CONTENTS

EDITORIAL
1441 Young Leaders for Biology in India
Shubha Tole and Ronald D. Vale
>> Policy Forum p. 1471

NEWS OF THE WEEK
1450 With Stem Cells in Court, a History Primer
1453 China Clamps Down on Illegal Fossil Trading
1453 From the Science Policy Blog
1454 No Meeting of Minds on XMRV’s Role in Chronic Fatigue, Cancer
1455 From Science’s Online Daily News Site
1456 Genentech Scientist to Take the Helm at Rockefeller University
1457 Physicist Tapped to Turn Embattled Institute Into a Fully Fledged University

NEWS FOCUS
1458 Has China Outgrown the One-Child Policy?
Of Population Projections and Projectiles
>> Science Podcast
1462 No Vaccines in the Time of Cholera
1464 11th International Conference of Archaeozology
Score One for Hunting at Olduvai
Burying Man’s Best Friend, With Honor
In a Cold Snap, Farmers Turned to Milk

LETTERS
1466 Battling the Paper Glut
D Siegel and P. Baveye
India’s Courteous Creativity
T. N. Narasimhan
Archaeology Augments Tibet’s Genetic History
P. J. Brantingham et al.
Response
X. Yi et al.
1467 CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.
1469 Whistling Vivaldi
C. M. Steele, reviewed by W. von Hippel
1469 BROWSINGS
1470 Nanotechnologies for Future Mobile Devices
T. Ryhänen et al., Eds.

POLICY FORUM
1471 Achieving Scientific Eminence Within Asia
A. S. Huang and C. Y. H. Tan
>> Editorial p. 1441

PERSPECTIVES
1473 New Roles for Codon Usage
I. Weygand-Durasevic and M. Ibba
>> Report p. 1534
1474 Aerosols in Clearer Focus
U. Baltensperger
>> Research Article p. 1488; Report p. 1513
1475 A Never-Ending Story
B.-M. Sjöberg
>> Report p. 1526
1477 Quantum Walks Through a Waveguide Maze
M. Hillery
>> Report p. 1500
1478 Should Confidence Be Trusted?
H. Lau and B. Maniscalco
>> Report p. 1541
1479 Seismic Images of the Biggest Crash on Earth
R. Kind and X. Yuan

REVIEW
1481 Tyrannosaur Paleobiology: New Research on Ancient Exemplar Organisms
S. L. Brusatte et al.
CONTENTS continued >>

COVER
Topographic map of the Moon based on measurements from the Lunar Orbiter Laser Altimeter, showing the boundary between Oceanus Procellarum, a smooth, relatively young mare region on the western nearside (upper right), and the older, more heavily cratered highlands (center and lower left). Colors indicate increasing elevation from blue to red. The crescent-shaped Lorentz crater (center) is ~312 kilometers in diameter. See the Reports on pages 1504, 1507, and 1510.

Image: NASA/LRO/LOLA/GSFC/MIT/Brown

DEPARTMENTS
1437 This Week in Science
1442 Editors’ Choice
1446 Science Staff
1449 Random Samples
1544 New Products
1545 Science Careers
BREVIA

1487 Island Biogeography Reveals the Deep History of SIV
M. Worobey et al.
Separation of the island of Bioko from West Africa about 10,000 years ago dates the origins of simian immunodeficiency virus.

RESEARCH ARTICLES

1488 Hemispheric Aerosol Vertical Profiles: Anthropogenic Impacts on Optical Depth and Cloud Nuclei
A. Clarke and V. Kapustin
Vertical profiles of atmospheric aerosols from throughout the Pacific region show the influence of anthropogenic combustion.
>> Perspective p. 1474; Report p. 1513

1492 Evidence for an Alternative Glycolytic Pathway in Rapidly Proliferating Cells
M. G. Vander Heiden et al.
Characterization of cancer cell metabolism provides evidence for a previously uncharacterized metabolic pathway.

REPORTS

1500 Quantum Walks of Correlated Photons
A. Peruzzo et al.
Pairs of correlated photons retain their quantum-mechanical correlations as they propagate through a waveguide maze.
>> Perspective p. 1477

1504 Global Distribution of Large Lunar Craters: Implications for Resurfacing and Impactor Populations
J. W. Head III et al.
An analysis of high-resolution global topography data advances our understanding of the impact history of the Moon.

1507 Global Silicate Mineralogy of the Moon from the Diviner Lunar Radiometer
B. T. Greenhagen et al.

1510 Highly Silicic Compositions on the Moon
T. D. Glotch et al.
Remote thermal emission spectroscopy reveals the existence of complex igneous processes on the Moon.

