

EDITORIAL

- 1549 **Dueling Visions for Science**
Rush Holt

NEWS OF THE WEEK

- 1556 A roundup of the week's top stories

NEWS & ANALYSIS

- 1559 **Patent Reform Shuffles Who Is First in Line**
- 1560 **Novel Antibody Response May Explain HIV Vaccine Success**
- 1561 **Meeting Brings Attention But Little Action on Chronic Diseases**
- 1562 **13th Congress of the European Society for Evolutionary Biology Meeting**
Mothering Beetles Suppress Microbes to Protect Food for Their Young
Tracing the Common Roots of Antibiotic Resistance
Epigenetics Linked to Inbreeding Depression

NEWS FOCUS

- 1564 **Particle Physicists' New Extreme Teams**
U.S. Physicists, a Long Way From Home
>> *Science Podcast*
- 1569 **Pushing the Envelope in Neuroblastoma Therapy**
- 1572 **Two-Year Colleges Are Jumping Into the U.S. Research Pool**
>> *Science Careers article p. 1545*

LETTERS

- 1574 **Trade-Secret Model: Privacy Rights**
J. H. Matsuura
- Trade-Secret Model: Potential Pitfalls**
C. J. Weil and C. Compton
- Trade-Secret Model: Legal Limitations**
E. S. Dove et al.
- Response**
R. Mitchell et al.
- 1576 **CORRECTIONS AND CLARIFICATIONS**
- 1576 **TECHNICAL COMMENT ABSTRACTS**

BOOKS ET AL.

- 1577 **Africa as a Living Laboratory**
H. Tilley, reviewed by F. Cooper
- 1578 **The Evolution of the Human Head**
D. E. Lieberman, reviewed by M. J. Ravosa

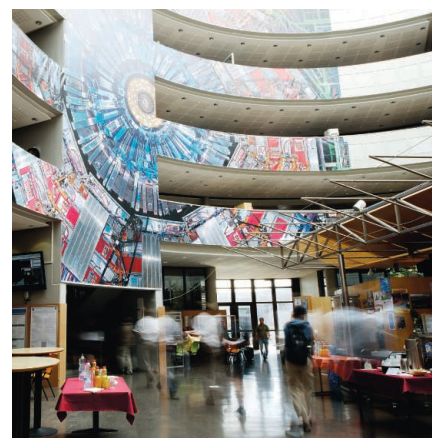
POLICY FORUM

- 1580 **Preventing the Next Fukushima**
M. Bunn and O. Heinonen

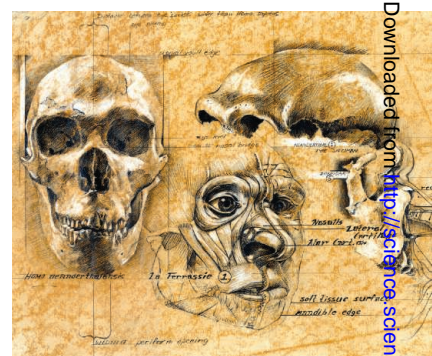
PERSPECTIVES

- 1582 **Mechanically Throwing a Reaction into Reverse**
F. A. Leibfarth and C. J. Hawker
>> *Report p. 1606*
- 1583 **Pyrazinamide—Old TB Drug Finds New Target**
S. T. Cole
>> *Report p. 1630*
- 1584 **Refining Quantum Cryptography**
R. Hughes and J. Nordholt
- 1586 **Soil Nitrites Influence Atmospheric Chemistry**
M. Kulmala and T. Petäjä
>> *Report p. 1616*
- 1587 **Electrically Driven Insulation in the Central Nervous System**
A. Araque and M. Navarrete
>> *Report p. 1647*
- 1589 **Converging on an HIV Vaccine**
B. Korber and S. Gnanakaran
>> *Research Article p. 1593; Report p. 1633*
- 1590 **Fossilized Feathers**
M. A. Norell
>> *Reports pp. 1619 and 1622*

