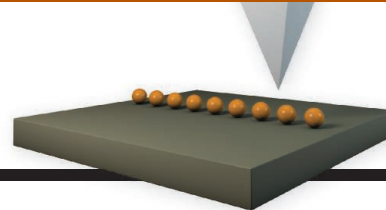


CONTENTS

**545 & 602**

A glimpse at Majorana fermions via iron atoms

31 OCTOBER 2014 • VOLUME 346 • ISSUE 6209

NEWS

IN BRIEF

526 Roundup of the week's news**530 & 630**

IN DEPTH

530 THE COMING SALAMANDER PLAGUEAlready harming a European species, an Asian fungus could wreak havoc in North America *By E. Stokstad*

► REPORT P. 630

531 AN EASY CONSCIOUSNESS TEST?EEG studies detect awareness in locked-in people *By E. Underwood***532 MODERN SYMBIONTS INSIDE CELLS MIMIC ORGANELLE EVOLUTION**Long-term partnerships can result in extremes in genome reduction or expansion *By E. Pennisi***534 THE EBOLA VACCINE UNDERDOG**NewLink Genetics says it might have enough doses ready by spring to vaccinate most people at risk *By J. Cohen***535 FRIENDS, NOT FOES, BOOST WARRIORS' SUCCESS**New analysis of Yanomamö data suggests that alliances among in-laws raise fighters' fitness *By L. Wade***537 LOW OXYGEN STIFLED ANIMALS' EMERGENCE, STUDY SAYS**Rocks shed light on a billion years of stalled evolution *By C. Gramling*

► REPORT P. 635

FEATURE

538 STEPPING ON THE GAS

What would it take to put you behind the wheel of a methane-powered vehicle? Researchers are determined to find out

By R. F. Service

INSIGHTS

PERSPECTIVES

542 COMPLETE PAIRING NOT NEEDEDStructures of microRNA-mRNA-human Argonaute reveal where and how intermolecular interactions are specified *By D. J. Patel*

► RESEARCH ARTICLE P. 608

544 CLARIFYING THE STRUCTURE OF CARBONIC ACID

Discrepancies in the reported structures of the difficult-to-isolate solid form of a common acid have been resolved

*By G. Bucher and W. Sander***545 SEEKING OUT MAJORANA UNDER THE MICROSCOPE**A chain of iron atoms on lead may reveal a signature of the elusive Majorana particle *By P. A. Lee*

► RESEARCH ARTICLE P. 602

547 ADOLESCENT MENTAL HEALTH—OPPORTUNITY AND OBLIGATIONEmerging neuroscience offers hope for treatments *By F. S. Lee et al.*

► THE AGING BRAIN SECTION P. 566

549 THE VALUE OF VALUING NATUREValuing nature in economic terms is not always beneficial for biodiversity conservation *By W. M. Adams*

► EDITORIAL P. 525

551 THE ATOMS OF NEURAL COMPUTATION

Does the brain depend on a set of elementary, reusable computations?

By G. Marcus et al.

SCIENCE PRIZE ESSAY

554 SHORTCUTS AND CHECKPOINTS ON THE ROAD TO SKILLED MOVEMENTCoordinating intricate motor circuits *By E. Azim*

SPECIAL SECTION

The aging brain

INTRODUCTION

566 Better aging through neuroscience

NEWS

568 Starting young *By E. Underwood*

REVIEWS

572 Human cognitive aging: *Corriger la fortune?* *U. Lindenberger***579** Plasticity of the aging brain: New directions in cognitive neuroscience *A. Gutchess***583** Language in the aging brain: The network dynamics of cognitive decline and preservation *M. A. Shafto and L. K. Tyler***587** Economic and social implications of aging societies *S. Harper*

SEE ALSO

► PERSPECTIVE P. 547

► SCIENCE SIGNALING RESEARCH ARTICLE BY W. M. PRYOR ET AL. (28 OCT. 2014)

► sciencemag.org/special/neuro2014

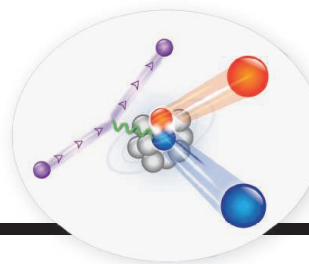
ON THE COVER



Myelin content (red, high; grayish purple, low) mapped on the cerebral cortex of a healthy adult, aged over 70 years, scanned

for the Human Connectome Project, Lifespan supplement. Myelin maps provide useful markers for functionally distinct regions of the cerebral cortex, which vary in size between individuals. For more on the aging brain, see page 566. *Image: M. F. Glasser, D. C. Van Essen, and J. S. Elam for the WU-Minn Human Connectome Project consortium; <http://humanconnectome.org>*

CONTENTS



614

Probing the momentum
of protons and neutrons

31 OCTOBER 2014 • VOLUME 346 • ISSUE 6209

BOOKS ET AL.

