow

J. Duprat et al.

Interplanetary dust particles recovered from Antarctic snow may provide a sample of the early solar system.

>> Perspective p. 698; Science Podcast

745 Cross-Reacting Antibodies Enhance Dengue Virus Infection in Humans

W. Dejnirattisai et al.

Variable maturation of a dengue viral antigen results in incomplete neutralization and promotes secondary pathology.

749 Induction of Lymphoidlike Stroma and Immune Escape by Tumors That Express the Chemokine CCL21

J. D. Shields et al.

An immunotolerant microenvironment driven by chemokine expression contributes to tumor growth and spread.

>> Perspective p. 697

753 Altered Histone Acetylation Is Associated with Age-Dependent Memory Impairment in Mice

S. Peleg et al.

Deregulated histone acetylation may represent an early biomarker of age-dependent cognitive decline.

>> Perspective p. 701

757 Sequential Checkpoints Govern Substrate Selection During Cotranslational Protein Targeting

X. Zhang et al.

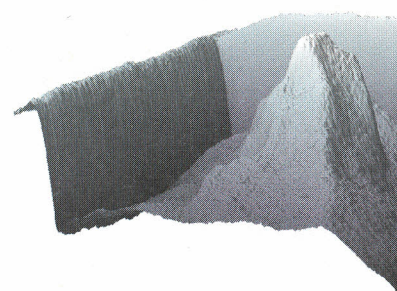
Protein cargo is monitored at several points during membrane translocation to improve targeting fidelity.

760 Dynamic Ca²⁺-Dependent Stimulation of Vesicle Fusion by Membrane-Anchored Synaptotagmin 1

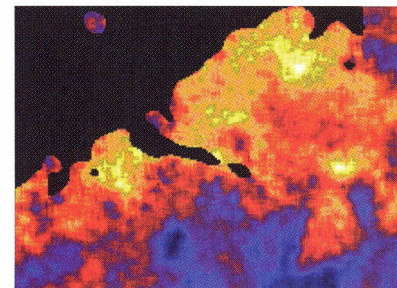
H.-K. Lee et al.

A synaptic vesicle protein must be membrane-anchored to stimulate fusion in vitro at physiological Ca²⁺ concentrations.

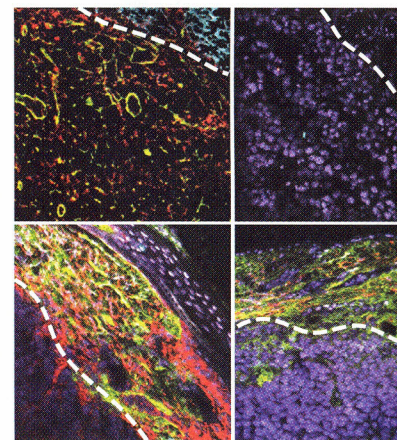
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A Novel miRNA Processing Pathway Independent of Dicer Requires Argonaute2 Catalytic Activity
D. Cifuentes et al.

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
A. Vegiopoulos et al.

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
J. Ishibashi and P. Seale
10.1126/science.1190816

FCHo Proteins Are Nucleators of Clathrin-Mediated Endocytosis
W. M. Henne et al.

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
L. Cotter et al.

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
M. Oren-Suissa et al.

In developing *Caenorhabditis elegans* during neuronal arborization, excess neurite branches are retracted and fuse.
10.1126/science.1189095

SCIENCENOW

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Highlights From Our Daily News Coverage

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.

SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment

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

D. Q. Matus et al.

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

PERSPECTIVE: "Complementing" Toll Signaling
J. C. Kagan

A common oral pathogen uses the C5a receptor to selectively inhibit some TLR2 responses.

PODCAST

C. H. Eng et al.

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

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

SPECIAL FEATURE:

MITIGATING CLIMATE CHANGE

Researching Carbon-Neutral Buildings

N. Lubick

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

Examining Carbon Capture and Storage
S. Coelho

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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Integrating Medicine and Science

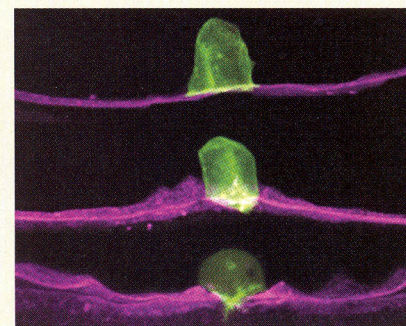
COMMENTARY: Institutional Review Boards, Professionalism, and the Internet

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

www.sciencemag.org/multimedia/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.

SCIENCEONLINE FEATURE

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

THE NEANDERTAL GENOME

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

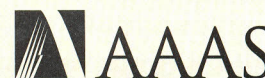
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Science Policy News and Analysis

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