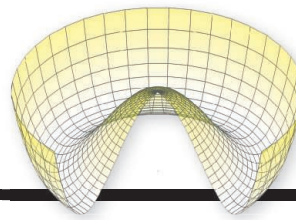


CONTENTS



1121 & 1145

Tracking oscillations
in a superconductor

5 SEPTEMBER 2014 • VOLUME 345 • ISSUE 6201

NEWS

IN BRIEF

1102 Roundup of the week's news

IN DEPTH

1105 POLICE CLAIM LEADING FLU RESEARCHER ILLEGALLY SOLD VIRUS

Italian probe depicts web of scandal, including illegal animal vaccines and deliberate outbreaks *By L. Margottini*

1106 THREE-PART ANCESTRY FOR EUROPEANS

Eurasian "ghost lineage" contributed to most modern European genomes *By A. Gibbons*

1108 ESTIMATING THE EBOLA EPIDEMIC

Modelers of infectious diseases strive to predict spread of the virus—and how to stop it *By K. Kupferschmidt*

1109 SMALL MAMMALS VANISH IN NORTHERN AUSTRALIA

Scientists are struggling to rein in the culprit: feral cats, aided by fire *By D. Lewis*

1110 RIKEN SHRINKS TROUBLED CENTER

Japan's developmental biology powerhouse brought to knees by misconduct revelations *By D. Normile*

1111 CELLULOSIC ETHANOL AT LAST?

Large volumes of fuel from crop wastes will soon start flowing in the U.S.—unless policymakers balk *By R. F. Service*

► PODCAST



1112

FEATURES

1112 THE CATALYST

Marc Lipsitch wants to turn the bitter debate over risky virus research into a search for solutions *By J. Kaiser*

1115 A POLICY MORASS

By D. Malakoff

► EDITORIAL P. 1101

INSIGHTS

PERSPECTIVES

1116 GREENLAND DEGLACIATION PUZZLES

Nitrogen isotope data help to resolve puzzling observations during the last deglaciation *By L. C. Sime*

► REPORT P. 1177

1118 CLOGGING INFORMATION FLOW IN ALS

Dipeptide repeat proteins produced in certain neurodegenerative diseases exert toxicity by blocking RNA biogenesis

By J. P. West III and A. D. Gitler

► RESEARCH ARTICLE P. 1139; REPORT P. 1192

1120 MICROBIAL PROTEINS AND OCEANIC NUTRIENT CYCLES

Ocean microbes respond to limited nutrients by tuning the abundance of specific proteins *By C. M. Moore*

► REPORTS PP. 1170 & 1173

1121 PARTICLE PHYSICS IN A SUPERCONDUCTOR

A superconducting condensate can display analogous behavior to the Higgs field *By A. Pashkin and A. Leitenstorfer*

► REPORT P. 1145

1122 PARTITIONING THE CIRCADIAN CLOCK

Sirtuin proteins divide control of the circadian gene expression and metabolism *By Y. Xi and D. Chen*

1124 A WAKE-UP CALL WITH COFFEE

Recording and archiving crop phenotype diversity needs to catch up with genomic data *By D. Zamir*

► REPORT P. 1181

1125 APPLYING SCIENTIFIC PRINCIPLES IN INTERNATIONAL LAW ON WHALING

The approach might address disputes beyond whaling and the courtroom *By W. de la Mare et al.*

BOOKS ET AL.

1127 ON LOOKING

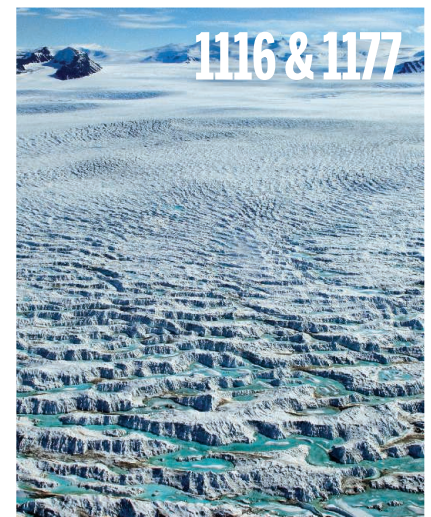
By A. Horowitz, reviewed by A. Wang

1127 MATH BYTES

By T. Chartier, reviewed by R. Skyner

1128 GROWING FOOD IN A HOTTER, DRIER LAND

By G. P. Nabhan, reviewed by K. Watt



LETTERS

1129 FAUNA IN DECLINE: MEEK SHALL INHERIT

By A. V. Christianini et al.

1129 FAUNA IN DECLINE: EXTINCT PIGEON'S TALE

By D. E. Blockstein and S. A. Temple

1130 CARBON: NO SILVER BULLET

By J. W. M. van der Meer et al.

