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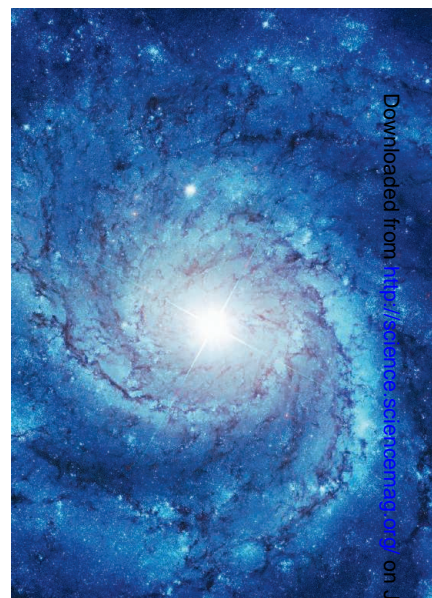
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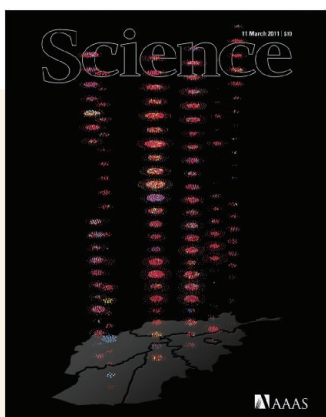


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COVER

The North Atlantic Treaty Organization–led military coalition in Afghanistan has released its internal database of civilian casualties. In this visualization of the data, monthly casualties rise above the region of Afghanistan in which they occurred, from January 2009 (bottom, near map) to December 2010 (top). Over this period, 2537 civilians were killed (large dots), and 5594 were wounded (small dots), with weaponry and perpetrator coded by color. See News Focus story on p. 1256.

Image: Created by George Michael Brower, based on a concept by John Bohannon

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K. R. Hill et al.

Individuals in residential groups in contemporary hunter-gatherer societies are unrelated to each other.

>> *Perspective p. 1276; Science Podcast*

- 1289 Ordered and Dynamic Assembly of Single Spliceosomes

A. A. Hoskins et al.

Fluorescently labeled yeast spliceosome proteins reveal the events of intron splicing as it happens.

REPORTS

- 1295 Organic Aerosol Formation Downwind from the Deepwater Horizon Oil Spill

J. A. de Gouw et al.

Organic compounds of intermediate volatility play an important role in the formation of secondary organic aerosols.

>> *Perspective p. 1273*

- 1299 Catastrophic Drought in the Afro-Asian Monsoon Region During Heinrich Event 1

J. C. Stager et al.

An extreme megadrought occurred in the Afro-Asian monsoon region during an iceberg melting episode 50,000 years ago.

- 1302 Complex Multicolor Tilings and Critical Phenomena in Tetrphilic Liquid Crystals

X. Zeng et al.

X-shaped molecules undergo reversible thermal transitions between phase-separated and mixed states.

- 1306 A Planar Rhombic Charge-Separated Tetrasilacyclobutadiene

K. Suzuki et al.

A stable silicon analog of a reactive, antiaromatic hydrocarbon has been synthesized and characterized.

>> *Perspective p. 1277*

- 1309 Tomography of Reaction-Diffusion Microemulsions Reveals Three-Dimensional Turing Patterns

T. Bánsági Jr. et al.

Tomography reveals three-dimensional Turing patterns created by the Belousov-Zhabotinsky reaction running in a microemulsion.

- 1312 Creating Favorable Geometries for Directing Organic Photoreactions in Alkanethiolate Monolayers

M. Kim et al.

Molecules align in molecular overlayers for photodimerization reactions that would be disfavored in solution.

- 1315 A Circadian Rhythm Orchestrated by Histone Deacetylase 3 Controls Hepatic Lipid Metabolism

D. Feng et al.

Circadian control of liver metabolism is mediated by cycles of recruitment of the histone deacetylase HDAC3.

>> *Perspective p. 1275*

- 1319 A Bacterial Protein Targets the BAHD1 Chromatin Complex to Stimulate Type III Interferon Response

A. Lebreton et al.

A virulence factor secreted by *Listeria monocytogenes* induces expression of interferon-stimulated genes.

>> *Perspective p. 1271*

- 1322 Mechanistic Basis of Resistance to PCBs in Atlantic Tomcod from the Hudson River

I. Wirgin et al.

Chronic pollution of the Hudson River, New York, results in rapid evolution of resistance to the pollutants.

- 1325 Aging in the Natural World: Comparative Data Reveal Similar Mortality Patterns Across Primates

A. M. Bronikowski et al.

Aging patterns in humans fall within the parameters of other primates in natural populations.

>> *Science Podcast*

- 1328 Positive Supercoiling of Mitotic DNA Drives Decatenation by Topoisomerase II in Eukaryotes

J. Baxter et al.

Positive supercoiling of catenated DNA during cell division induces its enzymic decatenation to allow chromosome segregation.

- 1333 Function of Rhodopsin in Temperature Discrimination in *Drosophila*

W. L. Shen et al.

The light sensor rhodopsin appears to also function in temperature sensation in the fruit fly.

