

EDITORIAL

- 1019 Ending Honorary Authorship
Philip Greenland and Phil B. Fontanarosa

NEWS OF THE WEEK

- 1024 A roundup of the week's top stories

NEWS & ANALYSIS

- 1028 A Crystal-Clear View of an Extinct Girl's Genome
>> Science Express Research Article by M. Meyer et al.; Science Podcast
- 1030 Outbreak Pattern Stymies Vaccine Work
- 1031 Service Offers to Reproduce Results for a Fee

NEWS FOCUS

- 1032 In the Hunt for the Red Planet's Dirtiest Secret
- 1034 The New View of Complement Stalling Sepsis?

LETTERS

- 1038 The Scientific Whaling Loophole
L. R. Gerber
- Iconic CO₂ Time Series at Risk
S. Houweling et al.
- Decoding Cryptosystems
R. Van Meter
- 1040 CORRECTIONS AND CLARIFICATIONS
- 1040 TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.

- 1041 The Social Conquest of Earth
E. O. Wilson, reviewed by R. Griss
- 1042 Moral Origins
C. Boehm, reviewed by B. Zhao

POLICY FORUM

- 1043 Climate Negotiators Create an Opportunity for Scholars
J. E. Aldy and R. N. Stavins

PERSPECTIVES

- 1045 Spare the (Elastic) Rod
P. C. Nelson
>> Report p. 1097
- 1046 Vibrational Excitation Can Control Tropospheric Chemistry
G. Tyndall
>> Report p. 1066
- 1047 Beyond Oil and Water—Phase Transitions in Cells
A. A. Hyman and K. Simons
- 1049 Bad News for Soil Carbon Sequestration?
G. A. Kowalchuk
>> Report p. 1084
- 1051 Esophageal Stem Cells, Where Art Thou?
J. A. Kushner
>> Report p. 1091
- 1052 Mitochondrial Dynamics and Apoptosis—the ER Connection
S. Hoppins and J. Nunnari
>> Review p. 1062
- 1054 Structured Light Meets Structured Matter
N. M. Litchinitser

SCIENCE PRIZE ESSAY

- 1056 Discovering Nanoscience
A. C. Blair et al.

REVIEW

- 1062 Mitochondrial Fission, Fusion, and Stress
R. J. Youle and A. M. van der Bliek
>> Perspective p. 1052

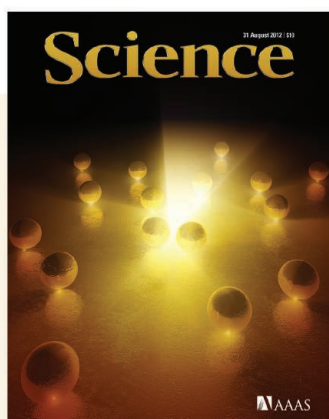


page 1028



page 1042

Downloaded from <http://science.sciencemag.org/> on February 18, 2019



COVER

Artist's rendering of the film-nanoparticle plasmonic system. Spherical gold nanoparticles are coupled to a gold film substrate by means of an ultrathin layer that prevents the particles from directly touching the film. Electromagnetic ultrahot spots are excited in the gaps. The system enables the exploration of light interactions occurring on a scale of a few tenths of a nanometer, the diameter of a typical atom. See page 1072.

Image: Sebastian Nicosia and Cristian Ciraci

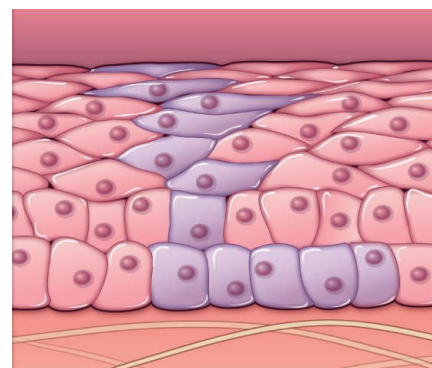
DEPARTMENTS

- 1016 This Week in *Science*
- 1020 Editors' Choice
- 1022 *Science* Staff
- 1058 AAAS News & Notes
- 1123 New Products
- 1124 *Science* Careers

