

CONTENTS



1200

Early stirrings of modern behavior

16 MARCH 2018 • VOLUME 359 • ISSUE 6381

1206



Systems engineer Qian Xuesen had fans in high places.

NEWS

IN BRIEF

1196 News at a glance

IN DEPTH

1200 COMPLEX BEHAVIOR AROSE AT DAWN OF HUMANS

Advanced stone tools, pigment, and extensive networks emerged as environment changed

By A. Gibbons

► R. POTTS *ET AL.* 10.1126/science.aao2200;
A. S. BROOKS *ET AL.* 10.1126/science.aao2646;
A. L. DEINO *ET AL.* 10.1126/science.aao2216

1201 NIGERIA HIT BY UNPRECEDENTED LASSA FEVER OUTBREAK

As efforts to contain it mount, researchers are racing to find out what is driving this year's surge in cases and deaths

By L. Roberts

1202 VIBRATIONS USED TO TALK TO QUANTUM CIRCUITS

Sound waves could supplant microwaves in controlling quantum computers

By A. Cho

1204 MAX PLANCK SOCIETY, AT A CROSSROADS, SEEKS NEW LEADERS

A wave of retirements offers a chance to recruit female leaders and open up new research avenues

By K. Kupferschmidt

1205 CONCERN AS HIV PREVENTION STRATEGY LANGUISHES

Few countries promote prophylactic drug regimen, and many people shun it

By J. Cohen

FEATURE

1206 MASTER PLANNER

China's revered rocket scientist, Qian Xuesen, set in motion a system for engineers to control Chinese society

By M. Hvistendahl

INSIGHTS

PERSPECTIVES

1210 RHYTHMS: THE DARK SIDE MEETS THE LIGHT

Researchers examine the 24-hour biological clock in daytime-active baboons

By A. Millius and H. Ueda
► RESEARCH ARTICLE P. 1232

1212 CIRCADIAN ORGANIZATION OF THE GENOME

The clock protein Rev-erba regulates genome folding to establish circadian gene repression

By C. Dietrich Mallet de Lima and A. Göndör

► REPORT P. 1274

1213 A LANDSCAPE OF DISGUST

Parasite avoidance behavior affects ecology and evolution in ways similar to predator avoidance

By S. B. Weinstein *et al.*

► PODCAST

1214 LOGIC IN BABIES

12-month-olds spontaneously reason using process of elimination

By J. Halberda

► REPORT P. 1263

1216 RANDOM COPOLYMERS THAT PROTECT PROTEINS

Synthetic polymers are designed to stabilize proteins in polar and nonpolar solvents

By A. Alexander-Katz and R. C. Van Lehn

► REPORT P. 1239

1217 BEYOND PARP—POL θ AS AN ANTICANCER TARGET

Targeting cancers dependent on DNA polymerase θ has considerable clinical potential

By G. S. Higgins and S. J. Boulton

POLICY FORUM

1219 SOCIETAL INEQUALITIES AMPLIFY GENDER GAPS IN MATH

Egalitarian countries cultivate high-performing girls

By T. Breda *et al.*

BOOKS ET AL.

1221 WOMEN'S WORK

Stepping into scientific roles left vacant during World War I brought gains for women in and out of the laboratory

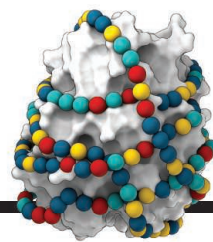
By L. M. Puaca

1222 LIFE IN TRIPLICATE

A tale of triplets separated at birth raises red flags and questions about the role of nature and nurture

By G. Kardon

CONTENTS



1216 & 1239

Plastics helping proteins

16 MARCH 2018 • VOLUME 359 • ISSUE 6381

LETTERS

1224 ARRIVAL ROUTES OF FIRST AMERICANS UNCERTAIN

By B. A. Potter et al.

1225 RESPONSE

By T. J. Braje et al.