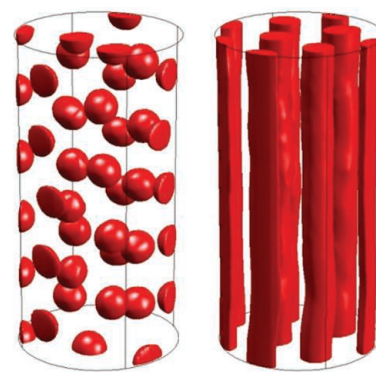
>> *Perspective p. 1272*

- 1336 A Polarized Epithelium Organized by β - and α -Catenin Predates Cadherin and Metazoan Origins

D. J. Dickinson et al.

An epithelium in *Dictyostelium discoideum* suggests convergence between multicellular animals and slime molds.

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SCIENCEONLINE

SCIENCEEXPRESS

www.sciencexpress.org

Structure of an Agonist-Bound Human A_{2A} Adenosine Receptor

F. Xu et al.

Changes associated with conformationally selective agonist binding shed light on G protein-coupled receptor activation.

10.1126/science.1202793

The Growth Factor Progranulin Binds to TNF Receptors and Is Therapeutic Against Inflammatory Arthritis in Mice

W. Tang et al.

A growth factor protects against arthritis in mice by blocking tumor necrosis factor-dependent signaling.

10.1126/science.1199214

A Midzone-Based Ruler Adjusts Chromosome Compaction to Anaphase Spindle Length

G. Neurohr et al.

The degree of chromosome condensation can be modulated within cells to ensure proper segregation.

10.1126/science.1201578

Enhanced Turbulence and Energy Dissipation at Ocean Fronts

E. D'Asaro et al.

Energy in surface ocean currents can dissipate into deep water via enhanced turbulence at the boundaries between water masses.

10.1126/science.1201515

Low-Power Switching of Phase-Change Materials with Carbon Nanotube Electrodes

F. Xiong et al.

The crystallinity and resistivity of a compound semiconductor was changed with current pulses delivered by nanoelectrodes.

10.1126/science.1201938

TECHNICALCOMMENTS

Comment on "Global Convergence in the Temperature Sensitivity of Respiration at Ecosystem Level"

A. Graf et al.

Full text at www.sciencemag.org/cgi/content/full/331/6022/1265-c

Response to Comment on "Global Convergence in the Temperature Sensitivity of Respiration at Ecosystem Level"

M. D. Mahecha et al.

Full text at www.sciencemag.org/cgi/content/full/331/6022/1265-d

SCIENCENOW

www.sciencenow.org

Highlights From Our Daily News Coverage

Crustaceans Crave a Little Quiet

Noisy reefs may lure some marine invertebrates, but they repel many others.

<http://scim.ag/crustaceans>

Elephants Can Lend a Helping Trunk

Pachyderms know when they need help—and are willing to wait for it.

<http://scim.ag/helping-trunk>

Memristors Make Fast Work of Mazes

Electronic devices could test multiple potential escape routes at the same time.

<http://scim.ag/memristors>

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

8 March issue: <http://scim.ag/ss030811>

RESEARCH ARTICLE: Vav1-Mediated Scaffolding Interactions Stabilize

SLP-76 Microclusters and Contribute

to Antigen-Dependent T Cell Responses

N. R. Sylvain et al.

Scaffolding functions of Vav1 contribute to SLP-76 clustering and signaling downstream of the T cell receptor.

RESEARCH ARTICLE: Ubiquitination of K-Ras Enhances Activation and Facilitates Binding to Select Downstream Effectors

A. T. Sasaki et al.

PERSPECTIVE: Ubiquitin on Ras—

Warden or Partner-In-Crime?

C. M. Pfeleger

Cancers in which K-Ras activation drives tumor growth could be targeted by treatments blocking K-Ras ubiquitination.

PODCAST

M. González-Gaitán et al.

Mathematical analysis reveals how a graded signal can induce a homogeneous response across a field of cells.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

Reentering Academia: A Success Story

E. Pain

University of Oxford chemist Carol Robinson returned to academia after an 8-year break and went on to win the FEBS/EMBO Women in Science Award. http://scim.ag/robinsonq_a

Mind Matters: Troubled Colleagues

I. S. Levine

When a scientist is confronted with a colleague who is struggling with personal problems, there are no easy answers.

http://scim.ag/mm_troubled

SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

9 March issue: <http://scim.ag/stm030911>

RESEARCH ARTICLE: Neutrophils Activate Plasmacytoid Dendritic Cells by Releasing Self-DNA–Peptide Complexes in Systemic Lupus Erythematosus

R. Lande et al.

RESEARCH ARTICLE: Netting Neutrophils Are Major Inducers of Type I IFN Production in Pediatric Systemic Lupus Erythematosus

G. S. Garcia-Romo et al.

PERSPECTIVE: Dissecting the Immune Cell Mayhem that Drives Lupus Pathogenesis

J. E. Craft

New studies suggest that rational combinatorial targeting of the pathogenic mechanisms in lupus may be a winning therapeutic strategy.

RESEARCH ARTICLE: Nanodiamond Therapeutic Delivery Agents Mediate Enhanced Chemoresistant Tumor Treatment

E. K. Chow et al.

PERSPECTIVE: Dodging Drug-Resistant Cancer with Diamonds

T. J. Merkel and J. M. DeSimone

Nanodiamond-drug conjugates show antitumor activity in mouse models of chemoresistant breast and liver cancer.

SCIENCEPODCAST

www.sciencemag.org/multimedia/podcast

Free Weekly Show

On the 11 March *Science* Podcast: civilian casualties in Afghanistan, primate mortality rates, social structure in hunter-gatherer societies, and more.

SCIENCEINSIDER

news.sciencemag.org/scienceinsider

Science Policy News and Analysis

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