557 DO ZOMBIES DREAM OF UNDEAD SHEEP?

By T. Verstynen and B. Voytek,
reviewed by S. C. Schlozman

557 FASTER, HIGHER, STRONGER

By M. McClusky, reviewed by P. J. Hines

LETTERS

559 VENEZUELAN SCIENCE IN DIRE STRAITS

By A. E. Paniz-Mondolfi and
A. J. Rodríguez-Morales

561 POPULATION GROWTH: PEAK PROBABILITY

By W. Lutz et al.

561 POPULATION GROWTH: LIMITS OF FOOD SUPPLY

By R. R. Holt

561 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF

596 From *Science* and other journals

RESEARCH ARTICLES

600 CELL ADHESION

The minimal cadherin-catenin complex binds to actin filaments under force
C. D. Buckley et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1254211

601 MEMBRANE TRAFFICKING

The specificity of vesicle traffic to the Golgi is encoded in the golgin coiled-coil proteins
M. Wong and S. Munro

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1256898

602 TOPOLOGICAL MATTER

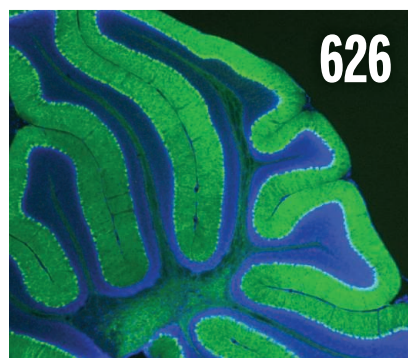
Observation of Majorana fermions in ferromagnetic atomic chains on a superconductor
S. Nadj-Perge et al.

► PERSPECTIVE P. 545

608 GENE REGULATION

Structural basis for microRNA targeting
N. T. Schirle et al.

► PERSPECTIVE P. 542



REPORTS

614 NUCLEAR PHYSICS

Momentum sharing in imbalanced Fermi systems
O. Hen et al.

617 VOLCANOLOGY

A large magmatic sill complex beneath the Toba caldera
K. Jaxybulatov et al.

620 NANOMATERIALS

Influence of the support on surface rearrangements of bimetallic nanoparticles in real catalysts
N. J. Divins et al.

623 EARLY SOLAR SYSTEM

Early accretion of water in the inner solar system from a carbonaceous chondrite-like source
A. R. Sarafian et al.

626 NEURODEVELOPMENT

Dendrite morphogenesis depends on relative levels of NT-3/TrkC signaling
W. Joo et al.

630 WILDLIFE DISEASE

Recent introduction of a chytrid fungus endangers Western Palearctic salamanders
A. Martel et al.

► NEWS STORY P. 530

632 BEHAVIORAL ECONOMICS

Avoiding overhead aversion in charity
U. Gneezy et al.

► PODCAST

635 EARTH HISTORY

Low Mid-Proterozoic atmospheric oxygen levels and the delayed rise of animals
N. J. Planavsky et al.

► NEWS STORY P. 537

638 CHEMICAL BIOLOGY

A bump-and-hole approach to engineer controlled selectivity of BET bromodomain chemical probes
M. G. J. Baud et al.

641 INNATE IMMUNITY

A Spaetzle-like role for nerve growth factor β in vertebrate immunity to *Staphylococcus aureus*
L. Hepburn et al.

646 PLANT GENETICS

A Y-chromosome-encoded small RNA acts as a sex determinant in persimmons
T. Akagi et al.

DEPARTMENTS

525 EDITORIAL

Planet at the crossroads

By Julia Marton-Lefèvre

► PERSPECTIVE P. 549

666 WORKING LIFE

On the ground in Sierra Leone

By George F. Gao and Yong Feng

Science Staff	522
AAAS News & Notes	562
New Products	651
Science Careers	652

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): \$153 (\$74 allocated to subscription). 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, 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 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.



346 (6209)
(October 31, 2014)
Science **346** (6209), 525-666.

Editor's Summary

This copy is for your personal, non-commercial use only.

- | | |
|----------------------|--|
| Article Tools | Visit the online version of this article to access the personalization and article tools:
http://science.sciencemag.org/content/346/6209 |
| Permissions | Obtain information about reproducing this article:
http://www.sciencemag.org/about/permissions.dtl |

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published weekly, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. Copyright 2016 by the American Association for the Advancement of Science; all rights reserved. The title *Science* is a registered trademark of AAAS.