



NEWS

IN BRIEF

726 News at a glance

IN DEPTH

728 ARCTIC RESEARCHERS PREPARE TO GO WITH THE FLOES

German ship will drift with ice pack as part of unprecedented international expedition *By E. Kintisch*

729 CANADIAN CANNABIS RESEARCH HITS LICENSING LOGJAM

Frustration grows as government agency seeks to speed up application process *By M. Wadman*

730 CODEMAKERS FIND ALGORITHMS IMMUNE TO QUANTUM HACKS

NIST will select cryptographic standards for the internet that could blunt future hacks by a quantum computer *By A. Cho*

731 FINANCIAL CRISIS LOOMS AT BRAZILIAN SCIENCE AGENCY

Cuts put scholarships and grants for 80,000 at risk *By E. Rodríguez Mega*

732 ITALIAN MINISTRY AIDS ANIMAL RIGHTS GROUPS

Blindness researchers threatened after ministry releases names *By A. Abbott*



733 SALMON-SMEARED NOTEBOOKS REVEAL FISHERIES PAST BOUNTY

DNA from scales on pages exposed wild sockeye declines *By L. Evans Ogden*

INSIGHTS

PERSPECTIVES

750 A TALE OF TWO TRENCHES

An offshore seismic network shows that slow slip complemented rupture in the 2011 Tohoku earthquake

By H. Houston

► REPORT P. 808

752 GENOMIC ANALYSIS INFORMS MALARIA EVOLUTION

Updated analysis of *Plasmodium falciparum* malaria reveals markers of antimalarial resistance

By C. H. Sibley

► REPORT P. 813

753 A ROADMAP FOR MALARIA RESEARCH

Single-cell profiling of parasite species provides an atlas of life cycle-coordinated gene expression

By E. A. Winzeler

► RESEARCH ARTICLE P. 774

754 CRISPR PROPELS A SMART HYDROGEL

The DNA hydrogel displays an enhanced response to target nucleic acid sequences

By D. Han et al.

► RESEARCH ARTICLE P. 780

756 REDUCING TROPICAL DEFORESTATION

The interventions required to reduce deforestation differ widely across the tropics

By F. Seymour and N. L. Harris

► POLICY FORUM P. 761

758 THE 200-YEAR EFFORT TO SEE THE EMBRYO

Innovations in technology and thought help to visualize the embryo as it really is

By J. B. Wallingford

760 CALVIN F. QUATE (1923–2019)

Nanoscience pioneer who invented advanced microscopes

By D. Rugar and F. Giessibl

UNRAVELING SUICIDE

734 INTRODUCTION
By J. Couzin-Frankel

736 GEOGRAPHY OF LOSS
By M. Weiland; Graphics by N. Desai

738 READING AN ANGUISHED BRAIN
Scanning the brains of people who are depressed or suicidal could point to better-targeted treatments *By E. Underwood*

742 WARNING SIGNS
Can data from mobile phones anticipate a suicide attempt? *By K. Servick*

745 PATHWAYS TO PREVENTION
Some straightforward approaches show promise. One question is how they can reach more people *By G. Miller*

748 PROBING AN EVOLUTIONARY RIDDLE
A startling evolutionary hypothesis considers why humans harm themselves—and how they've kept themselves safe for millennia *By E. Culotta*

SEE ALSO ► EDITORIAL P. 725; PODCAST; VIDEO

ON THE COVER

Many different strategies are needed to support vulnerable people and help them stay safe. Research that sheds new light on biology, improvements in mental health care and access to it, and other approaches are bringing hope for progress in preventing suicide. See pages 725 and 734. *Image: Stephan Schmitz/Folio Art*

CREDITS: (IMAGE) T. M. NORTON/ET AL., (PHOTO) ALEX HOFFORD/EPA/SHUTTERSTOCK

Downloaded from <http://science.sciencemag.org/> on September 21, 2019

POLICY FORUM

761 THE CASE FOR STRATEGIC AND MANAGED CLIMATE RETREAT

Why, where, when, and how should communities relocate?

By A. R. Siders et al.

► PERSPECTIVE P. 756; PODCAST

BOOKS ET AL.

764 SHARING DATA

Scientific collections have long been lightning rods for data ownership concerns By D. Greenbaum and M. Gerstein

765 CRISPR COMES TO THE SILVER SCREEN

Slick visuals and compelling interviews render gene editing intelligible to nonexperts By T. Winkleman

LETTERS

766 VENEZUELA'S UPHEAVAL THREATENS YANOMAMI

By A. E. Paniz Mondolfi et al.

767 NO INFLATION OF THREATENED SPECIES

By A. Purvis et al.

767 CERTIFICATION FOR GENE-EDITED FORESTS

By S. H. Strauss et al.

768 TECHNICAL COMMENT ABSTRACTS**768 ERRATA****RESEARCH**

IN BRIEF

769 From *Science* and other journals

REVIEW

772 SOIL ECOLOGY

The global soil community and its influence on biogeochemistry

T. W. Crowther et al.

REVIEW SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aav0550

RESEARCH ARTICLES

773 MOLECULAR MACHINES

Structure and conformational plasticity of the intact *Thermus thermophilus* V/A-type ATPase L. Zhou and L. A. Sazanov

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaw9144

**774 MALARIA**

The Malaria Cell Atlas: Single parasite transcriptomes across the complete *Plasmodium* life cycle

V. M. Howick et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaw2619

► PERSPECTIVE P. 753

775 QUANTUM SIMULATION

Observation of a symmetry-protected topological phase of interacting bosons with Rydberg atoms

S. de Léséleuc et al.

780 BIOMATERIALS

Programmable CRISPR-responsive smart materials M. A. English et al.

► PERSPECTIVE P. 754

786 GENOMICS

Exploring genetic interaction manifolds constructed from rich single-cell phenotypes T. M. Norman et al.

793 PLANT SCIENCE

NAD⁺ cleavage activity by animal and plant TIR domains in cell death pathways S. Horsefield et al.

► REPORT P. 799

REPORTS

799 PLANT SCIENCE

TIR domains of plant immune receptors are NAD⁺-cleaving enzymes that promote cell death L. Wan et al.

► RESEARCH ARTICLE P. 793

803 CERAMICS

Ultrafast laser welding of ceramics E. H. Penilla et al.

808 GEOPHYSICS

The slow earthquake spectrum in the Japan Trench illuminated by the S-net seafloor observatories T. Nishikawa et al.

► PERSPECTIVE P. 750

813 MALARIA

Major subpopulations of *Plasmodium falciparum* in sub-Saharan Africa

A. Amambua-Ngwa et al.

► PERSPECTIVE P. 752

817 ASTEROIDS

Images from the surface of asteroid Ryugu show rocks similar to carbonaceous chondrite meteorites

R. Jaumann et al.

821 NEUROSCIENCE

Persistence of neuronal representations through time and damage in the hippocampus W. G. Gonzalez

825 PHASE SEPARATION

Phospho-dependent phase separation of FMRP and CAPRIN1 recapitulates regulation of translation and deadenylation T. H. Kim et al.

DEPARTMENTS

725 EDITORIAL

Suicide—turning the tide By Merete Nordentoft and Annette Erlangsen

► UNRAVELING SUICIDE SECTION P. 734

834 WORKING LIFE

Stand out as a speaker By Mathilde His

New Products..... 830
Science Careers..... 831

Science

365 (6455)

Science **365** (6455), 725-834.

ARTICLE TOOLS

<http://science.sciencemag.org/content/365/6455>

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. The title *Science* is a registered trademark of AAAS.

Copyright © 2019 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.