

Breaking the cell cycle
to treat cancer *p.* 865

Watching metal atoms order
and organize *pp.* 909 & 916

Enhancer dynamics in
blood development *p.* 943

Science

\$10
22 AUGUST 2014
sciencemag.org

AAAS

Fostering reef recovery

Young corals and fishes colonize
healthy habitats *pp.* 879 & 892

CONTENTS

22 AUGUST 2014 • VOLUME 345 • ISSUE 6199



876, 937, & 940

Riboswitch-based regulation

RESEARCH

IN BRIEF

886 From *Science* and other journals

REVIEW

889 STEM CELL THERAPY

Use of differentiated pluripotent stem cells in replacement therapy for treating disease *I. J. For et al.*

REVIEW SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1247391

RESEARCH ARTICLES

891 POLITICAL SCIENCE

Reverse-engineering censorship in China: Randomized experimentation and participant observation *G. King et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.1251722

► NEWS STORY P. 859; PODCAST

892 REEF ECOLOGY

Chemically mediated behavior of recruiting corals and fishes: A tipping point that may limit reef recovery

D. L. Dixon et al.

► PERSPECTIVE P. 879

897 CLIMATE

Varying planetary heat sink led to global-warming slowdown and acceleration *X. Chen and K.-K. Tung*

► NEWS STORY P. 860



868 & 912

REPORTS

903 QUANTUM OPTICS

All-optical routing of single photons by a one-atom switch controlled by a single photon *I. Shomroni et al.*

► PERSPECTIVE P. 871

906 HELIUM SUPERFLUIDITY

Shapes and vorticities of superfluid helium nanodroplets *L. F. Gomez et al.*

909 NANOPARTICLE IMAGING

Electron microscopy of gold nanoparticles at atomic resolution *M. Azubel et al.*

912 MASSIVE STARS

A chemical signature of first-generation very massive stars *W. Aoki et al.*

► PERSPECTIVE P. 868

916 NANOPARTICLE GROWTH

Facet development during platinum nanocube growth *H.-G. Liao et al.*

919 GLACIERS

Attribution of global glacier mass loss to anthropogenic and natural causes

B. Marzeion et al.

► PERSPECTIVE P. 872

922 POLIO ERADICATION

Efficacy of inactivated poliovirus vaccine in India *H. Jafari et al.*

► NEWS STORY P. 861

925 CARBON CYCLE

Sunlight controls water column processing of carbon in arctic fresh waters *R. M. Cory et al.*

► PERSPECTIVE P. 870

929 SENSORY BIOLOGY

Evolution of sweet taste perception in hummingbirds by transformation of the ancestral umami receptor

M. W. Baldwin et al.

► PERSPECTIVE P. 878

933 PLANT DEVELOPMENT

Arabidopsis NAC45/86 direct sieve element morphogenesis culminating in enucleation *K. M. Furuta et al.*

► PERSPECTIVE P. 875



870 & 925

RIBOSWITCHES

937 A riboswitch-containing sRNA controls gene expression by sequestration of a response regulator *S. DebRoy et al.*

940 Sequestration of a two-component response regulator by a riboswitch-regulated noncoding RNA *J. R. Mellin et al.*

► PERSPECTIVE P. 876

943 IMMUNOGENETICS

Chromatin state dynamics during blood formation *D. Lara-Astiaso et al.*

950 PLANT GENETICS

Early allopolyploid evolution in the post-Neolithic *Brassica napus* oilseed genome *B. Chalhouh et al.*

ON THE COVER



Tropical corals and reef fishes (like the fish *Priacanthus* sp. and the coral *Turbinaria mesenterina* shown here) are in global decline. Recovery in degraded reefs may be limited because

dispersing juveniles from these groups are attracted to chemical cues produced by organisms in healthy reefs and are repelled by cues from seaweeds in degraded areas. See pages 879 and 892. Photo: Tim Laman/National Geographic Creative

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 © 2014 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): \$125 (\$74 allocated to subscriptions). Domestic institutional subscription (51 issues): \$1282. Foreign postage extra: Mexico, Caribbean (surface mail) \$55; other countries (air or sea 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 3069524. 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, \$25.00 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.

