We are all too familiar with human conflict, such as this bombing on 13 August 2006 in Beirut, Lebanon, by the Israel Defense Forces. In the special section on Human Conflict (see page 818), we examine the origins of conflict, trace its path through history, and consider its modern manifestations. We also analyze our innate ability to foster peace and look at societies that eschew war. This cover was chosen for visual imagery and not for any political message or endorsement.

Image: Sang-Hoon KISH Kim/Sipa Press/Newscom
PERSPECTIVES

809 An Alternative Route for Nuclear mRNP Export by Membrane Budding
   B. Montpetit and K. Weis
   >> Report p. 893

810 Active Site of an Industrial Catalyst
   J. P. Greeley
   >> Report p. 889

811 NMR Tools for Determining the Structure of Plutonium Materials
   T. E. Albrecht-Schmitt
   >> Report p. 901

812 Room for Just One Photon
   P. Grangier
   >> Report p. 887

813 Ancient Sensor for Ancient Drug
   R. J. Shaw and L. C. Cantley
   >> Report p. 918

814 Pinning Down the Water Hexamer
   R. J. Saykally and D. J. Wales
   >> Report p. 897

816 Retrospective: Robert R. Sokal
   (1926–2012)
   D. J. Futuyma

BREVIA

886 Evolutionary Diversity of the Mitochondrial Calcium Uniporter
   A. G. Bick et al.
   Phylogenetic analysis of the mitochondrial calcium transporter shows that it was a feature of early eukaryotes.

REPORTS

887 Strongly Interacting Rydberg Excitations of a Cold Atomic Gas
   Y. O. Dudin and A. Kuzmich
   Illumination of an ensemble of cold rubidium atoms ultimately leads to high-level excitation of just a single atom.
   >> Perspective p. 812

889 Water-Mediated Proton Hopping on an Iron Oxide Surface
   L. R. Merte et al.
   The presence of adsorbed water enhances proton diffusion, likely through a hydronium ion transition state.

893 The Active Site of Methanol Synthesis over Cu/ZnO/Al₂O₃ Industrial Catalysts
   M. Behrens et al.
   Catalysis is favored by stepped copper nanoparticles decorated with zinc oxide, which promotes stronger intermediate binding.
   >> Perspective p. 810

897 Structures of Cage, Prism, and Book Isomers of Water Hexamer from Broadband Rotational Spectroscopy
   C. Pérez et al.
   Observing three distinct water clusters in the same experiment resolves long-standing questions about their relative stabilities.
   >> Perspective p. 814

901 Observation of ²³⁹Pu Nuclear Magnetic Resonance
   H. Yatsuoka et al.
   The long-sought magnetic resonance signal of the plutonium nucleus has been detected in a sample of solid plutonium dioxide.
   >> Perspective p. 811

904 Conspecific Negative Density Dependence and Forest Diversity
   D. J. Johnson et al.
   Tree seedlings have a harder time establishing themselves in forests containing many adults of the same species.

907 Randomized Government Safety Inspections Reduce Worker Injuries with No Detectable Job Loss
   D. I. Levine et al.
   It may be feasible to achieve employee safety while keeping businesses viable.

911 Cost-Benefit Tradeoffs in Engineered lac Operons
   M. Eames and T. Kortemme
   A close look at a paradigmatic system accounts for the costs due to protein activity versus expression and folding.

915 How Hibernation Factors RMF, HPF, and YfiA Turn Off Protein Synthesis
   Y. S. Polikanov et al.
   Three crystal structures show why bacteria stop making proteins when they enter the stationary phase.

918 The Ancient Drug Salicylate Directly Activates AMP-Activated Protein Kinase
   S. A. Hawley et al.
   A possible molecular mechanism of action for a metabolite of aspirin is described.
   >> Perspective p. 813

922 Aerobic Microbial Respiration in 86-Million-Year-Old Deep-Sea Red Clay
   H. Ray et al.
   Microbes in Pacific sediments grow very, very slowly.

925 Multiple Spectral Inputs Improve Motion Discrimination in the Drosophila Visual System
   T. J. Wardill et al.
   Fly photoreceptors that detect colors also contribute information to the processing of motion.

931 AID-Driven Deletion Causes Immunoglobulin Heavy Chain Locus Suicide Recombination in B Cells
   S. Péron et al.
   Recombination-induced deletion of the immunoglobulin heavy chain gene in activated B cells may influence B cell homeostasis.