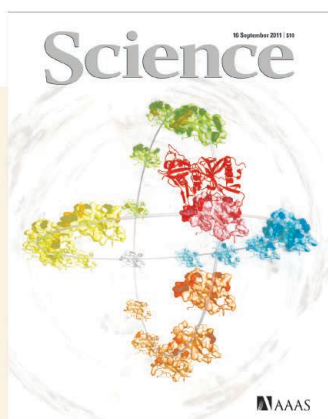
CONTENTS continued >>



page 1564



page 1578



COVER

Maturation of human antibodies from germline recombinant (gray ribbon structure), along four lineages (orange, yellow, green, and blue), into potent neutralizers of HIV-1. A mature antibody variable domain is shown binding its target, HIV-1 envelope glycoprotein gp120 (red ribbon structure). Deep sequencing and structural bioinformatics of the antibody repertoires of HIV-infected individuals uncover the genetic record for the development of broadly neutralizing HIV-1 immunity. See page 1593.

Image: Jonathan Stuckey/Vaccine Research Center, National Institute of Allergy and Infectious Diseases/NIH

DEPARTMENTS

- 1547 **This Week in Science**
- 1551 **Editors' Choice**
- 1555 **Science Staff**
- 1652 **New Products**
- 1653 **Science Careers**

BREVIA

- 1592 **Compatibility with Killer Explains the Rise of RNAi-Deficient Fungi**
I. A. Drinnenberg et al.
Yeast can compensate for the loss of RNA interference by becoming killer yeast through the acquisition of a killer virus.

RESEARCH ARTICLES

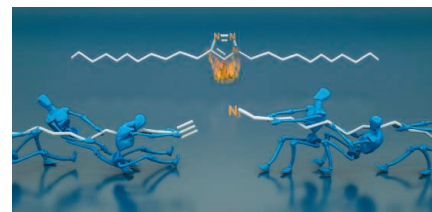
- 1593 **Focused Evolution of HIV-1 Neutralizing Antibodies Revealed by Structures and Deep Sequencing**
X. Wu et al.
Broadly neutralizing antibodies to HIV with similar specificities can be found in multiple HIV-infected individuals.
>> *Perspective p. 1589; Report p. 1633*
- 1602 **Kepler-16: A Transiting Circumbinary Planet**
L. R. Doyle et al.
An exoplanet has been observed, comparable in size and mass to Saturn, that orbits a pair of stars.
>> *Science Podcast*

REPORTS

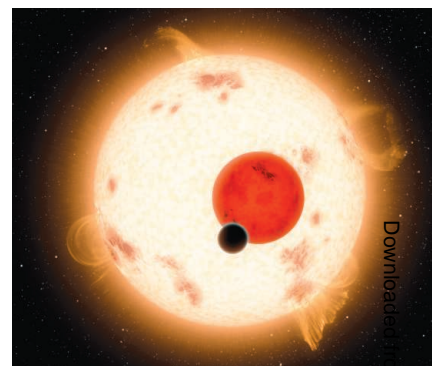
- 1606 **Unclicking the Click: Mechanically Facilitated 1,3-Dipolar Cycloreversions**
J. N. Brantley et al.
Application of ultrasound can cleanly reverse a widely used chemical coupling reaction.
>> *Perspective p. 1582*
- 1609 **Primary Alcohols from Terminal Olefins: Formal Anti-Markovnikov Hydration via Triple Relay Catalysis**
G. Dong et al.
Three catalysts create alcohols by guiding water to attack carbon-carbon bonds in the opposite sense than it normally would.
- 1613 **Selective Catalytic C–H Alkylation of Alkenes with Alcohols**
D.-H. Lee et al.
A ruthenium catalyst forms carbon-carbon bonds between olefins and alcohols while liberating only water as a by-product.
- 1616 **Soil Nitrite as a Source of Atmospheric HONO and OH Radicals**
H. Su et al.
Biogenic nitrite in soils is an important source of atmospheric HONO and OH.
>> *Perspective p. 1586*