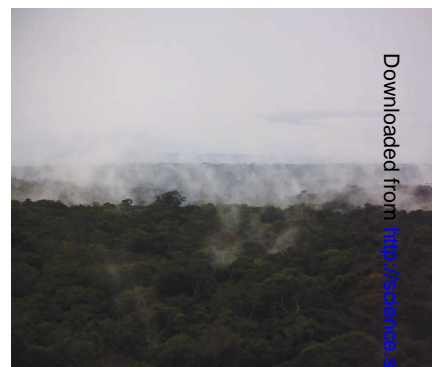
REPORTS

- 1066** Interception of Excited Vibrational Quantum States by O₂ in Atmospheric Association Reactions
D. R. Glowacki et al.
Vibrationally excited reaction intermediates play a bigger role under atmospheric conditions than previously suspected.
>> *Perspective p. 1046*
- 1069** Conduction of Ultracold Fermions Through a Mesoscopic Channel
J.-P. Brantut et al.
Lithium atoms are used to simulate electronic transport.
- 1072** Probing the Ultimate Limits of Plasmonic Enhancement
C. Ciraci et al.
The nonlocal dielectric response of metals places a fundamental limit on the performance of plasmonic optical devices.
- 1075** Biogenic Potassium Salt Particles as Seeds for Secondary Organic Aerosol in the Amazon
C. Pöhlker et al.
Potassium salt particles account for the previously mysterious initiation sites of aerosol growth above the Amazonian rainforest.
>> *Science Podcast*
- 1078** Radiative Absorption Enhancements Due to the Mixing State of Atmospheric Black Carbon
C. D. Cappa et al.
Direct measurements show that ambient atmospheric particulate black carbon absorbs less solar radiation than theory suggested.
- 1081** A Gain-of-Function Polymorphism Controlling Complex Traits and Fitness in Nature
K. V. S. K. Prasad et al.
Positive selection for a mutation that enhances resistance to herbivory in the model plant *Boecheira* is described.
- 1084** Arbuscular Mycorrhizal Fungi Increase Organic Carbon Decomposition Under Elevated CO₂
L. Cheng et al.
Counter to expectations, fungi associated with plant roots diminish the carbon pool in soil ecosystems under elevated levels of carbon dioxide.
>> *Perspective p. 1049*
- 1087** How the Cucumber Tendril Coils and Overwinds
S. J. Gerbode et al.
Plants climb via lifelines that are a mix of strength and flexibility.
- 1091** A Single Progenitor Population Switches Behavior to Maintain and Repair Esophageal Epithelium
D. P. Doupé et al.
Dividing cells in the mouse esophagus contribute to wound healing without the need for quiescent stem cells.
>> *Perspective p. 1051*
- 1094** Identification of Small Molecule Activators of Cryptochrome
T. Hirota et al.
A small molecule binds to a core protein in the circadian clock and slows down time.
- 1097** Extreme Bendability of DNA Less than 100 Base Pairs Long Revealed by Single-Molecule Cyclization
R. Vafabakhsh and T. Ha
DNA molecules are not quite as stiff or standoffish as originally thought.
>> *Perspective p. 1045*
- 1101** Network Context and Selection in the Evolution to Enzyme Specificity
H. Nam et al.
Are less promiscuous enzymes more highly evolved?
- 1104** Synthesis of Methylphosphonic Acid by Marine Microbes: A Source for Methane in the Aerobic Ocean
W. W. Metcalf et al.
The archaeon *Nitrosopumilus maritimus* makes what may be a major source of ocean methane.
- 1107** The Shared Antibiotic Resistome of Soil Bacteria and Human Pathogens
K. J. Forsberg et al.
Perfect identity between antibiotic resistance genes in farmland soil bacteria and human pathogens suggests direct transfer.
>> *Science Podcast*
- 1111** TLR13 Recognizes Bacterial 23S rRNA Devoid of Erythromycin Resistance-Forming Modification
M. Oldenburg et al.
A region of ribosomal RNA that confers antibiotic resistance is also recognized by mouse innate immune receptors.
- 1115** Compartmentalized Control of Skin Immunity by Resident Commensals
S. Naik et al.
The skin microbiota play a selective role in modulating immunity in the skin of mice.

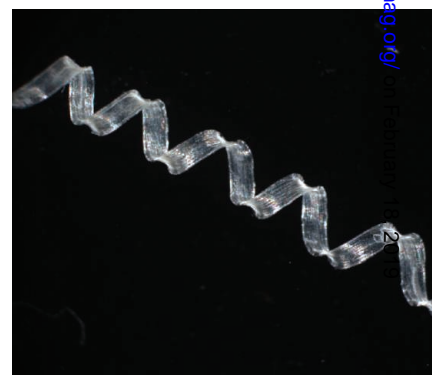
CONTENTS continued >>



pages 1051 & 1091



page 1075



page 1087

SCIENCEONLINE

SCIENCEEXPRESS

www.sciencexpress.org

Kepler-47: A Transiting Circumbinary Multiplanet System

J. A. Orosz et al.

Data from the Kepler space telescope reveal two small planets orbiting a pair of two low-mass stars.
10.1126/science.1228380

A High-Coverage Genome Sequence from an Archaic Denisovan Individual

M. Meyer et al.

A close-up look provides clues to the relationships between modern humans, Denisovans, and Neandertals.
10.1126/science.1224344

>> *News story p. 1028*

Transcriptional Architecture and Chromatin Landscape of the Core Circadian Clock in Mammals

N. Koike et al.

A 1-day reconstruction of transcriptional events reveals the influence of the circadian clock across the genome.
10.1126/science.1226339

Processing and Subcellular Trafficking of ER-Tethered EIN2 Control Response to Ethylene Gas

H. Qiao et al.

The plant hormone ethylene triggers cleavage and translocation to the nucleus of a signaling component.
10.1126/science.1225974

Disulfide Rearrangement Triggered by Translocon Assembly Controls Lipopolysaccharide Export

S.-S. Chng et al.

