CONTENTS

EDITORIAL
1359 Still Vulnerable in 2011
Lewis M. Branscomb

NEWS OF THE WEEK
1364 A roundup of the week’s top stories

NEWS & ANALYSIS
1366 Big Budget Squeeze Looms for Major New Facilities
1368 Piqued Chinese Dean Throws Down the Gauntlet
1369 Warning of H5N1 Resurgence Surprises Community

NEWS FOCUS
1370 AUSTRALOPITHECUS SEDIBA
Skeletons Present an Exquisite Paleo-Puzzle
>> Reports pp. 1402, 1407, 1411, 1417, and 1421
1373 Paleanthropologist Now Rides High on a New Fossil Tide
Little Foot, Big Mystery
1377 Which Way to the Island?
>> Science Podcast

LETTERS
1380 Hope for Graduate School Childbirth Policies
F. A. Leibfarth and N. Vermaak
Low Sperm Counts May Be Preventable
R. M. Sharpe
Moving USAID Forward
R. W. Nichols
1381 CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
1382 Wrestling with Nature
P. Harrison et al., Eds., reviewed by M. L. Jones
1383 Histories of Computing
M. S. Mahoney, reviewed by N. Ensmenger

POLICY FORUM
1384 Boosting Health Services Research
R. Cook-Deegan

PERSPECTIVES
1386 Antarctic Ice Flow Revealed
K. M. Caffrey
>> Report p. 1427
1387 High-Throughput Discovery of New Chemical Reactions
J. Montgomery
>> Report p. 1423
1388 Getting to the Heart of Mechanotransduction
C. Hidalgo and P. Donoso
>> Report p. 1440
1390 Mother Tongue and Y Chromosomes
P. Forster and C. Renfrew
1391 How Many Cell Types Does It Take to Wire a Brain?
R. M. Ransohoff and B. Stevens
>> Report p. 1456

REVIEW
1393 Visualizing Uncertainty About the Future
D. Spiegelhalter et al.

CONTENTS continued >>

vol.333 no.6048  1351  9 SEPTEMBER 2011
Published by AAAS

www.sciencemag.org

DEPARTMENTS
1357 This Week in Science
1360 Editors’ Choice
1362 Science Staff
1468 Gordon Research Conferences
1479 New Products
1480 Science Careers

COVER
The right forearm and hand (hand skeleton ~12.3 centimeters long) of Australopithecus sediba, specimen Malapa Hominin 2. Papers in this issue present a detailed look at the hands, feet, pelvis, brain endocast, and age of this hominin, which lived 2 million years ago, near the emergence of our genus, Homo. See the series of Reports starting on p. 1402, News Focus package p. 1370, and www.sciencemag.org/extra/sediba.

Photo: Peter Schmid, courtesy of Lee Berger and the University of the Witwatersrand
BREVIA

1401 A Gene for an Extended Phenotype
K. Hoover et al.
An insect virus gene controls the behavior of the dying host to increase dispersion of the virus.

REPORTS

1402 The Endocast of MH1, Australopithecus sediba
K. J. Carlson et al.

1407 A Partial Pelvis of Australopithecus sediba
J. M. Kim et al.

1411 Australopithecus sediba Hand Demonstrates Mosaic Evolution of Locomotor and Manipulative Abilities
T. L. Kivell et al.

1417 The Foot and Ankle of Australopithecus sediba
B. Zipfel et al.

1421 Australopithecus sediba at 1.977 Ma and Implications for the Origins of the Genus Homo
R. Pickering et al.
Details of the hands, feet, pelvis, and brain of Australopithecus sediba show both primitive features and one derived toward those of Homo.
>> News stories pp. 1370 and 1373; Science Podcast

1423 A Simple, Multidimensional Approach to High-Throughput Discovery of Catalytic Reactions
D. W. Robbins and J. F. Hartwig
A screening technique based on simple mass spectrometry measurements uncovers catalysts for organic coupling reactions.
>> Perspective p. 1387

1427 Ice Flow of the Antarctic Ice Sheet
E. Rignot et al.
A high-resolution map of ice motion in Antarctica shows the details of ice movement in a warming climate.
>> Perspective p. 1386

1430 Aeroelastic Flutter Produces Hummingbird Feather Songs
C. J. Clark et al.
Hummingbirds produce diverse courtship sounds by using resonantly fluttering tail feathers.