1225 POST-PUBLICATION PEER REVIEW: A CRUCIAL TOOL

By G. I Peterson

1226 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF

1227 From *Science* and other journals

RESEARCH ARTICLES

TOPOLOGICAL PHOTONICS

1230 Topological insulator laser:

Theory G. Harari et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: [dx.doi.org/10.1126/science.aar4003](https://doi.org/10.1126/science.aar4003)

1231 Topological insulator laser:

Experiments M. A. Bandres et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: [dx.doi.org/10.1126/science.aar4005](https://doi.org/10.1126/science.aar4005)

1232 CIRCADIAN RHYTHMS

Diurnal transcriptome atlas of a primate across major neural and peripheral tissues L. S. Mure et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: [dx.doi.org/10.1126/science.aao0318](https://doi.org/10.1126/science.aao0318)

► PERSPECTIVE P. 1210

1233 HUMAN GENOMICS

Phenotype risk scores identify patients with unrecognized Mendelian disease patterns L. Bastarache et al.

REPORTS

1239 POLYMERS

Random heteropolymers preserve protein function in foreign environments B. Panganiban et al.

► PERSPECTIVE P. 1216



1243 SURFACE CHEMISTRY

Real-time imaging of adatom-promoted graphene growth on nickel L. L. Patera et al.

1247 ENZYMOLOGY

Organometallic and radical intermediates reveal mechanism of diphthamide biosynthesis M. Dong et al.

1251 INDUCED SEISMICITY

Oklahoma's induced seismicity strongly linked to wastewater injection depth T. Hincks et al.

1255 FISHERIES

Protecting marine mammals, turtles, and birds by rebuilding global fisheries M. G. Burgess et al.

1259 MALARIA

GDV1 induces sexual commitment of malaria parasites by antagonizing HP1-dependent gene silencing M. Filarsky et al.

1263 COGNITIVE SCIENCE

Precursors of logical reasoning in preverbal human infants N. Cesana-Arlotti et al.

► PERSPECTIVE P. 1214

1266 NITROGEN CYCLE

Factoring stream turbulence into global assessments of nitrogen pollution S. B. Grant et al.

1269 NEURODEVELOPMENT

Astrocyte-derived interleukin-33 promotes microglial synapse engulfment and neural circuit development I. D. Vainchtein et al.

1274 CIRCADIAN RHYTHMS

Rev-erba dynamically modulates chromatin looping to control circadian gene transcription Y. H. Kim et al.

► PERSPECTIVE P. 1212

1277 AGING

Lysosome activation clears aggregates and enhances quiescent neural stem cell activation during aging

D. S. Leeman et al.

1283 SINGLE-CELL ANALYSIS

Mutation dynamics and fitness effects followed in single cells L. Robert et al.

► VIDEO

DEPARTMENTS

1195 EDITORIAL

Good gun policy needs research

By Alan I. Leshner and Victor J. Dzau

1294 WORKING LIFE

Instagram won't solve inequality

By Meghan Wright

ON THE COVER



Illustration of a non-magnetic topological insulator laser: an array of microring resonators (circles) coupled by waveguides (ellipses) in a topological fashion. The red perimeter depicts the

lasing topological edge mode, which exits through one of the two outputs (solid red triangle). Implementation of this design in an all-dielectric semiconductor enhances lasing performance and makes many diode lasers operate together as a single highly coherent laser. See pages 1230 and 1231.

Illustration: Valerie Altounian/Science

Science Staff 1194
New Products 1290
Science Careers 1291

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except 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 © 2018 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership, including subscription (12 months): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$1808. Foreign postage extra: Mexico, Caribbean (surface mail) \$55; other countries (air assist delivery): \$89. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #R125488122. 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: \$15 each plus shipping and handling; bulk rate on request. Authorization to reproduce 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 others who use Copyright Clearance Center (CCC) Pay-Per-Use services provided that \$35.00 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

359 (6381)

Science **359** (6381), 1195-1294.

ARTICLE TOOLS

<http://science.sciencemag.org/content/359/6381>

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.