Protein-protein interactions promote oxidative protein folding during assembly of a bacterial lipopolysaccharide exporter.
10.1126/science.1227215

TECHNICAL COMMENTS

Comment on "Intensifying Weathering and Land Use in Iron Age Central Africa"

K. Neumann et al.

Full text at www.sciencemag.org/cgi/content/full/337/6098/1040-c

Comment on "Intensifying Weathering and Land Use in Iron Age Central Africa"

J. Maley et al.

Full text at www.sciencemag.org/cgi/content/full/337/6098/1040-d

Response to Comments on "Intensifying Weathering and Land Use in Iron Age Central Africa"

G. Bayon et al.

Full text at www.sciencemag.org/cgi/content/full/337/6098/1040-e

SCIENCE NOW

www.sciencenow.org

Highlights From Our Daily News Coverage

What Time Is It on Your Circadian Clock?

Researchers find an easier way to determine our internal body time.

<http://scim.ag/Circadian-Clock>

New Computer Memory Material Goes Easy on the Juice

Organic compounds could help retain data without a continuous trickle of electricity.

<http://scim.ag/Organic-Compounds>

Genome Sequencing Clears Up a Cancer Medical Mystery

A mutation in a patient's tumor explains her rare response to a new drug.

<http://scim.ag/Medical-Mystery>

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

28 August issue: <http://scim.ag/ss082812>

RESEARCH ARTICLE: A VASP-Rac-Soluble Guanylyl Cyclase Pathway Controls cGMP Production in Adipocytes

K. Jennissen et al.

Targeting the cGMP effector VASP may enhance metabolism by stimulating the activity and abundance of brown adipocytes.

RESEARCH ARTICLE: The Complex of G Protein Regulator RGS9-2 and Gβ₅ Controls Sensitization and Signaling Kinetics of Type 5 Adenylyl Cyclase in the Striatum

K. Xie et al.

By suppressing cAMP production in the striatum, the RGS9-2/Gβ₅ complex could affect the development of opioid addiction.

PERSPECTIVE: Do Pancreatic β cells "Taste" Nutrients to Secrete Insulin?

J.-C. Henquin

The role of β cell taste receptors in the control of insulin secretion is unclear.

PODCAST

G. Wang and A. M. VanHook

A protease can help protect against neurodegeneration by preventing inflammation in microglia.

SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

29 August issue: <http://scim.ag/stm082912>

RESEARCH ARTICLE: Clonal Evolution of Preleukemic Hematopoietic Stem Cells Precedes Human Acute Myeloid Leukemia

M. Jan et al.

Exome sequencing and single-cell analysis reveal that a clonal progression of mutations in hematopoietic stem cells precedes human acute myeloid leukemia.

RESEARCH ARTICLE: A Dense Poly(Ethylene Glycol) Coating Improves Penetration of Large Polymeric Nanoparticles Within Brain Tissue

E. A. Nance et al.

Nanoparticles densely coated with poly(ethylene glycol) rapidly penetrate within mouse, rat, and human brain parenchyma.

RESEARCH ARTICLE: The Stoichiometric Production of IL-2 and IFN-γ mRNA Defines Memory T Cells That Can Self-Renew After Adoptive Transfer in Humans

A. Wang et al.

Cytokines can identify memory T cells used for cancer immunotherapy.

FOCUS: FDA Oversight of Cell Therapy Clinical Trials

P. Au et al.

The U.S. Food and Drug Administration applies regulatory flexibility to balance benefits and risks to participants in cell-therapy clinical trials.

FOCUS: Designing a Public Square for Research Computing

D. R. Masys et al.

The use of a set of principles when designing research computing applications can increase the likelihood of successful adoption by researchers.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Helping Paralympians Go for Gold

E. Pain

Sports biomechanics researcher Barry Mason works on improving wheelchair design for basketball and rugby athletes.

<http://scim.ag/Paralympians>

Spotlight on Diversity

M. Price

Filmmaker and physicist Aziza Baccouche, who is blind, showcases the challenges and successes of diverse scientists in a new documentary series.

<http://scim.ag/DiversityDocumentary>

SCIENCE PODCAST

www.sciencemag.org/multimedia/podcast

On the 31 August *Science* Podcast: a reservoir of antibiotic resistance, forests that control the rain, the latest in Denisovan DNA, and more.

SCIENCE INSIDER

news.sciencemag.org/scienceinsider

Science Policy News and Analysis

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 © 2012 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): \$149 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$990; 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 #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 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.



ADVANCING SCIENCE. SERVING SOCIETY

Science

337 (6098)

Science **337** (6098), 1016-1123.

ARTICLE TOOLS

<http://science.sciencemag.org/content/337/6098>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.