EDITORIAL
672  Think Outside the Lab
Marcia McNutt

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

NEWS & ANALYSIS
678  Crippling Virus Set to Conquer
Western Hemisphere
679  Needed: More Females in Animal
and Cell Studies
680  Bones From a Watery ‘Black Hole’
Confirm First American Origins
>> Report p. 750
681  Job Change Lands Egyptian Scientist
in Legal Battle
683  No Stopping the Collapse of
West Antarctic Ice Sheet
>> Report p. 735

NEWS FOCUS
684  Beyond the Temples
687  The Hunt for Missing Genes

LETTERS
691  China’s Soil Pollution: Farms on
the Frontline
R. Chen et al.
China’s Soil Pollution: Urban Brownfields
H. Yang et al.
Scientific Justification for Animal Capture
J. Cooke et al.
Public Credibility Drives Vaccination
Decisions
B. Penders

BOOKS ET AL.
694  The Oldest Living Things in the World
R. Sussman; reviewed by J. Farmer
695  The Gap
T. Suddendorf; reviewed by B. Sim

POLICY FORUM
696  A Call for Deep-Ocean Stewardship
K. J. Mengerink et al.

PERSPECTIVES
699  Making Hunger Yield
C. R. McClung
700  Recognizing Foreshocks from the 1 April
2014 Chile Earthquake
E. E. Brodsky and T. Lay
702  Electronic Control of Circularly Polarized
Light Emission
J. Zaumseil
>> Report p. 725
703  New Tricks for an Old Dimer
J. A. Wells and A. A. Kossiakoff
>> Research Article p. 710
705  Imaging Crystallization
P. Dandekar and M. F. Doherty
>> Report p. 729
706  Toward Recyclable Thermosets
T. E. Long
>> Report p. 732
707  Cas9 Targeting and the CRISPR Revolution
R. Barrangou

REVIEW
709  Lignin Valorization: Improving Lignin
Processing in the Biorefinery
A. J. Ragauskas et al.
Review Summary; for full text:
http://dx.doi.org/10.1126/science.1246843

ON THE WEB THIS WEEK
>> Science Podcast
On this week’s show: avoiding quantum
back-action effects and a roundup of stories
from our daily news site.
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videos, daily news, our research journals, and
Science Careers at www.sciencemag.org.

COVER
A male stick insect (*Timema knulli*) sitting on its host redwood
(*Sequoia sempervirens*) in the Landels-Hill Big Creek Reserve,
Big Sur, California. The process of *Timema* populations adapting
to different hosts has repeatedly initiated parallel genetic
changes in this group of insects. In turn, these replicate instances
of differentiation have resulted in predictable and repeatable
patterns of genome divergence by natural selection. See page 738.

*Photo: © Moritz Muschick*
RESEARCH ARTICLES

710 Mechanism of Activation of Protein Kinase JAK2 by the Growth Hormone Receptor
A. J. Brooks et al.
A molecular mechanism for transmembrane signaling by the growth hormone receptor is elucidated.
Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1249783
>> Perspective p. 703

711 Border Control—A Membrane-Linked Interactome of Arabidopsis
A. M. Jones et al.
A membrane and signaling protein interaction network for gene discovery and hypothesis generation is identified in Arabidopsis.

717 Oxidation Products of Biogenic Emissions Contribute to Nucleation of Atmospheric Particles
F. Riccobono et al.
Experiments in the CLOUD chamber at CERN reproduce particle nucleation rates observed in the lower atmosphere.

REPORTS

722 Transverse Demagnetization Dynamics of a Unitary Fermi Gas
A. B. Bardon et al.
The diffusion of spin orientation is observed in a gas of potassium atoms in a magnetic field gradient.

725 Electrically Switchable Chiral Light-Emitting Transistor
Y. J. Zhang et al.
The valley degree of freedom in WSe₂ is used to realize an electrically switchable, circularly polarized light source.
>> Perspective p. 702

729 In Situ Imaging of Silicalite-1 Surface Growth Reveals the Mechanism of Crystallization
A. I. Lupulescu and J. D. Rimer
Silicalite-1 growth occurs via the addition of silica molecules and precursors, confirming both main theories.
>> Perspective p. 705

732 Recyclable, Strong Thermosets and Organogels via Paraformaldehyde Condensation with Diamines
J. M. García et al.
A strong polymer formed by heating can be digested with strong acid to recover and recycle its bisaniline monomers.
>> Perspective p. 706

735 Marine Ice Sheet Collapse Potentially Under Way for the Thwaites Glacier Basin, West Antarctica
J. I. Joughin et al.
The onset of rapid collapse of the Thwaites Glacier in West Antarctica is likely within the next 200 to 1000 years.
>> News story p. 683

738 Stick Insect Genomes Reveal Natural Selection’s Role in Parallel Speciation
V. Sara-Carrasco et al.
Parallel speciation in insects shows both convergent and divergent selection after one generation.

742 NMR Spectroscopy of Native and in Vitro Tissues Implicates PolyADP Ribose in Biomineralization
W. Y. Chow et al.
An in vitro model of developing bone from a mouse model is amenable to nuclear magnetic resonance analysis.

747 Genomic Diversity and Admixture Differs for Stone-Age Scandinavian Foragers and Farmers
P. Skoglund et al.
Population dynamics of Scandinavian Mesolithic and Neolithic hunter-gatherers differ from those of early farmers.

750 Late Pleistocene Human Skeleton and mtDNA Link Paleoamericans and Modern Native Americans
J. C. Chatters et al.
The differences between Paleoamericans and Native Americans likely resulted from local evolution.
>> News story p. 680

754 Neurosensory Perception of Environmental Cues Modulates Sperm Motility Critical for Fertilization
K. McKnight et al.
Nematode pheromones modulate a neuroendocrine pathway that converts dietary fats into sperm-attracting prostaglandins.

757 Sulfur Oxidation Genes in Diverse Deep-Sea Viruses
K. Anantharaman et al.
Host-derived viral auxiliary metabolic genes for sulfur oxidation play a key biogeochemical role in the dark ocean.

760 Positive Feedback Within a Kinase Signaling Complex Functions as a Switch Mechanism for NF-κB Activation
H. Shinohara et al.
The molecular basis of an all-or-none response in B cells is revealed.

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