

CONTENTS

1236

NEWS

IN BRIEF

1226 News at a glance

IN DEPTH

1228 BILLIONS OF NORTH AMERICAN BIRDS HAVE VANISHED

Even common birds are in steep decline, spurring hunt for causes *By E. Pennisi*

► REPORT BY K. V. ROSENBERG ET AL. 10.1126/SCIENCE.AAW1313

1229 NEW DEALS COULD HELP SCIENTIFIC SOCIETIES SURVIVE OPEN ACCESS

Goal is to eliminate paywalls while preserving revenue *By J. Brainard*

1230 DUST FROM ASTEROID BREAKUP VEILED AND COOLED EARTH

Ancient event may have led to a boom in animal life *By J. Sokol*

► SCIENCE ADVANCES RESEARCH ARTICLE BY B. SCHMITZ ET AL. 10.1126/SCIADV.AAX4184; PODCAST

1231 EPA PLAN TO END ANIMAL TESTING SPLITS SCIENTISTS

Some see nonanimal models as the future, but others worry about health impacts *By D. Grimm*

1232 FACE OF THE MYSTERIOUS DENISOVANS EMERGES

New method uses epigenetics to infer anatomy of Neanderthals' extinct cousins *By M. Price*

1233 A NEW 'BLOB' MENACES PACIFIC ECOSYSTEMS

Scientists see signs of a damaging marine heat wave and prepare to respond *By W. Cornwall*

1234 GM MOSQUITO STUDY DRAWS FIRE

Release of altered strain spread DNA to local mosquitoes *By K. Servick*

1235 SICKLE CELL DRUG RAISES HOPES AND DOUBTS

FDA grants speedy review of eagerly awaited treatment, despite unproven clinical benefit *By M. Wadman*

FEATURES

1236 RENEWABLE BONDS

With solar and wind booming, the chemical industry dabbles with forgoing petroleum as its feedstock

By R. F. Service

INSIGHTS

POLICY FORUM

1240 A CLIMATE INTELLIGENCE ARMS RACE IN FINANCIAL MARKETS

Public policy grapples with private "black box" models *By J. M. Keenan*

PERSPECTIVES

1244 AN AGING PHENOTYPE IN THE WILD

Deterioration of the immune system with age increases winter mortality in Soay sheep

By J.-M. Gaillard and J.-F. Lemaître

► REPORT P. 1296

1245 AN ATOMIC-SCALE VIEW OF CYCLOCARBON SYNTHESIS

Combining organic synthesis with microscopy addresses long-standing bottlenecks in cyclocarbon production

By S. Maier

► REPORT P. 1299

1246 COUNTERING OPIOID SIDE EFFECTS

A genetic screen in worms reveals a receptor target to battle opioid addiction

By N. Mercer Lindsay and G. Scherrer

► RESEARCH ARTICLE P. 1267

1248 "WEYL"ING AWAY TIME-REVERSAL SYMMETRY

Precise band-structure measurements identify two ferromagnetic Weyl semimetals *By E. H. da Silva Neto*

► REPORTS PP. 1278, 1282, & 1286

1249 CLEANING UP PLASTIC POLLUTION IN AFRICA

New technologies and consumer engagement will be key to addressing plastic pollution *By B. Adebisi-Abiola et al.*

► REVIEWS PP. 1263 & 1264

1251 CHANGES IN ANTIBIOTIC RESISTANCE IN ANIMALS

Surveys in low- and middle-income countries reveal emerging hotspots of resistance *By C. E. Moore*

► RESEARCH ARTICLE P. 1266

1253 JOHN ROBERT SCHRIEFFER (1931–2019)

Codiscoverer of the theory of superconductivity

By D. Scalapino and S. A. Kivelson

BOOKS ET AL.