- 1619 **A Diverse Assemblage of Late Cretaceous Dinosaur and Bird Feathers from Canadian Amber**
R. C. McKellar et al.
Late Cretaceous amber entombs both dinosaur protofeathers and avian feathers of modern aspect.
- 1622 **Trace Metals as Biomarkers for Eumelanin Pigment in the Fossil Record**
R. A. Wogelius et al.
X-ray maps of fossil feather pigments reveal color patterning in extinct bird species.
>> *Perspective p. 1590*
- 1627 **Faking Giants: The Evolution of High Prey Clearance Rates in Jellyfishes**
J. L. Acuña et al.
Jellyfish process prey at the same rates as fish, suggesting that a shift to jellyfish-dominated systems is possible.
- 1630 **Pyrazinamide Inhibits Trans-Translation in *Mycobacterium tuberculosis***
W. Shi et al.
The target of a first-line tuberculosis drug that acts against persister bacteria is identified.
>> *Perspective p. 1583*
- 1633 **Sequence and Structural Convergence of Broad and Potent HIV Antibodies That Mimic CD4 Binding**
J. F. Scheid et al.
Anti-HIV broadly neutralizing antibodies with similar specificities and modes of binding were found in multiple HIV-infected individuals.
>> *Perspective p. 1589; Research Article p. 1593*
- 1637 **Yeast Rrn7 and Human TAF1B Are TFIIB-Related RNA Polymerase I General Transcription Factors**
B. A. Knutson and S. Hahn
- 1640 **TAF1B Is a TFIIB-Like Component of the Basal Transcription Machinery for RNA Polymerase I**
S. Naidu et al.
RNA polymerase I uses a transcription factor IIB-related protein for transcription, similar to the known requirement for polymerase II and III.
- 1642 **Role for the Membrane Receptor Guanylyl Cyclase-C in Attention Deficiency and Hyperactive Behavior**
R. Gong et al.
A receptor for gut hormones also functions in the brain, where its loss affects attention.
- 1647 **Control of Local Protein Synthesis and Initial Events in Myelination by Action Potentials**
H. Wake et al.
Axons signal through both glutamate and adenosine triphosphate release to regulate their insulating wraps.
>> *Perspective p. 1587*

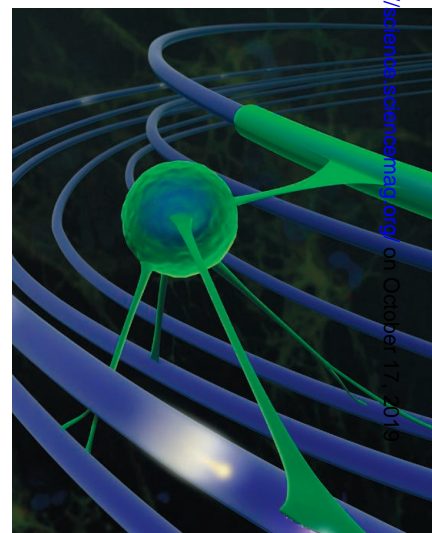
CONTENTS continued >>



pages 1582 & 1606



page 1602



pages 1587 & 1647

SCIENCEONLINE

SCIENCEEXPRESS

www.sciencexpress.org

Deep Mantle Cycling of Oceanic Crust: Evidence from Diamonds and Their Mineral Inclusions

M. J. Walter et al.

Tiny minerals trapped inside Brazilian diamonds show that Earth's carbon cycle extends down to the lower mantle.

10.1126/science.1209300

>> [Science Podcast](#)

The Influence of Nonlinear Mesoscale Eddies on Near-Surface Oceanic Chlorophyll

D. B. Chelton et al.

Large ocean eddies are the cause of some sea surface height and chlorophyll anomalies previously ascribed to Rossby waves.

10.1126/science.1208897

Information Transduction Capacity of Noisy Biochemical Signaling Networks

R. Cheong et al.

Noise limits information transfer through a single signaling pathway in a single cell to just one bit.

10.1126/science.1204553

Acetylcholine-Synthesizing T Cells Relay Neural Signals in a Vagus Nerve Circuit

M. Rosas-Ballina et al.

A neural circuit that involves a specialized population of memory T cells regulates the immune response.

10.1126/science.1209985

Functional Innervation of Hepatic iNKT Cells Is Immunosuppressive Following Stroke

C. H. Y. Wong et al.

Neurotransmitters relay immunosuppressive signals to natural killer T cells after stroke.

10.1126/science.1210301

Transgenerational Epigenetic Instability Is a Source of Novel Methylation Variants

R. J. Schmitz et al.

Spontaneous methylation rates that may affect phenotype in the plant *Arabidopsis* are higher than the mutation rate.

