A depiction of the interaction of an excess electron with the hydrogen-bonded complex NH$_3$...HCl, which induces formation of the ionic pair NH$_4^+Cl^-$ solvated by the excess electron. The image shows the structures of three possible systems and highlights the areas that correspond to 10%, 30%, and 50% of the excess electron. See page 936.

Illustration: Maciej Haranczyk
Sr Lattice Clock at $1 \times 10^{-16}$ Fractional Uncertainty by Remote Optical Evaluation with a Ca Clock
A. D. Ludlow et al.
Two clocks based on optical transitions in single trapped ions set 4 kilometers apart are able to keep time within a fractional error of $1 \times 10^{-16}$, better than the standard atomic clock.
10.1126/science.1153341

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A Cholesterol Biosynthesis Inhibitor Blocks Staphylococcus aureus Virulence
C.-I. Liu et al.
A drug for controlling cholesterol may be useful as an antibiotic for multi-drug-resistant Staphylococcus because of unexpected structural similarities among critical proteins.
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10.1126/science.1153018

Neurokinin 1 Receptor Antagonism as a Possible Therapy for Alcoholism
D. T. George et al.
A drug that inhibits a neural signaling pathway linked to behavioral stress may be a useful therapy in preventing relapse in alcoholics.
10.1126/science.1153813

Generation of Pluripotent Stem Cells from Adult Mouse Liver and Stomach Cells
T. Aoi et al.
Induced pluripotent stem cells are generated by direct reprogramming of adult liver and stomach cells without retroviral integration into specific sites in the genome.
10.1126/science.1154884

Comment on “The Latitudinal Gradient in Recent Speciation and Extinction Rates of Birds and Mammals”
J. A. Tobias, J. M. Bates, S. J. Hackett, N. Seddon
Response to Comment on “The Latitudinal Gradient in Recent Speciation and Extinction Rates of Birds and Mammals”
J. T. Weir and D. Schluter

Adapting Proteostasis for Disease Intervention
W. E. Balch, R. I. Morimoto, A. Dillin, J. W. Kelly

Emergence of Anoxia in the California Current Large Marine Ecosystem
F. Chan et al.
Extreme oxygen deficits in the northern California Current system caused widespread anoxia, killing benthic invertebrates on the continental shelf of Oregon during 2006.

Identification of Host Proteins Required for HIV Infection Through a Functional Genomic Screen
A. L. Brass et al.
An RNAi screen identified 237 new and 38 known human proteins required for HIV infection, including ones used in Golgi transport and in viral integration and transcription.

Discovery of a Jupiter/Saturn Analog with Gravitational Microlensing
B. S. Gaudi et al.
A system of two giant planets orbiting a star has been discovered through their gravitational deflection of light from more distant stars.
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Imaging Phonon Excitation with Atomic Resolution
H. Gawronski, M. Mehlhorn, K. Morgenstern
Maps of the second derivative of the scanning tunneling microscope current with respect to voltage reveal atomic-scale variations in the surface vibrational modes of metals.
REPORTS CONTINUED...

PHYSICS
Spin-Dependent WIMP Limits from a Bubble Chamber
E. Behnke et al.
Experiments with a stabilized bubble chamber, consisting of a buried superheated liquid, limit the abundance of weakly interacting massive particles, a dark-matter candidate.

CHEMISTRY
Electron-Driven Acid-Base Chemistry: Proton Transfer from Hydrogen Chloride to Ammonia
S. N. Eustis et al.
Spectroscopy and simulations show that binding an excess electron to HCl helps it fully transfer its proton to ammonia, facilitating this type of acid-base reaction in a vacuum.

CHEMISTRY
High-Throughput Synthesis of Zeolitic Imidazolate Frameworks and Application to CO$_2$ Capture
R. Banerjee et al.
Microporous metallic-organic frameworks with two types of linkers between the metal atoms in a tetrahedral lattice can take up large amounts of CO$_2$ at ambient conditions.

GEOCHEMISTRY
Rogue Mantle Helium and Neon
F. Albarede
Anomalously high rations of $^3$He to $^4$He in the recycled basalts under ocean islands may result from helium diffusing in from more pristine, primitive mantle.

EVOLUTION
The Premetazoan Ancestry of Cadherins
M. Abedin and N. King
A close unicellular relative of metazoans unexpectedly contains 23 genes for a cell adhesion protein, suggesting a role for the protein in the evolution of multicellularity.

ECOLOGY
A Global Map of Human Impact on Marine Ecosystems
B. S. Halpern et al.
A meta-analysis shows that human activities have altered virtually all ocean ecosystems, at least to some extent, documenting those areas needing the most protection.

ECOLOGY
Effects of Predator Hunting Mode on Grassland Ecosystem Function
O. J. Schmitz
An ecosystem containing actively hunting spiders shows lower plant diversity but higher primary production than one with spiders that sit and wait to ambush their prey.

BIOCHEMISTRY
Axle-Less F$_2$-ATPase Rotates in the Correct Direction
S. Furuike et al.
A molecular rotary motor continues to rotate in the correct direction even when its shaft is deleted, leaving only the rotor head sitting on top of the shaft housing.

GENETICS
A Mouse Model of Mitochondrial Disease Reveals Germline Selection Against Severe mtDNA Mutations
W. Fan et al.
Developing mouse oocytes that harbor highly deleterious mitochondrial DNA mutations are eliminated, minimizing negative impact on population fitness.

MEDICINE
Metal Chelation and Inhibition of Bacterial Growth in Tissue Abscesses
B. D. Corbin et al.
An immune cell–derived protein binds metal ions in infected abscesses, depriving the bacteria of the essential nutrients magnesium and zinc and reducing their growth.

PSYCHOLOGY
The Critical Importance of Retrieval for Learning
J. D. Karpicke and H. L. Roediger III
Students recalled words they had learned the previous week more effectively if they were tested repeatedly in the interim than if they spent the time studying.

M. Abedin and N. King
A close unicellular relative of metazoans unexpectedly contains 23 genes for a cell adhesion protein, suggesting a role for the protein in the evolution of multicellularity.
The Tiredness of the Long-Distance Runner
Leaky calcium channels may cause muscle fatigue, and a new drug could boost performance.

I Hear You, My Monkey Brother
A region of the monkey brain responds preferentially to the voices of other monkeys.

Taking the Heat Off Coral
A natural ocean “thermostat” is counteracting the effects of climate warming.

Overcoming that phony feeling.

PERSPECTIVE: Cell Stress Gives a Red Light to the Mitochondrial Cell Death Pathway
M. E. Guicciardi and G. J. Gores
A prefoldin protein and insulin-like growth factor–binding protein act at the mitochondrion to inhibit apoptosis.

TEACHING RESOURCE: Quantitative Models of Mammalian Cell Signaling Pathways
R. Iyengar
Prepare a graduate-level class covering mathematical modeling of mammalian signaling pathways.

The Gonzo Scientist: Can Scientists Dance?
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Science 319 (5865), 873-969.

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