

NEWS

IN BRIEF

1066 Roundup of the week's news

IN DEPTH

1069 KICKOFF LOOMS FOR DEMO OF BRAIN-CONTROLLED MACHINE

Brazilian neuroscientist Miguel Nicolelis defends his plans to show off a thought-directed exoskeleton at the World Cup *By K. Servick*

1070 A BOLD BABY STEP ON EMISSIONS

But U.S. curbs alone won't slow warming *By E. Kintisch*

1072 LENGTHY RNAS EARN RESPECT AS CELLULAR PLAYERS

A few of these molecules are clearly important, but just how many? *By E. Pennisi*

1073 GEARING UP FOR A CLOSER LOOK AT THE HUMAN PLACENTA

Workshop participants build an agenda for research on this oft-ignored bridge between mother and fetus *By J. Kaiser*

1075 SOLAR FURNACE RISES FROM THE SOVIET ASHES IN CENTRAL ASIA

Lasers, superconductors, and gamma rays now fill the time of extraordinary facility *By R. Stone*

FEATURES

1076 MINORITY VOICE

Richard Tapia has prepared generations of minority students for academic jobs, but he says they still aren't welcome *By J. Mervis*



1076

SPECIAL SECTION

The global supply chain

INTRODUCTION

1100 Rethinking the global supply chain

NEWS

1104 The information highway gets physical *By J. Mervis*

OPINION

1108 The whole chain *By K. J. Dooley*

REVIEWS

1109 Emerging approaches, challenges and opportunities in life cycle assessment *S. Hellweg and L. Milà i Canals*

1114 Humanity's unsustainable environmental footprint *A. Y. Hoekstra and T. O. Wiedmann*

1118 Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains *D. Nepstad et al.*

1124 The science of sustainable supply chains

D. O'Rourke

SEE ALSO

► **PODCAST**

► WWW.SCIENCEMAG.ORG/SPECIAL/SUPPLY



Hong Kong staging dock

Photo: © Victor Fraile/Corbis

1080 THE KILLING GROUND

Clues from a German coal mine show how early hunters lived, 300,000 years ago, and how their prey died *By M. Balter*

INSIGHTS

PERSPECTIVES

1084 CHANGE IS COMING TO THE NORTHERN OCEANS

Cod and pollock respond to changing climate and ocean conditions *By A. B. Hollowed and S. Sundby*

1086 SPEED METAL

Planetary core formation is a relatively fast process *By T. Elliott*
► REPORT P. 1150

1087 MEMORIES—GETTING WIRED DURING SLEEP

Sleep gives dendritic spines staying power *By D. R. Euston and H. W. Steenland*
► REPORT P. 1173

1089 JUST ADD AEROSOLS

Only a little aerosol is needed to change cloudiness *By L. A. Remer*
► REPORT P. 1143

1090 EU AGRICULTURAL REFORM FAILS ON BIODIVERSITY

Extra steps by Member States are needed to protect ecosystems *By G. Pe'er et al.*

1092 ENERGY AT LIFE'S ORIGIN

Analysis of primitive organisms suggests life began at hydrothermal vents *By W. F. Martin et al.*

1094 DISRUPTING DISSOLVING IONS AT SURFACES WITH FLUID FLOW

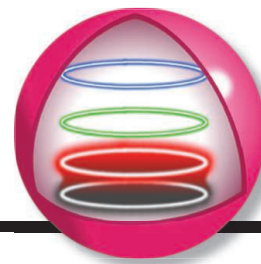
Solvent flow can dramatically change surface reactions *By G. A. Waychunas*
► REPORT P. 1138

1095 BEST PRACTICES FOR BIOFUELS

Data-based standards should guide biofuel production *By H. Youngs and C. Somerville*

CONTENTS

6 JUNE 2014 • VOLUME 344 • ISSUE 6188



1135

An electric field manipulates terbium nuclear spin

BOOKS ET AL.

1097 SOCIAL PHYSICS

By A. Pentland, reviewed by W. P. Butz

LETTERS

1098 OVERLOOKED LOCAL BIODIVERSITY LOSS

By B. Cardinale

1098 RESPONSE

By M. Dornelas et al.

1099 TALK THERAPY RESULTS SPEAK FOR THEMSELVES

By M. Keshavan

1099 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF

1128 From *Science* and other journals

RESEARCH ARTICLE

1131 CALCIUM CHANNELS

Structural basis for a pH-sensitive calcium leak across membranes
Y. Chang et al.

REPORTS

1135 QUANTUM INFORMATION

Electrically driven nuclear spin resonance in single-molecule magnets
S. Thiele et al.



1138 INTERFACIAL CHEMISTRY

Liquid flow along a solid surface reversibly alters interfacial chemistry
D. Lis et al.

► PERSPECTIVE P. 1094

1143 CLOUD PHYSICS

From aerosol-limited to invigoration of warm convective clouds
I. Koren et al.

► PERSPECTIVE P. 1089

1146 LUNAR FORMATION

Identification of the giant impactor Theia in lunar rocks
D. Herwartz et al.

1150 PLANETARY FORMATION

Protracted core formation and rapid accretion of protoplanets
T. S. Kruijer et al.

► PERSPECTIVE P. 1086

1154 SENSORY BIOLOGY

Marine teleost locates live prey through pH sensing
J. Caprio et al.

1156 PLURIPOTENCY PROGRAM

Defining an essential transcription factor program for naïve pluripotency
S.-J. Dunn et al.

1160 PLANT GROWTH

A mutually assured destruction mechanism attenuates light signaling in *Arabidopsis*
W. Ni et al.

1164 MEMBRANE BIOLOGY

Caspase-mediated cleavage of phospholipid flippase for apoptotic phosphatidylserine exposure
K. Segawa et al.

1168 SHEEP GENOME

The sheep genome illuminates biology of the rumen and lipid metabolism
Y. Jiang et al.

1173 SLEEP AND LEARNING

Sleep promotes branch-specific formation of dendritic spines after learning
G. Yang et al.

► PERSPECTIVE P. 1087

1178 SCHIZOPHRENIA

Specific disruption of thalamic inputs to the auditory cortex in schizophrenia models
S. Chun et al.

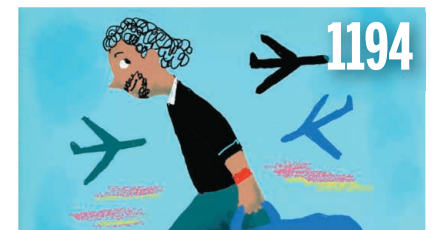
1182 NEURODEVELOPMENT

Cell-intrinsic requirement of Dscam1 isoform diversity for axon collateral formation
H. He et al.

DEPARTMENTS

1065 EDITORIAL

Science diplomacy with Cuba
By Gerald R. Fink et al.



1194 WORKING LIFE

On the road again
By Jacopo Marino

Science Staff1063
New Products.....1187
Science Careers 1188

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). 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 surface postage 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.

Science

344 (6188)

Science **344** (6188), 1065-1194.

ARTICLE TOOLS

<http://science.sciencemag.org/content/344/6188>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.