

CONTENTS

9 DECEMBER 2016 • VOLUME 354 • ISSUE 6317



1235

What drives the ice ages?



1210

NEWS

IN BRIEF

1208 News at a glance

IN DEPTH

1210 CORALS TIE STRONGER EL NIÑOS TO CLIMATE CHANGE

Much-debated link gains support from long record of ocean temperatures
By C. Pala

1211 WORRIES, CONFUSION AFTER CANCER TRIAL DEATHS

Experimental immune treatment linked to fatal brain swelling
By J. Couzin-Frankel

1212 U.S. CONGRESS WANTS TO KNOW THE WEATHER WEEKS AHEAD

Bill targets seasonal forecasts and NOAA's pricey satellites
By P. Voosen

1213 AIDS EPIDEMIC NEARS CONTROL IN THREE AFRICAN COUNTRIES

Massive new surveys show stunning progress
By J. Cohen

1214 PEROVSKITE SOLAR CELLS GEAR UP TO GO COMMERCIAL

In tandem with silicon, low-cost photovoltaic crystals make electricity more efficiently
By R. F. Service

1215 CARBON MONOXIDE, THE SILENT KILLER, MAY HAVE MET ITS MATCH

Repurposed molecule saves rodents from gas poisoning
By W. Yan
► *SCI. TRANSL. MED. RESEARCH ARTICLE BY I. AZAROV ET AL. 10.1126/scitranslmed.aah6571*

1216 CURATOR RESIGNS AFTER SEXUAL MISCONDUCT INVESTIGATIONS

Long-running case sparks debate about collaboration
By A. Gibbons

FEATURES

1217 WHEN DNA AND CULTURE CLASH

Saudi Arabia is making a big push into human genomics, hoping to prevent inherited diseases
By J. Kaiser

1220 Qatar's genome effort slowly gears up

By J. Kaiser



1222

INSIGHTS

BOOKS ET AL.

1222 CALLING ALL KID SCIENTISTS

PERSPECTIVES

1230 A FAST RADIO BOOM

Bright distant radio bursts are excellent probes of the intergalactic medium

By V. M. Kaspi

► REPORT P. 1249

1231 WHY DOES TIME SEEM TO FLY WHEN WE'RE HAVING FUN?

Increased dopamine may cause our internal clock to slow down, creating a sense of speeding time
By P. Simen and M. Matell

► REPORT P. 1273

1232 SWIMMING IN POLLUTED WATERS

Genomic data provide insights into the molecular basis for pollution tolerance of Atlantic killifish
By M. Tobler and Z. W. Culumber

► REPORT P. 1305

1234 ENCODING VOCAL CULTURE

Neuronal encoding of birdsong promotes learning and species specificity
By O. Tchernichovski and D. Lipkind

► REPORTS PP. 1278 & 1282

1235 THE SMOKING GUN OF THE ICE AGES

Forty years ago, a seminal paper showed that small changes in Earth's orbit are key to understanding ice age cycles

By D. A. Hodell

DEPARTMENTS

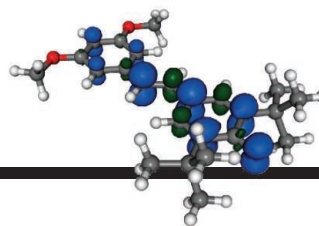
1207 EDITORIAL

Lifeline for refugee scholars
By Allan Goodman

1346 WORKING LIFE

Following my lucky star
By Nancy Grace Roman

Science Staff	1204
New Products	1309
Science Careers	1310



POLICY FORUMS

1237 WHAT LIFE SCIENTISTS SHOULD KNOW ABOUT SECURITY THREATS

Considerable information is publicly available to help research institutions understand and counter potential threats *By K. M. Berger*

1240 ENHANCING REPRODUCIBILITY FOR COMPUTATIONAL METHODS

Data, code, and workflows should be available and cited *By V. Stodden et al.*

LETTERS

1242 EDITORIAL EXPRESSION OF CONCERN

By J. Berg

1242 INSTILLING INTEGRITY

By J. M. DuBois

1242 LIFE IN SCIENCE: RESPECT FOR THE ANCIENTS

By F. Beardsley

1243 NOW IS THE TIME TO PROTECT THE ARCTIC

By N. E. Hussey et al.

