

CONTENTS

17 APRIL 2015 • VOLUME 348 • ISSUE 6232



285 & 347

Treating spinal cord injury



270

NEWS

IN BRIEF

264 Roundup of the week's news

IN DEPTH

268 MEAGER SNOWS SPELL TROUBLE AHEAD FOR SALMON

Without snowmelt, streams in the western U.S. could reach lethal temperatures *By R. F. Service*

269 WOMEN BEST MEN IN STUDY OF TENURE-TRACK HIRING

Female candidates twice as likely to get top rating *By R. Bernstein*

270 U.S. LAYS OUT ITS AMBITIONS FOR LEADERSHIP IN THE ARCTIC

Climate, marine conservation, and renewable energy priorities as U.S. ascends to chair of Arctic Council *By C. Gramling*

► EDITORIAL P. 263

271 MOON-FORMING IMPACT LEFT SCARS IN DISTANT ASTEROIDS

Planetary collision dated through analysis of meteorites *By E. Hand*

► REPORT P. 321

272 FOR TOILETS, MONEY MATTERS

New work suggests that, subsidies to the poor to buy latrines could help end open defecation *By J. Kaiser*

► SCIENCE EXPRESS REPORT BY R. GUITERAS ET AL. 10.1126/science.aaa0491

273 JAPAN ACCELERATOR POISED TO GO FULLY OPERATIONAL

Closure after radiation leak ended up hampering some teams more than others *By D. Normile*

FEATURES

274 DAWN OF THE DOG

An unprecedented collaboration may solve one of the greatest mysteries of domestication *By D. Grimm*

277 How the wolf became the dog

By D. Grimm

► PERSPECTIVE P. 280; REPORT P. 333; PODCAST

INSIGHTS

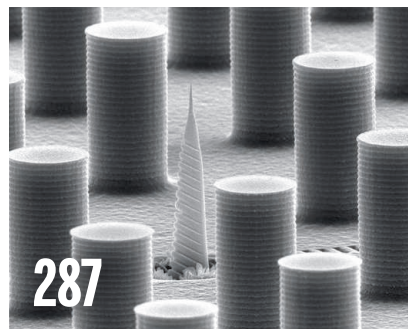
PERSPECTIVES

280 DOGS HIJACK THE HUMAN BONDING PATHWAY

Oxytocin facilitates social connections between humans and dogs

By E. L. MacLean and B. Hare

► NEWS STORY P. 274; REPORT P. 333; PODCAST



287

282 COMBATING EMERGING VIRAL THREATS

Broad-spectrum antiviral drugs are under development to treat emerging viral diseases such as Ebola and dengue for which no specific, licensed treatments exist *By E. Bekerman and S. Einav*

284 A SCAR IS BORN: ORIGINS OF FIBROTIC SKIN TISSUE

A fibroblast lineage is characterized by an inherent ability to form scar tissue in skin *By R. Sennett and M. Rendl*

► RESEARCH ARTICLE P. 302

285 SYSTEMICALLY TREATING SPINAL CORD INJURY

A drug that crosses the blood-brain barrier has therapeutic potential for central nervous system trauma

By A. P. Tran and J. Silver

► REPORT P. 347

287 NANOPLASMONIC SENSING AND DETECTION

Enhanced optical fields in nanoplasmonic systems provide efficient sensing and detection

By M. I. Stockman

288 MITORIBOSOME ODDITIES

The mitochondrial ribosome has evolved structural differences from its cytosolic counterpart *By R. Beckmann and J. M. Herrmann*

► REPORT P. 303

290 ESCAPE BY DILUTION

Dissolved organic matter in much of the deep ocean is too dilute to be consumed by microbes

By J. J. Middelburg

► REPORT P. 331

291 IMPROVE CUSTOMS SYSTEMS TO MONITOR GLOBAL WILDLIFE TRADE

Widely used trade codes lack taxonomic granularity

By H.-K. Chan et al.

BOOKS ET AL.