934 Quantitative Sequencing of 5-Methylcytosine and 5-Hydroxymethylcytosine at Single-Base Resolution
   M. J. Booth et al.
   A sequencing method can discriminate epigenetically modified cytosine nucleotides within embryonic stem cell DNA.
RESEARCH ARTICLE: High-Throughput Sequencing Detects Minimal Residual Disease in Acute T Lymphoblastic Leukemia
D. Wu et al.
High-throughput sequencing can detect minimal residual disease comparable to multiparametric flow cytometry in T-ALL patients.

PERSPECTIVE: Drug-Based Optical Agents—Infiltrating Clinics at Lower Risk
W. Scheuer et al.
Using drugs as optical imaging agents and “microdosing” amounts reduces risk or clinical translation of fluorescence molecular imaging.

RESEARCH ARTICLE: Oscillatory Dynamics of Cdc42 GTPase in the Control of Polarized Growth
M. Das et al.
The regulation of a yeast cell-growth enzyme is dynamic rather than on-off.

PERSPECTIVE: The Structural Basis of DKK-Mediated Inhibition of Wnt/LRP Signaling
J. Bao et al.
Structural analysis indicates that the binding sites on a receptor for ligand and inhibitor partially overlap.

PRESENTATION: Role of GRK2 in Cell Signaling Beyond GPCR Desensitization—GRK2-HDAC6 Interaction Modulates Cell Spreading and Motility
P. Penela et al.
GRK2 modulates tubulin acetylation dynamics in an HDAC6-dependent manner to affect epithelial cell spreading and motility.

RESEARCH ARTICLE: Chronic Traumatic Encephalopathy in Blast-Exposed Military Veterans and a Blast Neurotrauma Mouse Model
L. E. Goldstein et al.
Blast exposure is associated with chronic traumatic encephalopathy and persistent cognitive deficits in veterans and athletes.

>> News story p. 790

RESEARCH ARTICLE: Drug Target Genes Sequenced in 14,002 People
M. R. Nelson et al.
Coding genes are rare and, thus, difficult to find.

PERSPECTIVE: The Structure of the Full-Length Tetrameric PKA Regulatory R1β Complex Reveals the Mechanism of Allosteric PKA Activation
J. M. Elkins and S. Knapp
The conformational changes caused by CAMP binding to the regulatory subunit in the PKA holoenzyme are shown.

>> Human Conflict section p. 818

RESEARCH ARTICLE: Drug-based Optical Agents—Infiltrating Clinics at Lower Risk
W. Scheuer et al.
Using drugs as optical imaging agents and “microdosing” amounts reduces risk or clinical translation of fluorescence molecular imaging.

SCIENCE ONLINE

Evolution and Functional Impact of Rare Coding Variation from Deep Sequencing of Human Exomes
J. A. Tennesen et al.
Most functionally consequential variants in protein-coding genes are rare and, thus, difficult to find.

An Abundance of Rare Functional Variants in 202 Drug Target Genes Sequenced in 14,002 People
M. R. Nelson et al.
A pharmacogenomics analysis shows how challenging it will be to associate rare variants with phenotypes.

Oscillatory Dynamics of Cdc42 GTPase in the Control of Polarized Growth
M. Das et al.
The regulation of a yeast cell-growth enzyme is dynamic rather than on-off.

Graphene Barrister, a Triode Device with a Gate-Controlled Schottky Barrier
H. Yang et al.
The absence of defects and surface oxides at a graphene/silicon interface enables voltage control of graphene devices.

Direct Detection of Projectile Relics from the End of the Lunar Basin–Forming Epoch
K. H. Joy et al.
Analysis of lunar rocks from the Apollo missions reveals fragments from meteorites that hit the Moon in the ancient past.

Fragments of the Lunar Cataclysm
A. E. Rubin et al.

Roton-Type Mode Softening in a Quantum Gas with Cavity-Mediated Long-Range Interactions
R. Mottl et al.
Low-energy excitations of the type present in superfluid helium are observed in a cold gas of rubidium atoms.

RESEARCH ARTICLE: Chronic Traumatic Encephalopathy in Blast-Exposed Military Veterans and a Blast Neurotrauma Mouse Model
L. E. Goldstein et al.
Blast exposure is associated with chronic traumatic encephalopathy and persistent cognitive deficits in veterans and athletes.

>> News story p. 790

RESEARCH ARTICLE: Gene Therapy for Aromatic L-Amino Acid Decarboxylase Deficiency
W.-L. Hwu et al.
Gene therapy can restore some motor function in patients with aromatic L-amino acid decarboxylase deficiency.

RESEARCH ARTICLE: CD25 Blockade Depletes and Selectively Reprogrammes Regulatory T Cells in Concert with Immunotherapy in Cancer Patients
A. J. Rech et al.
CD25 monoclonal antibody therapy rapidly and durably depletes Tregs in cancer patients through a mechanism consistent with reprogramming.