1243 ERRATA

RESEARCH

IN BRIEF

1245 From *Science* and other journals

REVIEW

1248 CHEMISTRY

The broadening reach of frustrated Lewis pair chemistry *D. W. Stephan*

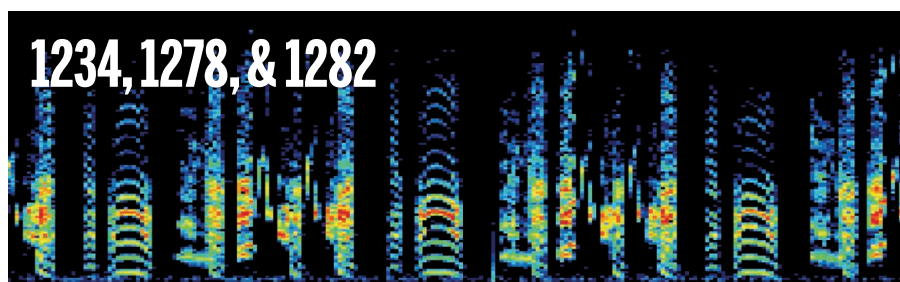
REVIEW SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aaf7229

REPORTS

1249 RADIO ASTRONOMY

The magnetic field and turbulence of the cosmic web measured using a brilliant fast radio burst *V. Ravi et al.*

► PERSPECTIVE P. 1230



1252 MICROFLUIDICS

How boundaries shape chemical delivery in microfluidics *M. Aminian et al.*

1257 COMPOSITES

Sensitive electromechanical sensors using viscoelastic graphene-polymer nanocomposites *C. S. Boland et al.*

► VIDEO

1260 ORGANIC CHEMISTRY

Synthesis of resveratrol tetramers via a stereoconvergent radical equilibrium *M. H. Keylor et al.*

1265 ASYMMETRIC CATALYSIS

A general, modular method for the catalytic asymmetric synthesis of alkylboronate esters *J. Schmidt et al.*

1269 TOPOLOGICAL MATTER

Robust spin-polarized midgap states at step edges of topological crystalline insulators *P. Sessi et al.*

1273 BRAIN RESEARCH

Midbrain dopamine neurons control judgment of time *S. Soares et al.*

► PERSPECTIVE P. 1231; PODCAST

NEUROSCIENCE

1278 Dopamine neurons encode performance error in singing birds *V. Gadagkar et al.*

1282 Mind the gap: Neural coding of species identity in birdsong prosody *M. Araki et al.*

► PERSPECTIVE P. 1234

1288 DEVELOPMENT ECONOMICS

The long-run poverty and gender impacts of mobile money *T. Suri and W. Jack*

1293 ORIGIN OF LIFE

Transient compartmentalization of RNA replicators prevents extinction due to parasites *S. Matsumura et al.*

1296 SYNTHETIC BIOLOGY

β -cell-mimetic designer cells provide closed-loop glycemic control *M. Xie et al.*

1301 VIRAL EVOLUTION

Ecological speciation of bacteriophage lambda in allopatry and sympatry *J. R. Meyer et al.*

1305 ECOLOGICAL GENOMICS

The genomic landscape of rapid repeated evolutionary adaptation to toxic pollution in wild fish *N. M. Reid et al.*

► PERSPECTIVE P. 1232

ON THE COVER



Arab families such as this one by the Red Sea in Jeddah, Saudi Arabia, are often at higher risk of genetic diseases because of the tradition of close cousins marrying. Saudi Arabia has boosted genomics research as part of an effort to help diagnose and prevent such diseases. See page 1217.

Photo: © Reuters Photographer/Reuters

Science

354 (6317)

Science **354** (6317), 1207-1346.

ARTICLE TOOLS

<http://science.sciencemag.org/content/354/6317>

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.