1513 Rainforest Aerosols as Biogenic Nuclei of Clouds and Precipitation in the Amazon
U. Pöschl et al.
The majority of cloud condensation nuclei in the Amazon during the wet season are derived from biogenic precursors.
>> Perspective p. 1474; Research Article p. 1488

1516 Melting of Peridotite to 140 Gigapascals
G. Fiquet et al.
High-temperature and high-pressure experiments reveal details about how and where the mantle melts.

1518 A Test of the Snowball Theory for the Rate of Evolution of Hybrid Incompatibilities
D. R. Matute et al.

1521 Hybrid Incompatibility “Snowballs” Between Solanum Species
L. C. Mayle and T. Nakazato
Two studies support the theory that the number of genes involved in hybrid incompatibility increases faster than linearly.

1523 The Ecological Significance of Tool Use in New Caledonian Crows
C. Rutz et al.
Stable isotope analysis reveals the nutritional benefits of tool use in wild New Caledonian crows.
>> Science Podcast

1526 Structural Basis for Activation of Class Ib Ribonucleotide Reductase
A. K. Boal et al.
A single protein activates two different metallofactors by distinct chemistries.
>> Perspective p. 1475

1530 Bifurcation of Toll-Like Receptor 9 Signaling by Adaptor Protein 3
M. Sasai et al.
Compartmentalization of signaling components allows induction of distinct pathways downstream of a pathogen receptor.

1534 Differential Arginylation of Actin Isoforms Is Regulated by Coding Sequence–Dependent Degradation
F. Zhang et al.
The translational speed of proteins influences whether they are cotranslationally degraded after arginylation.
>> Perspective p. 1473

1537 MiR-16 Targets the Serotonin Transporter: A New Facet for Adaptive Responses to Antidepressants
A. Baudry et al.
The uptake transporter for a key neurotransmitter is regulated by a microRNA, yielding new insight into how Prozac functions.

1541 Relating Introspective Accuracy to Individual Differences in Brain Structure
S. M. Fleming et al.
Individual differences in the capacity for introspection are reflected in structural variation in the frontal lobe.
>> Perspective p. 1478

CONTENTS continued >>
**Out of Laser Light**

Physicists Fashion the Ultimate Peashooter

Fast Vesicle Fusion in Living Cells Requires at Least Three SNARE Complexes

Membrane fusion proteins cooperate to promote rapid secretory vesicle exocytosis from neuroendocrine cells.

10.1126/science.1190780

RESEARCH ARTICLE: Characterization of the Extrinsic Apoptic Pathway in the Basal Chordate Amphioxus

S. Yuan et al.

Death domain–dependent signaling in the basal chordate amphioxus suggests that extrinsic apoptotic signaling is not restricted to vertebrates.

PERSPECTIVE: Domain Recombination—A Workhorse for Evolutionary Innovation

C. Apic and R. B. Russell

Firm evidence for domain shuffling as a means of evolving new functions may lead us to the creation of combinations of practical benefit.

PERSPECTIVE: Signals—Tinkering with Domains

E. Bornberg-Bauer

Binding domains in signaling proteins can tolerate sequence variation but still bind ligands and be structurally stable.

REVIEW: ABL Tyrosine Kinases—Evolution of Function, Regulation, and Specificity

J. Colicelli

Insight into the regulation of ABL-family tyrosine kinases could facilitate development of therapies for malignancies driven by ABL fusion proteins.

SCIENCEpodcast

www.sciencemag.org/multimedia/podcast

Free Weekly Show

Download the 17 September Science Podcast to hear about 30 years of China’s one-child policy, hydrocarbon-degrading bacteria in the Gulf of Mexico, tool-making crows, and more.

SCIENCEinsider

news.sciencemag.org/scienceinsider

Science Policy News and Analysis

---

**Evolving domains.**

RESEARCH ARTICLE: Personalized Epigenomic Signatures That Are Stable Over Time and Covary with Body Mass Index

A. P. Feinberg et al.

Epigenetic signatures akin to genetic fingerprints may correlate with a common genetic trait.

RESEARCH ARTICLE: Disruption at the **PTCHD1** Locus on Xp22.11 in Autism Spectrum Disorder and Intellectual Disability

A. Noor et al.

Mutations of the X-linked gene **PTCHD1** are associated with autism spectrum disorders and intellectual disability.
Editor's Summary

This copy is for your personal, non-commercial use only.

**Article Tools**  Visit the online version of this article to access the personalization and article tools: [http://science.sciencemag.org/content/329/5998](http://science.sciencemag.org/content/329/5998)

**Permissions**  Obtain information about reproducing this article: [http://www.sciencemag.org/about/permissions.dtl](http://www.sciencemag.org/about/permissions.dtl)