10.1126/science.1212959

TECHNICALCOMMENTS

Comment on "A Test of the Snowball Theory for the Rate of Evolution of Hybrid Incompatibilities"

D. A. Barbash

Full text at www.sciencemag.org/cgi/content/full/333/6049/1576-b

Response to Comment on "A Test of the Snowball Theory for the Rate of Evolution of Hybrid Incompatibilities"

D. R. Matute et al.

Full text at www.sciencemag.org/cgi/content/full/333/6049/1576-c

SCIENCENOW

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Highlights From Our Daily News Coverage

Lasker Awards Honors for Studies of Protein Folding, Malaria Drug

Scientists who discovered a cell 'machine' involved in protein folding and a life-saving treatment for malaria are this year's recipients.

http://scim.ag/_Laskers

Glowing Kittens Fight Feline AIDS

Researchers find an easier way to make genetically modified cats.

<http://scim.ag/glowcats>

The Sky Is Falling! But No Big Deal

The UARS satellite will soon fall to Earth, but then, everything eventually does.

<http://scim.ag/UARSfall>

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

13 September issue: <http://scim.ag/ss091311>

RESEARCH ARTICLE: Protein Arginine Methyltransferase 5 Regulates ERK1/2

Signal Transduction Amplitude and Cell Fate Through CRAF

P. Andreu-Pérez et al.

PODCAST

J. A. Recio and A. M. VanHook

Arginine methylation of RAF determines the response to growth factors that activate the same cascade.

RESEARCH ARTICLE: Feedback Circuits Monitor and Adjust Basal Lck-Dependent Events in T Cell Receptor Signaling

J. R. Schoenborn et al.

Signaling molecules downstream of the TCR are poised to rapidly respond to receptor activation.

TEACHING RESOURCE: Systems Biology—Biomedical Modeling

E. A. Sobie et al.

TEACHING RESOURCE: Introduction to Statistical Methods to Analyze Large Data Sets—Principal Components Analysis

N. R. Clark and A. Ma'ayan

TEACHING RESOURCE: Introduction to Statistical Methods for Analyzing Large Data Sets—Gene-Set Enrichment Analysis

N. R. Clark and A. Ma'ayan

TEACHING RESOURCE: Introduction to Network Analysis in Systems Biology

A. Ma'ayan

Lecture notes and problem sets provide materials for teaching systems biology.

PERSPECTIVE: Met Receptor—A Moving Target

M. J. Clague

Endosomal recycling pathways dictate the signaling capacity of wild-type or mutant Met receptor.

SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

14 September issue: <http://scim.ag/stm091411>

COMMENTARY: What Can a UN Health Summit Do?

R. A. Nugent and D. T. Jamison

A meeting on noncommunicable diseases will address this major threat to global health.

COMMENTARY: Biomedical Innovation in Academic Institutions—Mitigating Conflict of Interest

L. L. Nelsen and B. E. Bierer

Conflicts of interest must be managed for universities and their medical centers to maintain public trust.

RESEARCH ARTICLE: $G\alpha_s$ -Biased β_2 -Adrenergic Receptor Signaling from Restoring Synchronous Contraction in the Failing Heart

K. Chakir et al.

Synchronizing abnormal contraction in the failing heart permanently alters β_2 -adrenergic signaling.

RESEARCH ARTICLE: Engineering the Growth Factor Microenvironment with Fibronectin Domains to Promote Wound and Bone Tissue Healing

M. M. Martino et al.

A fibronectin fragment enhances the regenerative effects of growth factors in animal models.

RESEARCH ARTICLE: Donor Myocardial Infarction Impairs the Therapeutic Potential of Bone Marrow Cells by an Interleukin-1-Mediated Inflammatory Response

X. Wang et al.

Inflammation after heart attack impairs the ability of bone marrow cells to improve cardiac function.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

Tooling Up: Are You Likable?

D. Jensen

Maybe it's wrong, but your success in the job search depends partly on how much people like you.

http://scim.ag/TU_Likable

Research Careers at Community Colleges?

M. Price

Science faculty at community colleges are finding ways to fit research into their jobs.

http://scim.ag/CC_Research

>> [News story p. 1572](#)

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Science Policy News and Analysis

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