CONTENTS
7 NOVEMBER 2014 • VOLUME 346 • ISSUE 6210

NEWS

IN BRIEF
680 Roundup of the week's news

IN DEPTH
683 PLAN TO PROTECT GREAT BARRIER REEF UNDER FIRE
Continuing degradation threatens reef's World Heritage Site status By D. Normile and L. Dayton

684 DELAYS HINDER EBOLA GENOMICS
For months, no sequences from the virus have been released By G. Vogel

685 WHAT'S KILLING THE REINDEER?
Conservationists and herders in Norway differ about whether to blame predators or overpopulation By E. Kintisch

686 AN INTERNET RESEARCH PROJECT DRAWS CONSERVATIVE Ire
Truthy project at Indiana University analyzes Twitter traffic to understand patterns of political discourse By J. Mervis

687 GENETICS MAY FOSTER BUGS THAT KEEP YOU THIN
Twin study shows genes influence gut microbiome By E. Pennisi

FEATURES
688 A GLIMPSE OF COSMIC DAWN
Astronomers are attempting to look back to when the first stars and galaxies lit up and changed the universe forever By D. Clery

692 RARE EARTH
Soil scientists are tracking down rare and endangered soils in a quest to document—and preserve—“pedodiversity” By M. Tennesen

INSIGHTS

PERSPECTIVES
696 THE OTHER HALF OF THE UNIVERSE?
A large previously unknown population of stars inhabits intergalactic space
By S. H. Moseley
REPORT P. 732

698 SEARCHING FOR NEW BRANCHES ON THE TREE OF LIFE
Is there undiscovered life that differs fundamentally from that in the three known domains?
By T. Woyke and E. M. Rubin

699 LEAPING THE NOROVIRUS HURDLE
Bacteria and B cells solve the problem of culturing human norovirus in the laboratory
By C. M. Robinson and J. K. Pfeiffer
REPORT P. 755

700 LOCAL SYNTHESIS AND DISPOSAL
New experimental strategies reveal spatial and temporal features of protein synthesis and degradation in cells
By S. Shao and R. S. Hegde
RESEARCH ARTICLE 716;
REPORTS PP. 748 & 751

703 COPING WITH LOW OCEAN SULFATE
Did sulfate-reducing microbes exist in the Archean ocean? By Y. Ueno
REPORTS PP. 735, 739, & 742

704 SIMULATIONS PROVIDE A RARE LOOK AT REAL MELTING
Advanced computational methods allow sampling of rare events and reveal multiple pathways in melting of metals
By A. van de Walle
REPORT P. 729

706 BRAZIL'S ENVIRONMENTAL LEADERSHIP AT RISK
Mining and dams threaten protected areas By J. Ferreira et al.

BOOKS ET AL.
709 THE THEORY OF EVERYTHING
J. Marsh, director; reviewed by V. Thompson

709 WHAT IF?
By R. Munroe

LETTERS
710 HIDDEN EFFECTS OF MOUSE CHOW
By L. Augenlicht

710 EARTHSHAKING ENERGY DEVELOPMENT PLANS
By H. Yang et al.

710 ONLINE BUZZ: CLINICAL TRIALS

711 GIVE YOUNG SCIENTISTS A LEVEL PLAYING FIELD
By P. C. Jordan

DEPARTMENTS
679 EDITORIAL
Journals unite for reproducibility
By Marcia McNutt

782 WORKING LIFE
Reflections of a woman pioneer
By Vijaysree Venkatraman

Science Staff ..............................................676
New Products .............................................768
Science Careers .........................................770

Published by AAAS
IN BRIEF
712 From Science and other journals

REVIEW
715 ECONOMICS
Economics in the age of big data
L. Einy and J. Levin
REVIEW SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1243089

716 LOCAL TRANSLATION
Principles of ER cotranslational translocation revealed by proximity-specific ribosome profiling
C. H. Jan et al.
RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1257521
PERSPECTIVE P. 701; REPORT P. 748

717 NANOMATERIALS
 Casting inorganic structures with DNA molds W. Sun et al.
RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1258361

718 THE RIBOSOME
Structure of the large ribosomal subunit from human mitochondria A. Brown et al.

REPORTS
722 QUANTUM SPIN LIQUIDS
Coherent transmutation of electrons into fractionalized anyons M. Barkeshli et al.

725 PHOTOCHEMISTRY
Reduction of aryl halides by consecutive visible light-induced electron transfer processes I. Ghosh et al.

729 PHASE TRANSFORMATION
Microscopic mechanisms of equilibrium melting of a solid A. Samanta et al.

732 EARLY UNIVERSE
On the origin of near-infrared extragalactic background light anisotropy M. Zemcov et al.

736 INSECT PHYLOGENOMICS
Phylogenomics resolves the timing and pattern of insect evolution B. Misof et al.

ON THE COVER
A composite image of individually photographed insects illustrates a small fraction of their enigmatic diversity. Scientists from the 1KITE project used a data set of 1478 protein-coding genes from 144 insect species to provide reliable estimates on controversial dates of origin and relationships of all major insect groups. See page 763. Image: Hans Pohl, Friedrich-Schiller-Universität Jena, Germany

745 ANIMAL BEHAVIOR
Bats jamming bats: Food competition through sonar interference A. J. Corcoran and W. E. Conner

748 LOCAL TRANSLATION
Targeting and plasticity of mitochondrial proteins revealed by proximity-specific ribosome profiling C. C. Williams et al.
RESEARCH ARTICLE P. 716

751 QUALITY CONTROL
Quality control of inner nuclear membrane proteins by the Asi complex O. Foresti et al.

755 NOROVIRUS
Enteric bacteria promote human and mouse norovirus infection of B cells M. K. Jones et al.

759 HIV ENTRY
Conformational dynamics of single HIV-1 envelope trimers on the surface of native virions J. B. Munro et al.

763 INSECT PHYLOGENOMICS
Phylogenomics resolves the timing and pattern of insect evolution B. Misof et al.

Published by AAAS
7 NOVEMBER 2014 • VOL 346 ISSUE 6210