1254 PREPARING FOR THE UNTHINKABLE

An urgent tour of catastrophic risks calls for action *By S. D. Baum*

1255 ONLY THE STRONGEST HIVE WILL SURVIVE

A charming new game educates as players compete to stave off honey bee colony collapse *By A. Chuang*

1244
& 1296

LETTERS

1256 SOLVE THE BIODIVERSITY CRISIS WITH FUNDINGBy *J. Malcom et al.***1256 ON REPORTING SCIENTIFIC AND RACIAL HISTORY**By *R. Wynn-Grant***1257 EDITOR'S NOTE**By *T. Appenzeller***1257 A NEW SCIENTIFIC AGENDA FOR MEXICO**By *M. E. Álvarez-Buylla Rocas***1258 TECHNICAL COMMENT ABSTRACTS**

RESEARCH

IN BRIEF

1260 From *Science* and other journals

REVIEW

1263 CLIMATE CHANGE

The human imperative of stabilizing global climate change at 1.5°C

O. Hoegh-Guldberg et al.

REVIEW SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaw6974

▶ PERSPECTIVE P. 1249; REVIEW P. 1264

1264 HYDROLOGYLinkages between flow regime, biota, and ecosystem processes: Implications for river restoration *M. Palmer and A. Ruhi*

REVIEW SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaw2087

▶ PERSPECTIVE P. 1249; REVIEW P. 1263

RESEARCH ARTICLES

1265 DEVELOPMENTA lineage-resolved molecular atlas of *C. elegans* embryogenesis at single-cell resolution *J. S. Packer et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aax1971

1266 ONE HEALTHGlobal trends in antimicrobial resistance in animals in low- and middle-income countries *T. P. Van Boeckel et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aaw1944

▶ PERSPECTIVE P. 1251

1267 SIGNAL TRANSDUCTIONGenetic behavioral screen identifies an orphan anti-opioid system *D. Wang et al.*

▶ PERSPECTIVE P. 1246

1273 TOPOLOGICAL MATTERNon-Abelian band topology in noninteracting metals *Q. Wu et al.*

REPORTS

TOPOLOGICAL MATTER

1278 Discovery of topological Weyl fermion lines and drumhead surface states in a room temperature magnet *I. Belopolski et al.***1282** Magnetic Weyl semimetal phase in a Kagomé crystal *D. F. Liu et al.***1286** Fermi-arc diversity on surface terminations of the magnetic Weyl semimetal $\text{Co}_3\text{Sn}_2\text{S}_2$ *N. Morali et al.*

▶ PERSPECTIVE P. 1248

1291 PLANT SCIENCEEvolutionary flexibility in flooding response circuitry in angiosperms *M. A. Reynoso et al.***1296 LIFE HISTORY**Senescence in immunity against helminth parasites predicts adult mortality in a wild mammal *H. Froy et al.*

▶ PERSPECTIVE P. 1244

1299 SURFACE CHEMISTRYAn sp-hybridized molecular carbon allotrope, cyclo[18]carbon *K. Kaiser et al.*

▶ PERSPECTIVE P. 1245

1301 BIOTECHNOLOGYCRISPR-mediated live imaging of genome editing and transcription *H. Wang et al.***1305 PALEONTOLOGY**Reorganization of surviving mammal communities after the end-Pleistocene megafaunal extinction *A. B. Tóth et al.***1308 NEUROSCIENCE**REM sleep-active MCH neurons are involved in forgetting hippocampus-dependent memories *S. Izawa et al.***1313 PROTEIN FOLDING**Structural basis for client recognition and activity of Hsp40 chaperones *Y. Jiang et al.*

DEPARTMENTS

1221 EDITORIAL

400 years and (re)counting

By *Shirley M. Malcom***1342 WORKING LIFE**

What industry can teach academia

By *Yumeng Mao*

ON THE COVER

Voltage pulses applied through an atomic force microscope tip prompt CO molecules (C, gray; O, red) to dissociate from a custom synthesized precursor to create cyclo[18]carbon (C_{18})—aring-shaped molecule with 18 carbon atoms joined by alternating single and triple bonds. C_{18} and its precursors can be fused by atom manipulation, opening a route to create other elusive carbon-rich molecules with possible applications in molecular electronics. See pages 1245 and 1299.Illustration: *C. Bickel/Science*; AFM data and models of molecule and tip: *IBM Research*New Products.....1330
Science Careers.....1334

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