CONTENTS

22 AUGUST 2014 • VOLUME 345 • ISSUE 6199



875 & 933

A nucleus controls its own destruction

NEWS

IN BRIEF

856 Roundup of the week's news

IN DEPTH

859 STUDY EXPOSES CHINESE CENSORS' DEEPEST FEARS

The power of the masses proves most unnerving *By M. Hvistendahl*

► RESEARCH ARTICLE P. 891

860 IS ATLANTIC HOLDING EARTH'S MISSING HEAT?

New leads in the hunt to explain the global warming hiatus *By E. Kintisch*

► RESEARCH ARTICLE P. 897

861 A ONE-TWO PUNCH AGAINST POLIO

Injected vaccine promises a boost for eradication *By L. Roberts*

► REPORT P. 922

862 WHEELS WHEN YOU NEED THEM

Can special algorithms help keep shared bicycles rolling? *By C. Wald*

864 WOLVES COOPERATE BUT DOGS SUBMIT, STUDY SUGGESTS

Dependence may have driven initial dog domestication *By V. Morell*

FEATURE

865 THE CANCER DRUG THAT ALMOST WASN'T

A neglected compound that blocks cell division stirs excitement *By K. Garber*

INSIGHTS

PERSPECTIVES

868 IMPRINT OF AN ANCIENT CONFLAGRATION

Evidence is found for the massive stars that populated the early universe

By V. Bromm

► REPORT P. 912

870 CARBON CYCLING IN THE ARCTIC

Sunlight drives the emission of carbon from arctic waters *By L. Tranvik*

► REPORT P. 925



871 A PHOTON STEERS A PHOTON WITH AN ATOM

Nonlinear optics with single quanta of light and matter becomes reality

By G. Rempe

► REPORT P. 903

872 GLACIER RETREAT CROSSES A LINE

Mountain glacier loss since the 1970s has mostly been caused by human influences on climate change *By S. Marshall*

► REPORT P. 919

873 BOOSTING GDP GROWTH BY ACCOUNTING FOR THE ENVIRONMENT

Including air pollution and greenhouse gas damages increases estimated U.S. growth *By N. Z. Muller*

875 MAKING PHLOEM—A NEAR-DEATH EXPERIENCE

How to get rid of the phloem cell nucleus to make a root-to-shoot tip transport system *By N. Geldner*

► REPORT P. 933

876 RIBOSWITCH REGULATES RNA

Nutrient metabolism in bacteria is controlled by a circuit in which RNA is regulated by RNA

By J. Chen and S. Gottesman

► REPORTS PP. 937 & 940

878 SENSING NECTAR'S SWEETNESS

A taste receptor evolves to sense sugar in adapting to the diet of some birds

By P. Jiang and G. K. Beauchamp

► REPORT P. 929

879 HOW DO CORAL REEFS RECOVER?

Experiments on juvenile coral and fish behavior may have implications for reef restoration efforts *By J. F. Bruno*

► RESEARCH ARTICLE P. 892

881 JOEP LANGE (1954–2014)

A leader in developing therapy for AIDS is tragically killed *By J. Goudsmit*

BOOKS ET AL.

882 MORALITY FOR HUMANS

By M. Johnson, reviewed by L. Beldo

883 THE ENTREPRENEURIAL STATE

By M. Mazzucato, reviewed by D. Consoli

LETTERS

884 FAUNA IN DECLINE: PLIGHT OF THE PANGOLIN

By Y. Liu and Q. Weng

884 FAUNA IN DECLINE: FIRST DO NO HARM

By A. Ricciardi and D. Simberloff

885 FAUNA IN DECLINE: GLOBAL ASSESSMENTS

By H. Mooney and H. Tallis

885 AILING ACADEMIA NEEDS CULTURE CHANGE

By V. Callier and N. L. Vanderford

885 LET MINORITY-SERVING INSTITUTIONS LEAD

By F. Jackson et al.

DEPARTMENTS

855 EDITORIAL

A swan in the making

By Timothy Gardner

974 WORKING LIFE

Playing a new tune

By Jim Austin



Science Staff	854
New Products	954
Science Careers	955