EDITORIAL

10 Building Better Institutions Paul Nurse et al.

NEWS OF THE WEEK

14 A roundup of the week's top stories

NEWS & ANALYSIS

- 17 NIH to Phase Out Most Chimp Research
- 18 New Law Would Dilute and Diminish Russian Science Academy
- 19 Budget Malaise May Hit DOE's One Big Growth Area
- 20 China's Exquisite Look at Earth's Rocky Husk Wins Raves
- 21 At Long Last, Europe's Mega R&D Program
 Comes Into Focus

NEWS FOCUS

- 22 Into the Minds of Birds >> Science Podcast
- 26 Solution to Vaccine Mystery Starts to Crystallize

LETTERS

28 NextGenVOICES

BOOKS ET AL.

- 31 We Modern People
 A. Banerjee, reviewed by A. Siddiqi
- 32 The Golden Ticket
 L. Fortnow, reviewed by V. Elser

POLICY FORUM

33 Sustainable Intensification in Agriculture: Premises and Policies T. Garnett et al.

PERSPECTIVES

- 35 Seabirds—Individuals in Colonies
 H. Weimerskirch
 >> Report p. 68
- 36 Spectroscopy Beyond the Single-Particle Limit G. V. Hartland and S. S. Lo >> Report p. 56
- 37 Fueling Function Over Expansion in T Cells J. P. Argus and S. J. Bensinger
- 39 The Roots of Cultivation in Southwestern Asia G. Willcox >> Report p. 65
- 40 Radio Bursts, Origin Unknown
 J. M. Cordes
 >> Report p. 53
- 41 Making Macrophages Eat Cancer M. H. Kershaw and M. J. Smyth >> Report p. 88

REVIEW

43 Somatic Mutation, Genomic Variation, and Neurological Disease A. Poduri et al. Review Summary; for full text: http://dx.doi.org/10.1126/science.1237758

RESEARCH ARTICLES

- The Long-Term Stability of the Human Gut Microbiota
 J. J. Faith et al.
 Low-error sequencing data suggest that initial microbial colonizers of infant guts could persist over the life span of an individual,
 Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1237439
- 45 Bringing Ecosystem Services into Economic Decision-Making:
 Land Use in the United Kingdom
 I. J. Bateman et al.
 The value of using land for recreation and wildlife, not just for agriculture, can usefully factor into planning decisions.

CONTENTS continued >>



page 22



page 31

ON THE WEB THIS WEEK

>> Science Podcast

Listen to stories on ultrahigh magnetoresistance at room temperature, tracing the roots of plant domestication, bird brains in the PET scanner, and more.

>> Find More Online

Check out *Science* Express, our podcast, videos, daily news, our research journals, and *Science* Careers at www.sciencemag.org.



COVER

Aerial view of farmland, Epping Forest, and the city of London. Landscapes such as this one produce important ecosystem services, but minor increases in marketed goods often cause major losses in the value of those services. This situation can be reversed by combining science and economics in a comprehensive approach to target improvements in the natural environment. See page 45.

Photo: Andrew Holt/Alamy

DEPARTMENTS

- 9 This Week in Science
- 11 Editors' Choice
- 12 Science Staff
- 92 New Products
- 93 Science Careers

REPORTS

- 50 Signatures of Cool Gas Fueling
 a Star-Forming Galaxy at Redshift 2.3
 N. Bouché et al.
 Observations of gas near a star-forming
 galaxy reveal kinematic signatures expected
 from gas inflowing onto the galaxy.
- 53 A Population of Fast Radio Bursts at Cosmological Distances D. Thornton et al.
 Radio telescope data revealed four short, extragalactic, nonrepeating bursts of radio emission whose source is unknown.
 >> Perspective p. 40
- 56 Ultrafast Three-Dimensional Imaging of Lattice Dynamics in Individual Gold Nanocrystals
 J. N. Clark et al.
 An x-ray free-electron laser is used to probe the elastic modes of a gold nanocrystal.
 >> Perspective p. 36
- 59 Chiral Symmetry Breaking in Superfluid

 3He-A
 H. Ikegami et al.
 The asymmetric deflection of impurities
 beneath the surface of helium-3 reveals
 the handedness of the superfluid A phase.
- 62 Crystal Structure Determination of the Nonclassical 2-Norbornyl Cation F. Scholz et al.

 A long-standing debate about the structural symmetry of a positively charged hydrocarbon is settled by x-ray diffraction.
- 65 Emergence of Agriculture in the Foothills of the Zagros Mountains of Iran S. Riehl et al.

 An archaeobotanical assemblage spans the transition period from foraging to farming in the Near East.

 >> Perspective p. 39; Science Podcast
- 68 Space Partitioning Without Territoriality in Gannets

 E. D. Wakefield et al.
 Gannets establish foraging territory boundaries in colonies through local competition and information exchange.

 >> Perspective p. 35

- 71 MiR-200b and miR-429 Function in Mouse Ovulation and Are Essential for Female Fertility

 H. Hasuwa et al.

 MicroRNAs regulate hormone synthesis in the pituitary and the production of oocytes.

 74 A Secreted Disulfide Catalyst Controls
- Extracellular Matrix Composition and Function

 T. Ilani et al.
 Laminin incorporation is promoted by a secreted enzyme, which is important for cell adhesion and migration.
- 577 Structure of the Repulsive Guidance Molecule (RGM)—Neogenin Signaling Hub C. H. Bell et al.

 A complex of a guidance molecule and its receptor reveals how signals cross the membrane.

80

the C-Terminal Tail of the Spliceosomal
Protein Prp8
S. Mozaffari-Jovin et al.
Regulating an RNA helicase in the eukaryotic splicing reaction involves intermittent blockade of the catalytic tunnel.

Inhibition of RNA Helicase Brr2 by

- 84 Monitoring Drug Target Engagement in Cells and Tissues Using the Cellular Thermal Shift Assay

 D. Martinez Molina et al.

 A method to monitor drug binding to proteins in cells may help in target validation and drug optimization.
- Engineered SIRPα Variants as Immunotherapeutic Adjuvants to Anticancer Antibodies

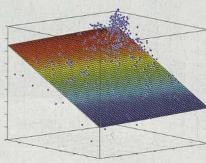
 K. Weiskopf et al.

 CD47 antagonists augment the effectiveness of antibody-mediated tumor immunotherapy in mice.

 >> Perspective p. 41



pages 40 & 53



page 44

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 © 2013 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (S1 issues): \$149 (574 allocated to subscription). Domestic institutional subscription (S1 issues): \$990; Foreign postage extra: Mexico, Caribbean (surface mail) 555; other countries (air assist delivery) 835. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 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 failing within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Cegler (CCC) Transactional Reporting Service, provided that \$30.00 per article is paid directly to CCC, Zosewood 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.