CONTENTS

EDITORIAL
137 Cancer Therapy Reform
Arthur D. Levinson

NEWS OF THE WEEK
150 NSF Board Draws Flak for Dropping Evolution From Indicators
151 Scientists Ask Minister to Disavow Predecessor’s Book
153 Cancer Gene Patents Ruled Invalid
154 Candidate Human Ancestor From South Africa Sparks Praise and Debate
>> Research Articles pp. 195 and 205
155 From Science’s Online Daily News Site
157 Fresh Signs of Volcanic Stirrings Are Radiating From Venus
157 Scientists Count the Costs of Chile’s Quake
158 Asking the Right Question Requires Right Mix of Science and Politics
159 From the Science Policy Blog

NEWS FOCUS
160 EVOLUTION OF BEHAVIOR
Did Working Memory Spark Creative Culture?
Does ‘Working Memory’ Still Work?
>> Science Podcast
164 Did Modern Humans Get Smart or Just Get Together?
165 Conquering by Copying
A Winning Combination
>> Research Article p. 208

LETTERS
169 Food Security: Population Controls
A. H. Westing
Food Security: Green Revolution Drawbacks
V. Rull

PERSPECTIVES
179 The Microbes Made Me Eat It
D. A. Sandoval and R. J. Seeley
>> Report p. 228
180 Holding On by a Hard-Shell Thread
P. B. Messersmith
>> Report p. 216
181 Central Chile Finally Breaks
R. Madariaga et al.
183 Probing the Nanoscale
R. F. Cook
184 Poisonous Contacts
S. C. Kogan
>> Report p. 240
185 Graphene Spreads the Heat
R. Prasher
>> Report p. 213

CORRECTIONS AND CLARIFICATIONS
170

BOOKS ET AL.
175 The Art of Not Being Governed
J. C. Scott, reviewed by F. Barth

POLICY FORUM
177 The Barometer of Life
S. N. Stuart et al.

COVER
Cranium of Australopithecus sediba (specimen UW88-50), a new species of australopith found at the Malapa site in South Africa.
Two partial skeletons, dated to about 1.9 million years ago, share many derived features with Homo and may thus shed light on the evolution of that genus. See the related Research Articles on pages 195 and 205 and the related News story on page 154.
Photo: Brett Eloff, courtesy of Lee Berger and the University of the Witwatersrand

www.sciencemag.org  SCIENCE  VOL 328  9 APRIL 2010
Published by AAAS
REVIEW

187 Four-Dimensional Electron Microscopy
A. H. Zewail

RESEARCH ARTICLES

195 Australopithecus sediba: A New Species of Homo-Like Australopith from South Africa
L. R. Berger et al.
>> Science Podcast

205 Geological Setting and Age of Australopithecus sediba from Southern Africa
P. H. G. M. Dirks et al.
A new species of Australopithecus, about 1.9 million years old, shows many derived features with Homo, helping to reveal its evolution.
>> News story p. 154

208 Why Copy Others? Insights from the Social Learning Strategies Tournament
L. Rendell et al.
Learning from what others do is more efficient than learning all on one’s own.
>> News story p. 165; Science Podcast

REPORTS

213 Two-Dimensional Phonon Transport in Supported Graphene
J. H. Seol et al.
The thermal conductivity of graphene supported on silicon dioxide remains high, despite phonon scattering by the substrate.
>> Perspective p. 185

216 Iron-Clad Fibers: A Metal-Based Biological Strategy for Hard Flexible Coatings
M. J. Harrington et al.
Marine mussel byssal threads have an outer coating in which proteins are linked to metal ions.
>> Perspective p. 180

220 Solvent-Mediated Electron Hopping: Long-Range Charge Transfer in IBr⁻(CO₂) Photodissociation
L. Sheps et al.
The presence of an intervening carbon dioxide molecule dramatically changes the electron transfer probability between two halogen atoms.

224 Increased Silver Activity for Direct Propylene Epoxidation via Subnanometer Size Effects
Y. Lei et al.
Clusters of three silver atoms deposited on alumina are active for the low-temperature direct formation of propylene oxide.

228 Metabolic Syndrome and Altered Gut Microbiota in Mice Lacking Toll-Like Receptor 5
M. Vijay-Kumar et al.
The innate immune system may promote metabolic health through effects on gut microbes.
>> Perspective p. 179

232 Variation in Transcription Factor Binding Among Humans
M. Kasowski et al.
Transcription factor binding sites vary among individuals and are correlated with differences in expression.

235 Heritable Individual-Specific and Allele-Specific Chromatin Signatures in Humans
R. McDaniell et al.
An appreciable amount of variation in chromatin status and transcription factor binding has a genetic basis.

240 Arsenic Trioxide Controls the Fate of the PML-RARα Oncoprotein by Directly Binding PML
X.-W. Zhang et al.
Arsenic, a drug used clinically for leukemia, binds directly to an oncogenic protein, thereby promoting its degradation.
>> Perspective p. 184

243 Transnuclear Mice with Predefined T Cell Receptor Specificities Against Toxoplasma gondii Obtained via SCNT
O. Kirak et al.
Researchers describe a method to obtain transgenic mice for the study of T cell responses to infectious disease.

CONTENTS continued >>
Cerebrovascular defects, prevents ligand-mediated CCM3, which is associated with inherited rare blood vessel disease. Thalidomide eases symptoms of nuclear matter to within 1.5%. Physicists measure fundamental bits of Assembly of a β-barrel membrane protein in a cell-free system does not require added energy. SCIENCE CAREERS www.sciencecareers.org/career_magazine Free Career Resources for Scientists Scientists Embrace Openness C. Wald Some scientists go to great lengths to make everything they do in the lab transparent. All in the Details: Careers in Regulatory Science N. Volkers Regulations at every step of drug development mean jobs for regulatory scientists. From Researcher to Outreacher L. Laursen A career in outreach makes connecting science with the public a full-time job. SCIENCE TRANSLATIONAL MEDICINE www.sciencetranslationalmedicine.org Integrating Medicine and Science PERSPECTIVE: Rod-Derived Cone Viability Factor for Treating Blinding Diseases—From Clinic to Redox Signaling T. Léveillard and J.-A. Sahel A neuroprotective protein may be broadly useful for treating degenerative retinal diseases caused by mutations in a number of different genes. COMMENTARY: Training Translators for Smart Drug Discovery C. Starke and G. A. Fitzgerald Human capital is a rate-limiting constraint in translational medicine and therapeutics.