1130 TECHNICAL COMMENT ABSTRACTS

DEPARTMENTS

1101 EDITORIAL

Culture of responsibility

By Ruth L. Berkelman and James W. Le Duc

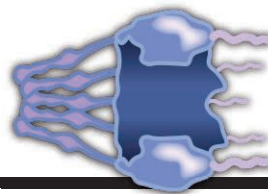
► NEWS STORIES PP. 1112 & 1115

1206 WORKING LIFE

Reviewing the reviewers

By Jim Austin

CONTENTS



1118, 1139, & 1192

Dipeptide polymers wreak nuclear havoc

5 SEPTEMBER 2014 • VOLUME 345 • ISSUE 6201

RESEARCH

IN BRIEF

1131 From *Science* and other journals

RESEARCH ARTICLES

1134 INNATE IMMUNITY

Intracellular sensing of complement
C3 activates cell autonomous immunity
J. C. H. Tam et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1256070

1135 DYNAMIC ORDERING

Topology and dynamics of active
nematic vesicles *F. C. Keber et al.*

1139 NEURODEGENERATION

Poly-dipeptides encoded by the *C9orf72*
repeats bind nucleoli, impede RNA
biogenesis, and kill cells *I. Kwon et al.*

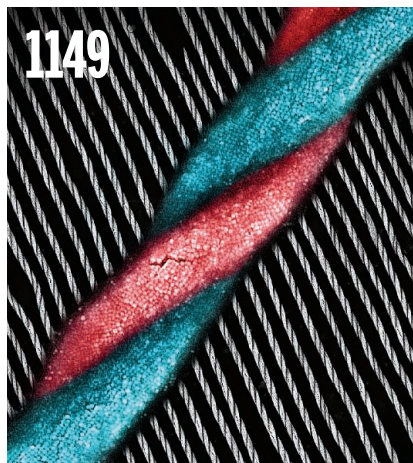
► PERSPECTIVE P. 1118; REPORT P. 1192

REPORTS

1145 SUPERCONDUCTIVITY

Light-induced collective pseudospin
precession resonating with Higgs mode
in a superconductor *R. Matsunaga et al.*

► PERSPECTIVE P. 1121



1149 NANOMATERIALS

Self-assembly of magnetite nanocubes
into helical superstructures
G. Singh et al.

1153 METAL ALLOYS

A fracture-resistant high-entropy
alloy for cryogenic applications
B. Gludovatz et al.

1158 CRYSTAL NUCLEATION

In situ TEM imaging of CaCO_3
nucleation reveals coexistence of
direct and indirect pathways
M. H. Nielsen et al.

1162 SUPERNOVAE

Early ^{56}Ni decay gamma rays
from SN2014J suggest an unusual
explosion *R. Diehl et al.*

1165 EARTHQUAKE DYNAMICS

Intense foreshocks and a slow slip
event preceded the 2014 Iquique
 M_w 8.1 earthquake *S. Ruiz et al.*

1170 METALLOPROTEINS

A complex iron-calcium cofactor
catalyzing phosphotransfer chemistry
S. C. Yong et al.

► PERSPECTIVE P. 1120

1173 MARINE MICROBES

Multiple nutrient stresses at
intersecting Pacific Ocean biomes
detected by protein biomarkers
M. A. Saito et al.

► PERSPECTIVE P. 1120

1177 PALEOCLIMATE

Greenland temperature response
to climate forcing during the last
deglaciation *C. Buizert et al.*

► PERSPECTIVE P. 1116

1181 PLANT GENOMICS

The coffee genome provides
insight into the convergent
evolution of caffeine biosynthesis
F. Denoed et al.

► PERSPECTIVE P. 1124

1184 GENOME EDITING

Prevention of muscular dystrophy
in mice by CRISPR/Cas9-mediated
editing of germline DNA *C. Long et al.*

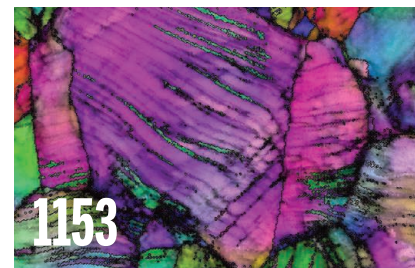
1188 THE RIBOSOME

How the ribosome hands the A-site tRNA
to the P site during EF-G-catalyzed
translocation *J. Zhou et al.*

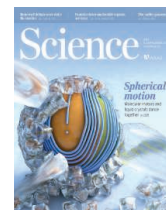
1192 NEURODEGENERATION

C9orf72 repeat expansions cause
neurodegeneration in *Drosophila*
through arginine-rich proteins
S. Mizielinska et al.

► PERSPECTIVE P. 1118; RESEARCH
ARTICLE P. 1139



ON THE COVER



Artist's impression of
how a monolayer of
aligned microtubule
filaments is assembled
on the inner leaflet of
a lipid bilayer. Powered
by molecular motors,
liquid crystalline
microtubules generate
dynamic states that include sustained
oscillations of topological defects and
shape-changing materials with streaming
filopodia-like protrusions. See page 1135.

Image: *Christoph Hohmann, Nanosystems
Initiative Munich*

Science Staff	1100
New Products	1195
Science Careers	1196

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, 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.

Science

345 (6201)

Science **345** (6201), 1101-1206.

ARTICLE TOOLS

<http://science.sciencemag.org/content/345/6201>

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.