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

www.sciencemag.org  SCIENCE  VOL 328    7 MAY 2010  657
Published by AAAS
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.
Effects of particular surface features on electron-induced atomic motion in metal structures are revealed.

740 Viscosity of MgSiO\textsubscript{3} 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 Lymphoid-like 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 Ca\textsuperscript{2+}-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 Ca\textsuperscript{2+} concentrations.
SCIENCEONLINE

SCIENCEEXPRESS
www.sciencexpress.org

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

Cycloxygenase-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
www.sciencenow.org

Highlights From Our Daily News Coverage

Scientists Resurrect Mammoth Hemoglobin
Wooly 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.

SCIENCEONLINE
www.sciencesignal.org

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.

SCIENCECAREERS
www.sciencemag.org/career_magazine

Free Career Resources for Scientists

SPECIAL FEATURE: MITIGATING CLIMATE CHANGE

Researching Carbon-Neutral Buildings
N. Lubik
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.

SCIENCEONLINE FEATURE
www.sciencemag.org/special/neandertal/frame

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

SCIENCEONLINE PODCAST
www.sciencemag.org/podcast

Free Weekly Show
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.

SCIENCEPOLICY NEWS
news.sciencemag.org/scienceinsider

Science Policy News and Analysis

MITIGATING CLIMATE CHANGE
SPECIAL FEATURE: The NEANDERTAL GENOME

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals Mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2010 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): $1596. Domestic institutional subscription (51 issues): $2784. Foreign postage extra: Mexico, Caribbean (surface mail) $55; other countries (air assist delivery) $85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request. GST #1254 88122. Publications Mail Agreement Number 1069624. Printed in U.S.A.
Change of address: Allow 4 weeks, giving old and new addresses and 8-digit account number. Postmaster: Send change of address to AAAS, P.O. Box 96178, Washington, DC 20090-6178. Single-copy sales: $10.00 current issue, $25.00 back issue prepaid includes surface postage; bulk rates on request. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center. (CCC) Transactional Reporting Service, provided that $20.00 per article is paid directly to CCC, 2715 Second Avenue, Danvers, MA 01923. The identification code for Science is 0036-8075. Science is indexed in the Reader’s Guide to Periodical Literature and in several specialized indexes.