



386

NEWS

IN BRIEF

376 Roundup of the week's news

IN DEPTH

378 SEEKING TESTS FOR A CONTESTED BRAIN DISEASE

FDA warning to UCLA highlights struggle to diagnose chronic traumatic encephalopathy *By E. Underwood*

379 PLAN FOR E.U. RESEARCH FUNDS RAISES IRE

European Parliament vows to shield science budget from stimulus package raid *By T. Rabesandratana*

380 HOUSE SCIENCE CHIEF UNVEILS CONTENTIOUS VISION FOR SCIENCE

Authorization bill would cut climate and energy research and reshape science agency policies *By J. Mervis and A. Cho*

382 CLINICAL TRIALS GET PRACTICAL

Many clinical trials don't help doctors make decisions. A new breed of studies aims to change that *By J. Couzin-Frankel*

383 INBRED WOLF POPULATION ON ISLE ROYALE COLLAPSES

But other wolves adopt a new Lake Superior island *By C. Mlot*

384 NIH'S PEER REVIEW STANDS UP TO SCRUTINY

Analyses show better scored proposals produce more papers and citations *By J. Mervis*

► REPORT P. 434

FEATURES

386 AFTER HUBBLE

The Webb telescope's troubled history poses challenges for other contenders to replace the world's most popular space telescope *By D. Clery*

391 Hubble on steroids

By G. Schilling

► EDITORIAL P. 375; PODCAST

INSIGHTS

PERSPECTIVES

392 EVOLVING NEW ORGANISMS VIA SYMBIOSIS

When and how do symbiotic partnerships become new, integrated organisms? *By E. T. Kiers and S. A. West*

394 BIOGEOCHEMICAL TALES TOLD BY ISOTOPE CLUMPS

Molecules with two or more heavy isotopes provide insights into diverse biological and geological phenomena *By B. H. Passey*

► REPORTS PP. 428 & 431

396 SUPRAMOLECULAR LATTICES FROM TETRAHEDRAL NANOBUILDING BLOCKS

The location of hydrophilic and hydrophobic regions on tetrahedral nanoparticles determines how they pack together into a variety of structures *By S. Yang*

► REPORT P. 424

398 CALCILYPTICS FOR ASTHMA RELIEF

A promiscuous calcium receptor holds promise as a therapeutic target for asthma *By R. B. Penn*

399 THE DELICATE DANCE OF TRANSLATION AND FOLDING

RNA translation and protein folding affect each other during protein synthesis *By J. D. Puglisi*

► REPORTS PP. 444 & 457

401 ECOSYSTEM SERVICES LOST TO OIL AND GAS IN NORTH AMERICA

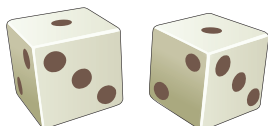
Net primary production reduced in crop and rangelands *By B. W. Allred et al.*



392

Science Staff	374
AAAS News & Notes	407
New Products	461
Science Careers	462

PHOTO (LEFT): DREW NOEL



394, 428, & 431

Clumped isotopes:
More than a roll of the dice



399, 444, & 457

The force of folding

BOOKS ET AL.

403 THE NARROW EDGE

By D. Cramer, reviewed by N. A. Clark

404 FORENSICS: THE ANATOMY OF CRIME

Reviewed by A. Robinson

LETTERS

405 A PATH TO RECRUITING MORE STEM TEACHERS

By M. Plisch

405 EDITOR'S NOTE

By T. Appenzeller

405 A CHINESE PHYSICS INSTITUTE'S DEFENSE

By L. He

RESEARCH

IN BRIEF

408 From *Science* and other journals

REVIEW

411 MULTILAYER ASSEMBLY

Technology-driven layer-by-layer assembly of nanofilms

J. J. Richardson et al.

REVIEW SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaa2491

RESEARCH ARTICLES

412 RNA IMAGING

Spatially resolved, highly multiplexed RNA profiling in single cells

K. H. Chen et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaa6090

413 SUPERNOVAE

Old supernova dust factory revealed at the Galactic center

R. M. Lau et al.

REPORTS

418 GALAXY EVOLUTION

Isolated compact elliptical galaxies:

Stellar systems that ran away

I. Chilingarian and I. Zolotukhin

421 ORGANIC CHEMISTRY

A rhodium catalyst for single-step styrene production from benzene and ethylene

B. A. Vaughan et al.

424 SELF-ASSEMBLY

Selective assemblies of giant tetrahedra via precisely controlled positional interactions

M. Huang et al.

► PERSPECTIVE P. 396

428 METHANE CYCLING

Nonequilibrium clumped isotope signals in microbial methane

D. T. Wang et al.

► PERSPECTIVE P. 394; REPORT P. 431



442

431 ISOTOPE GEOCHEMISTRY

Biological signatures in clumped isotopes of O₂

L. Y. Yeung et al.

► PERSPECTIVE P. 394; REPORT P. 428

434 RESEARCH FUNDING

Big names or big ideas: Do peer-review panels select the best science proposals?

D. Li and L. Agha

► NEWS STORY P. 384

439 VACCINES

An Ebola whole-virus vaccine is protective in nonhuman primates

A. Marzi et al.

442 GENOME EDITING

The mutagenic chain reaction: A method for converting heterozygous to homozygous mutations

V. M. Gantz and E. Bier

444 PROTEIN FOLDING

Translational tuning optimizes nascent protein folding in cells

S. J. Kim et al.

► PERSPECTIVE P. 399

448 INFECTIOUS DISEASE

Life-threatening influenza and impaired interferon amplification in human IRF7 deficiency

M. J. Ciancanelli et al.

453 NEUROBIOLOGY

SARM1 activation triggers axon degeneration locally via NAD⁺ destruction

J. Gerdt et al.

457 RIBOSOME

Mechanical force releases nascent chain-mediated ribosome arrest in vitro and in vivo

D. H. Goldman et al.

► PERSPECTIVE P. 399

DEPARTMENTS

375 EDITORIAL

Big science is hard but worth it

By Michael S. Turner

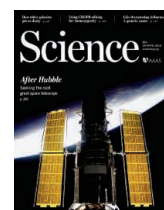
► NEWS STORY P. 386

470 WORKING LIFE

To work or not shouldn't be a question

By Marion Ronit Munk and René Rückert

ON THE COVER



The Hubble Space Telescope on the payload bay of the space shuttle Endeavour during its first servicing mission, in December 1993. Astronauts repaired flawed optics that had crippled most of Hubble's instruments since its launch almost 4 years earlier. The mission gave Hubble a new lease on life and inaugurated its brilliant astronomical career. See page 386. Photo: © Corbis

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 © 2015 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): \$153 (\$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. Printed in the U.S.A. Change of address: Allow 4 weeks. Give 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 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 \$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.