CONTENTS

EDITORIAL
777 Time to Deal with Antibiotics
Donald Kennedy

NEWS OF THE WEEK
782 A roundup of the week’s top stories

NEWS & ANALYSIS
785 Old Dogs Teach a New Lesson About Canine Origins
>> Report p. 871
786 Goal of Ending AIDS Gains Traction
787 Hint of Dark Matter May Be Just Cosmic Ray Debris
788 Initiative Aims to Minister to Mexico’s Unique Genetic Heritage
789 A Putative Antiaging Drug Takes a Step From Mice to Men
>> Sci. Transl. Med. Focus
by S. C. Johnson et al.

NEWS FOCUS
790 The Man Who Bottled Evolution
>> Science Express Report
by M. J. Wiser et al.
794 Turning Up the Light
>> Science Podcast

LETTERS
798 Biomedical Research:
Strength from Diversity
E. L. Wilder et al.
Pest Control: Embrace Marketing
D. Veríssimo
Pest Control: Biopesticides’ Potential
K. Wilson et al.
Pest Control: Risks of Biochemical Pesticides
G. Hao and G. Yang
799 CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
800 Arguments That Count
R. Slayton, reviewed by C. C. M. Mody
801 Social Learning
W. Hoppitt and K. N. Laland,
reviewed by D. M. Fragaszy and Y. Eshchar
802 Browsings

POLICY FORUMS
803 Protected Areas and Effective Biodiversity Conservation
S. Le Saout et al.
805 What Does Zero Deforestation Mean?
S. Brown and D. Zarin

PERSPECTIVES
808 Out of the African Humid Period
E. Bard
>> Report p. 843
809 Potential of the Synthetic Lethality Principle
S. M. B. Nijman and S. H. Friend
811 A Nickel Finish Protects Silicon Photoanodes for Water Splitting
J. A. Turner
>> Report p. 836
812 Transposons Up the Dosage
E. B. Chuong and C. Feschotte
>> Report p. 846
814 Can Cancer Drugs Treat Immunodeficiency?
M. E. Conley and D. A. Fruman
>> Report p. 866
815 Understanding Lakes Near and Far
S. E. Hampton

ASSOCIATION AFFAIRS
817 What’s So Special About Science (And How Much Should We Spend on It?)
W. H. Press
CONTENTS continued >>

ON THE WEB THIS WEEK
>> Science Podcast
Listen to stories on the origin of domestic dogs, tracking adaptation over 50,000 generations, ramping up solar power with perovskites, 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
The Basenji represents one of the most divergent dog lineages in existence today. Genetic analyses of modern and ancient canids, including some of the oldest known dog remains, place the origin of modern dogs in Europe between 18,800 and 32,100 years ago. See pages 785 and 871.
Photo: © Barbara von Hoffmann/Alamy

DEPARTMENTS
776 This Week in Science
778 Editors’ Choice
780 Science Staff
875 New Products
876 Science Careers

www.sciencemag.org SCIENCE VOL 342 15 NOVEMBER 2013 773
Published by AAAS
REVIEW
823 The Consequence of Tree Pests and Diseases for Ecosystem Services
I. L. Boyd et al.
Review Summary; for full text: http://dx.doi.org/10.1126/science.1235773

RESEARCH ARTICLES
824 Molecular Architecture of a Eukaryotic Translational Initiation Complex
I. S. Fernández et al.
Cryo-electron microscopy allows the rapid analysis of a yeast ribosome-initiator complex from a tiny data set.
Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1240585

825 Iron(IV)hydroxide pKₐ, and the Role of Thiolate Ligation in C–H Bond Activation by Cytochrome P450
T. H. Yosca et al.
The basicity of an iron oxo intermediate helps explain what keeps P450 enzymes from oxidizing their own backbone.

REPORTS
830 Room-Temperature Quantum Bit Storage Exceeding 39 Minutes Using Ionized Donors in Silicon-28
K. Saeedi et al.
Isotopically purified silicon is used to extend the coherence time of qubits based on phosphorus impurities.

833 Layer-Resolved Graphene Transfer via Engineered Strain Layers
J. Kim et al.
A two-step exfoliation process allows multiple transfers of oriented monolayer graphene from a silicon carbide surface.

836 High-Performance Silicon Photoanodes Passivated with Ultrathin Nickel Films for Water Oxidation
M. J. Kenney et al.
A nickel coating renders silicon stable in alkaline lithium borate electrolyte for solar water-splitting applications.

840 Enantioselective Lewis Acid Catalysis of Intramolecular Enone [2+2] Photocycloaddition Reactions
R. Brimioulle and T. Bach
A catalyst attains selectivity in a photochemical reaction by shifting the absorption wavelength of its complexed substrate.

843 Abrupt Shifts in Horn of Africa Hydroclimate Since the Last Glacial Maximum
J. E. Tierney and P. B. deMenocal
The mid-Holocene African Humid Period ended abruptly, within centuries rather than millennia, in the Horn of Africa.

846 Dosage Compensation via Transposable Element Mediated Rewiring of a Regulatory Network
C. E. Ellison and D. Bachtrog
Transposable elements facilitated functional specialization of recently evolved X chromosomes in fruit flies.

850 High-Resolution Global Maps of 21st-Century Forest Cover Change
M. C. Hansen et al.
Landsat data reveals details of forest losses and gains across the globe on an annual basis from 2000 to 2012.

853 Changes in Cytoplasmic Volume Are Sufficient to Drive Spindle Scaling
J. Hazel et al.
Cytoplasmic Volume Modulates Spindle Size During Embryogenesis
M. C. Good et al.
Microfluidic techniques reveal how mitotic spindle size is regulated by titratable cytosolic factors.

856 ERF115 Controls Root Quiescent Center Cell Division and Stem Cell Replenishment
J. Heyman et al.
Restrained growth of a key root tip region involves an interplay between hormonal activation and transcription factor levels.

863 Staphylococcus aureus Degrades Neutrophil Extracellular Traps to Promote Immune Cell Death
V. Thanavongsai et al.
Enzymes secreted by a bacterial pathogen turn immune responses against themselves.

866 Phosphoinositide 3-Kinase δ Gene Mutation Predisposes to Respiratory Infection and Airway Damage
I. Angulo et al.
Gene sequencing of unrelated patients with recurrent airway infections identifies a common underlying mutation.

871 Complete Mitochondrial Genomes of Ancient Canids Suggest a European Origin of Domestic Dogs
O. Thalmann et al.
Ancient DNA suggests that dog domestication was complex and likely originated in Europe.

885 Clearing the Way to Transgenic Crops
J. Karp
The basic science of transgenic plant production is being studied by researchers to improve the efficiency of transgenic crop production.
Science 342 (6160), 776-875.