CONTENTS
17 OCTOBER 2014 • VOLUME 346 • ISSUE 6207

NEWS

IN BRIEF
284 Roundup of the week’s news

IN DEPTH
287 FOR VENEZUELAN ACADEMICS, SPEAKING OUT IS RISKY BUSINESS
Government attacks some, snares many in red tape By L. Wade

288 ‘NONADHERENCE’: A BITTER PILL FOR DRUG TRIALS
Drug developers seek new ways to ensure that subjects take their medicine By K. Servick

289 EBOLA VACCINE TRIALS RAISE ETHICAL ISSUES
Randomized studies may offer fastest answer By J. Cohen and K. Kupferschmidt

290 LIGHT LOOPHOLE WINS LAURELS
Chemistry Nobel winners pushed microscopes past supposed limit By D. Clery

291 REGULATING INDUSTRY’S BIG BOYS
French economist Jean Tirole wins Nobel for his analyses of oligopolies By T. Rabesandratana

FEATURE
292 BABOON WATCH
An epic baboon study shows how social interactions shape health and reproduction in all primates—including humans By E. Pennisi

NEWS

IN BRIEF
284 Roundup of the week’s news

IN DEPTH
287 FOR VENEZUELAN ACADEMICS, SPEAKING OUT IS RISKY BUSINESS
Government attacks some, snares many in red tape By L. Wade

288 ‘NONADHERENCE’: A BITTER PILL FOR DRUG TRIALS
Drug developers seek new ways to ensure that subjects take their medicine By K. Servick

289 EBOLA VACCINE TRIALS RAISE ETHICAL ISSUES
Randomized studies may offer fastest answer By J. Cohen and K. Kupferschmidt

290 LIGHT LOOPHOLE WINS LAURELS
Chemistry Nobel winners pushed microscopes past supposed limit By D. Clery

291 REGULATING INDUSTRY’S BIG BOYS
French economist Jean Tirole wins Nobel for his analyses of oligopolies By T. Rabesandratana

FEATURE
292 BABOON WATCH
An epic baboon study shows how social interactions shape health and reproduction in all primates—including humans By E. Pennisi

INSIGHTS

PERSPECTIVES
296 CHANGES ON THE HORIZON FOR CONSUMER GENOMICS IN THE EU
Test results may no longer be available directly to consumers By L. Kalokairinou et al.

298 TO LEARN IS TO MYELINATE
The adult mammalian brain requires the production of new glial cells and myelin for learning By P. Long and G. Corfas

300 NUTRIENT COMPUTATION FOR ROOT ARCHITECTURE
Plants sense and respond to nutrients using a peptide signaling system By T. Bisseling and B. Scheres

301 SENSING BIODIVERSITY
Sophisticated networks are required to make the best use of biodiversity data from satellites and in situ sensors By W. Turner

303 POTASSIUM IONS LINE UP
Do K+ ions move in single file through potassium channels? By G. Hummer

304 IN OPTICAL PUMPING, LESS CAN BE MORE
Creating loss in one optical resonator can initiate lasing in its coupled partner By H. G. L. Schwefel

BOOKS ET AL.
307 WHAT IS YOUR RACE?
By K. Prewitt, reviewed by P. Schor

LETTERS
308 BEFORE THE KARDASHIAN INDEX
By G. R. Goldsmith

308 NUANCED NEGATIVE RESULT REPORTING
By S. K. Lhachimi et al.

308 SUPPORT UNDERWAY FOR COASTAL ECOSYSTEMS
By D. S. Schinn

309 SCIENCE AND RELIGION: THINK LOCAL
By J. M. Hanes

DEPARTMENTS
283 EDITORIAL
“Epicenters” of resilience By Mary Lou Zoback

390 WORKING LIFE
Life inspires applications By Sharon Ann Holgate

390 WORKING LIFE
Life inspires applications By Sharon Ann Holgate

Published by AAAS
RESEARCH

IN BRIEF

310 From Science and other journals

REVIEWS

313 APPLIED EVOLUTION
Applying evolutionary biology to address global challenges S. P. Carroll et al.

REPORT ABSTRACTS

316 On the prevalence of small-scale twist in the solar chromosphere and transition region B. De Pontieu et al.

Evidence of nonthermal particles in coronal loops heated impulsively by nanoflares P. Testa et al.

Hot explosions in the cool atmosphere of the Sun H. Peter et al.

The unresolved fine structure resolved: IRIS observations of the solar transition region V. Hansteen et al.