Highlights From Our Daily News Coverage

SCIENCE PODCAST
www.sciencemag.org/multimedia/podcast
Free Weekly Show
On the 18 May Science Podcast: a special show exploring human conflict, including strife among our primate ancestors, the biological underpinnings of racism, and the fundamentals of “peace systems.”

PERSPECTIVE: Drug-Based Optical Agents—Infiltrating Clinics at Lower Risk
W. Scheuer et al.
Using drugs as optical imaging agents and “microdosing” amounts reduces risk or clinical translation of fluorescence molecular imaging.

EDITORIAL: CD25 Blockade Depletes and Selectively Reprogrammes Regulatory T Cells in Concert with Immunotherapy in Cancer Patients
A. J. Rech et al.
CD25 monoclonal antibody therapy rapidly and durably depletes Tregs in cancer patients through a mechanism consistent with reprogramming.

RESEARCH ARTICLE: Oscillatory Dynamics of Cdc42 GTPase in the Control of Polarized Growth
M. Das et al.
The regulation of a yeast cell-growth enzyme is dynamic rather than on-off.

PERSPECTIVE: The Structural Basis of DKK-Mediated Inhibition of Wnt/LRP Signaling
J. Bao et al.
Structural analysis indicates that the binding sites on a receptor for ligand and inhibitor partially overlap.

PRESENTATION: Role of GRK2 in Cell Signaling Beyond GPCR Desensitization—GRK2-HDAC6 Interaction Modulates Cell Spreading and Motility
P. Penela et al.
GRK2 modulates tubulin acetylation dynamics in an HDAC6-dependent manner to affect epithelial cell spreading and motility.

SCIENCE TRANSLATIONAL MEDICINE
www.sciencetranslationalmedicine.org
Integrating Medicine and Science
16 May issue: http://scim.ag/stm051612

EDITORIAL: APoE4 Status and Traumatic Brain Injury on the Gridiron or the Battlefield
S. Gandy and S. T. DeKosky
Injury on the Gridiron or the Battlefi eld

SCIENCE CAREERS
www.sciencemag.org/career_magazine
Free Career Resources for Scientists
Winning Over Hearts Means Understanding Minds
M. Price
For scientists who study conflict’s motivations and consequences, the brain is the battlefield that matters.

Tooling Up: How to Swim With Sharks
D. Jensen
Here’s what you need to know about third-party services that offer to help with your job search.

In Person: Family-Friendly Science Careers
T. Ainsworth
We need to let young women know that it is possible to have a science career and a family.

SCIENCE PODCAST
www.sciencemag.org/multimedia/podcast
Free Weekly Show
On the 18 May Science Podcast: a special show exploring human conflict, including strife among our primate ancestors, the biological underpinnings of racism, and the fundamentals of “peace systems.”

>> News story p. 790

RESEARCH ARTICLE: Chronic Traumatic Encephalopathy in Blast-Exposed Military Veterans and a Blast Neurotrauma Mouse Model
L. E. Goldstein et al.
Blast exposure is associated with chronic traumatic encephalopathy and persistent cognitive deficits in veterans and athletes.

>> News story p. 790

RESEARCH ARTICLE: Gene Therapy for Aromatic L-Amino Acid Decarboxylase Deficiency
W.-L. Hwu et al.
Gene therapy can restore some motor function in patients with aromatic L-amino acid decarboxylase deficiency.

RESEARCH ARTICLE: CD25 Blockade Depletes and Selectively Reprogrammes Regulatory T Cells in Concert with Immunotherapy in Cancer Patients
A. J. Rech et al.
CD25 monoclonal antibody therapy rapidly and durably depletes Tregs in cancer patients through a mechanism consistent with reprogramming.

RESEARCH ARTICLE: Oscillatory Dynamics of Cdc42 GTPase in the Control of Polarized Growth
M. Das et al.
The regulation of a yeast cell-growth enzyme is dynamic rather than on-off.

PERSPECTIVE: The Structural Basis of DKK-Mediated Inhibition of Wnt/LRP Signaling
J. Bao et al.
Structural analysis indicates that the binding sites on a receptor for ligand and inhibitor partially overlap.

PRESENTATION: Role of GRK2 in Cell Signaling Beyond GPCR Desensitization—GRK2-HDAC6 Interaction Modulates Cell Spreading and Motility
P. Penela et al.
GRK2 modulates tubulin acetylation dynamics in an HDAC6-dependent manner to affect epithelial cell spreading and motility.