294 ARRESTING CONTAGION

By A. L. Olmstead and P. W. Rhode, reviewed by D. Grace

295 ETERNAL EPHEMERA

By N. Eldredge, reviewed by J. Endersby

CONTENTS



303

Mitochondrial ribosome
fingers tRNA

17 APRIL 2015 • VOLUME 348 • ISSUE 6232

LETTERS

296 SHAPING THE FUTURE OF SYNTHETIC BIOLOGY

By T. Kuiken

296 COMBATING THE NEXT LETHAL EPIDEMIC

By P. J. Hotez

297 OUTSIDE THE TOWER: MORE THAN A SCIENCE CAMP

By L. Gastón Morosi

297 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF

298 From *Science* and other journals

REVIEW

301 VERTEBRATE EVOLUTION

Evolutionary innovation and ecology in marine tetrapods from the Triassic to the Anthropocene *N. P. Kelley and N. D. Pyenson*

REVIEW SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.aaa3716

RESEARCH ARTICLES

302 SKIN FIBROSIS

Identification and isolation of a dermal lineage with intrinsic fibrogenic potential *Y. Rinkevich et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.aaa2151
► PERSPECTIVE P. 284

303 RIBOSOME

The complete structure of the 55S mammalian mitochondrial ribosome *B. J. Greber et al.*

► PERSPECTIVE P. 288

REPORTS

308 SURFACE STRUCTURE

Subatomic resolution force microscopy reveals internal structure and adsorption sites of small iron clusters *M. Emmrich et al.*

311 ACTIVE GALAXIES

A strong magnetic field in the jet base of a supermassive black hole *I. Martí-Vidal et al.*

314 GALAXY EVOLUTION

Evidence for mature bulges and an inside-out quenching phase 3 billion years after the Big Bang *S. Tacchella et al.*

317 SUPERCONDUCTIVITY

Quasiparticle mass enhancement approaching optimal doping in a high- T_c superconductor *B. J. Ramshaw et al.*

321 LUNAR FORMATION

Dating the Moon-forming impact event with asteroidal meteorites *W. F. Bottke et al.*

► NEWS STORY P. 271

324 CLIMATE CHANGE

The weakening summer circulation in the Northern Hemisphere mid-latitudes *D. Coumou et al.*

327 ICE SHEETS

Volume loss from Antarctic ice shelves is accelerating *F. S. Paolo et al.*

331 OCEAN CHEMISTRY

Dilution limits dissolved organic carbon utilization in the deep ocean *J. M. Arrieta et al.*

► PERSPECTIVE P. 290

333 SOCIAL EVOLUTION

Oxytocin-gaze positive loop and the coevolution of human-dog bonds *M. Nagasawa et al.*

► NEWS STORY P. 274; PERSPECTIVE P. 280;
PODCAST

336 PLANT ECOLOGY

Anthropogenic environmental changes affect ecosystem stability via biodiversity *Y. Hautier et al.*

340 STEM CELLS

Asymmetric apportioning of aged mitochondria between daughter cells is required for stemness *P. Katajisto et al.*

344 PROTEIN STRUCTURE

Engineering of a superhelicase through conformational control *S. Arslan et al.*

► REPORT P. 352

347 AXONAL REGENERATION

Systemic administration of epothilone B promotes axon regeneration after spinal cord injury *J. Ruschel et al.*

► PERSPECTIVE P. 285

352 PROTEIN STRUCTURE

Direct observation of structure-function relationship in a nucleic acid-processing enzyme *M. J. Comstock et al.*

► REPORT P. 344



DEPARTMENTS

263 EDITORIAL

One Arctic *By Fran Ulmer*
► NEWS STORY P. 270

366 WORKING LIFE

En pointe *By Elisabeth Pain*

ON THE COVER



As dogs gaze into our eyes, and we into theirs, we form a bond similar to that we share with our own infants. Now, a large collaboration of archaeologists and geneticists may help us understand when and when this special relationship began to form. See pages 274, 280, and 333.

Photo: © Arco Images GmbH/Alamy

Science Staff262
New Products355
Science Careers359

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 © 2015 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 #R1254 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.