1434 Flight at Low Ambient Humidity Increases Protein Catabolism in Migratory Birds
A. R. Gerson and C. G. Guglielmo
Dry conditions during endurance flight increase rates of lean mass loss and protein catabolism in Swainson’s thrushes.

1436 Generation of Spatial Patterns Through Cell Polarity Switching
S. Robinson et al.
A few simple rules are sufficient to keep neighboring stomata at a safe distance from one another.

1440 X-ROS Signaling: Rapid Mechano-Chemo Transduction in Heart
B. L. Prosser et al.
Reactive oxygen species produced by NADPH oxidase link mechanical stretching to calcium signaling in mammalian myocytes.
>> Perspective p. 1388

1445 Chromosome Organization by a Nucleoid-Associated Protein in Live Bacteria
W. Wang et al.
Super-resolution imaging in live Escherichia coli reveals protein clusters that sequester DNA loci and organize the chromosome.

1449 Ribosome Assembly Factors Prevent Premature Translation Initiation by 40S Assembly Intermediates
B. S. Strunk et al.
Ribosome assembly factors block multiple steps in translation initiation.

1453 Mutations in CIC and FUBP1 Contribute to Human Oligodendrogloma
C. Bettegowda et al.
A gene originally studied for its role in fruit fly embryogenesis is implicated in the growth of a common human brain tumor.

1456 Synaptic Pruning by Microglia Is Necessary for Normal Brain Development
R. C. Paolicelli et al.
A good brain needs a good vacuum cleaner.
>> Perspective p. 1391

1458 Light-Induced Structural and Functional Plasticity in Drosophila Larval Visual System
Q. Yuan et al.
Postsynaptic plasticity participates in the adaptation of a sensory circuit to the environment.

1462 HCN2 Ion Channels Play a Central Role in Inflammatory and Neuropathic Pain
E. C. Emery et al.
Action potential firing, initiated by HCN2 ion channels, is the basic mechanism underlying neuropathic pain.

CONTENTS continued >>
**FOCUS**: Getting to the Root of Hydrocephalus
J. P. McAllister
The blood-borne lipid lysophosphatidic acid and its receptor contribute to fetal-onset hydrocephalus, a severe neurological disorder of newborns.

**RESEARCH ARTICLE**: Lysophosphatidic Acid Signaling May Initiate Fetal Hydrocephalus
Y. C. Yung et al.
Blockade of lysophosphatidic acid (LPA) signaling provides a new strategy for treating fetal hydrocephalus.

**PODCAST**
J. Chun and O. Smith
A conversation with Jerold Chun about identification of a lipid in blood that may trigger hydrocephalus in the fetus.

**SCIENCECAREERS**
www.sciencemag.org/career_magazine
Free Career Resources for Scientists

**Seeking Work in the Social Net**
C. Mintz
Social media Web sites allow job seekers to present a fuller image of themselves and to interact directly with potential employers.

**SCIENCEPODCAST**
www.sciencemag.org/podcast
Free Weekly Show
On the 9 September Science Podcast: Australopithecus sediba and the genus Homo, brown algae and Li-ion batteries, the race for superheavy elements, and more.

**SCIENCEINSIDER**
news.sciencemag.org/scienceinsider
Science Policy News and Analysis

**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 © 2011 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): $149 (574 allocated to subscription). Domestic institutional subscription (15 issues): $990; 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 #12540 8822. Publications Mail Agreement Number 1069624. Printed in the 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 20090-96178. Single-copy sales: $10.00 current issue, $35.00 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 $25.00 per article is paid directly to CCC, 222 Rosewood Drive, 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.

Published by AAAS