SEE ALSO

▶ PERSPECTIVE P. 305
▶ VIDEO
▶ sciencemag.org/special/iris

RESEARCH ARTICLE

318 SKILL DEVELOPMENT
Motor skill learning requires active central myelination I. A. McKenzie et al.

325 LAB ASTROPHYSICS
Laboratory formation of a scaled protostellar jet by coaligned poloidal magnetic field B. Albertazzi et al.

328 OPTICS
Loss-induced suppression and revival of lasing B. Peng et al.

332 QUANTUM ELECTRONICS
Cavity quantum electrodynamics with many-body states of a two-dimensional electron gas S. Smolka et al.

336 ATTOSECOND DYNAMICS
Ultrafast electron dynamics in phenylalanine initiated by attosecond pulses F. Calegari et al.

340 STRATEGIC REASONING
Neural correlates of strategic reasoning during competitive games H. S. et al.

343 NITROGEN UPTAKE
Perception of root-derived peptides by shoot LRR-RKs mediates systemic N-demand signaling R. Tabata et al.

346 TROPHIC CASCADES
Large carnivores make savanna tree communities less thorny A. T. Ford et al.

349 CLIMATE CHANGE
Increased variability of tornado occurrence in the United States H. E. Brooks et al.

352 ION CHANNELS
Ion permeation in K+ channels occurs by direct Coulomb knock-on D. A. Köger et al.

355 ION CHANNELS
Structure and selectivity in bestrophin ion channels T. Yang et al.

360 AGING
HSP-1–mediated cytoskeletal integrity determines thermotolerance and life span N. A. Baird et al.

363 AUTOIMMUNITY
Detection of T cell responses to a ubiquitous cellular protein in autoimmune disease Y. Ito et al.

ON THE COVER

Ultraviolet view of a coronal mass ejection on the Sun on 9 May 2014. Images from the Interface Region Imaging Spectrograph (IRIS) (inset) and from the Solar Dynamics Observatory’s Atmospheric Imaging Assembly (background) show the violent eruption of hot plasma into space. NASA launched IRIS in June 2013 to study the complex interface between the Sun’s surface and outer atmosphere. See pages 305 and 315 and sciencemag.org/special/iris.

Images: IRIS and SDO/AIA, Lockheed Martin Solar & Astrophysics Laboratory, NASA/Goddard Space Flight Center

Eying the Sun

INTRODUCTION

315 Probing the solar interface region B. De Pontieu et al.

REPORT ABSTRACTS

316 On the prevalence of small-scale twist in the solar chromosphere and transition region B. De Pontieu et al.

Prevalence of small-scale jets from the networks of the solar transition region and chromosphere H. Tian et al.

Evidence of nonthermal particles in coronal loops heated impulsively by nanoflares P. Testa et al.

Hot explosions in the cool atmosphere of the Sun H. Peter et al.

The unresolved fine structure resolved: IRIS observations of the solar transition region V. Hansteen et al.

SEE ALSO

▶ PERSPECTIVE P. 305
▶ VIDEO
▶ sciencemag.org/special/iris

Myelin and motor skills

355 A bacterial homolog to a ubiquitous cellular protein in autoimmune disease

346 Large carnivores make savanna tree communities less thorny

349 Increased variability of tornado occurrence in the United States

352 Ion permeation in K+ channels occurs by direct Coulomb knock-on

355 Structure and selectivity in bestrophin ion channels

360 HSP-1–mediated cytoskeletal integrity determines thermotolerance and life span

363 Detection of T cell responses to a ubiquitous cellular protein in autoimmune disease

On the Cover

Ultraviolet view of a coronal mass ejection on the Sun on 9 May 2014. Images from the Interface Region Imaging Spectrograph (IRIS) (inset) and from the Solar Dynamics Observatory’s Atmospheric Imaging Assembly (background) show the violent eruption of hot plasma into space. NASA launched IRIS in June 2013 to study the complex interface between the Sun’s surface and outer atmosphere. See pages 305 and 315 and sciencemag.org/special/iris.

Images: IRIS and SDO/AIA, Lockheed Martin Solar & Astrophysics Laboratory, NASA/Goddard Space Flight Center

Published by AAAS
17 OCTOBER 2014 • VOL 346 ISSUE 6207 281

Science sciencemag.org

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 © 2014 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): $74; $126 ($74 allocated to subscription). Domestic institutional subscription (51 issues): $1282; 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. 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, $15.00 back issue (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 $30.00 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.