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COVER
Human cells infected with the protozoan parasite Toxoplasma gondii visualized by scanning electron microscopy. In the foreground are parasites (yellow-green) rupturing out of a dying host cell (blue); in the background is an intact host cell containing a large parasite-filled vacuole. See page 530.

Image: Sasha Meshinchin, Michael Robinson, Bjorn Kafsack, and Vern Carruthers

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Earth's Degassing: A Missing Ethane and Propane Source
G. Etiope and P. Ciccioli
Natural gas seepage contributes far more methane, ethane, and propane to the atmosphere than formerly realized.

Language Phylogenies Reveal Expansion Pulses and Pauses in Pacific Settlement
R. D. Gray et al.
Geographical distribution of Austronesian languages reveals the rate and direction of migrations from Taiwan 5200 years ago.

An Entanglement Filter
R. Okamoto et al.
A useful tool for quantum information processing transmits entangled photons only when they have the same polarization.

Quantum Teleportation Between Distant Matter Qubits
S. Olmschenk et al.
Transporting quantum states between trapped ions one meter apart may enable local storage of information in quantum memories.

Femtosecond XANES Study of the Light-Induced Spin Crossover Dynamics in an Iron(II) Complex
Ch. Bressler et al.
X-ray absorption spectroscopy resolves the dynamics of spin-state interconversions, which take place in less than a picosecond, in a well-studied class of iron compounds.

Complementary Active Sites Cause Size-Selective Reactivity of Aluminum Cluster Anions with Water
P. J. Roach et al.
Water dissociates at similar active sites on anionic aluminum clusters that have different sizes and electronic structure.

Brown Clouds over South Asia: Biomass or Fossil Fuel Combustion?
Ö. Gustafsson et al.
Biomass burning accounts for at least one-half of carbon-rich aerosols in the Asian atmospheric brown cloud that forms each winter.

Genetic Interactions Between Transcription Factors Cause Natural Variation in Yeast
J. Gerke et al.
Adaptive differences in yeast sporulation arise from single-nucleotide mutations in transcription factors regulating sex.

Different T Cell Receptor Signals Determine CD8+ Memory Versus Effector Development
E. Teixeiro et al.
Point mutations in the T cell receptor decide the fate of killer T cells and the development of immunological memory.

Secondary Replicative Function of CD8+ T Cells That Had Developed an Effector Phenotype
O. Banard et al.
Killer T cells that developed during a primary antiviral response can become memory T cells in secondary infections.

Electron Cryomicroscopy of E. coli Reveals Filament Bundles Involved in Plasmid DNA Segregation
J. Salje et al.
The actin-like filaments that power movement of DNA during bacterial cell division form small bundles of three to five filaments near the nucleoid.

Alternative Zippering as an On-Off Switch for SNARE-Mediated Fusion
C. G. Giraudou et al.
A structural motif in the protein complexin may act as a switch during membrane fusion.

Complexin Controls the Force Transfer from SNARE Complexes to Membranes in Fusion
A. Maximov et al.
The protein complexin may act as a force-transferring switch during membrane fusion.

Widespread Increase of Tree Mortality Rates in the Western United States
P. J. van Mantgem et al.
Regional warming is contributing to the recent acceleration of tree deaths seen in undisturbed forests of the western U.S.

The Sphingolipid Transporter Spns2 Functions in Migration of Zebrafish Myocardial Precursors
A. Kawahara et al.
Normal heart development in zebrafish requires the function of a lipid transporter in a membrane surrounding the yolk, a tissue outside of the embryo proper.

The Peopling of the Pacific from a Bacterial Perspective
Y. Moodley et al.
The geographical distribution of strains of a specific human pathogen helps to define patterns of colonization out of Taiwan.

Rapid Membrane Disruption by a Perforin-Like Protein Facilitates Parasite Exit from Host Cells
B. F. C. Kafsack et al.
The human and animal parasite that causes toxoplasmosis escapes from host cells by using a perforin-like protein to make holes in the intracellular vacuole in which it resides.
Coherence Factors in a High-Τc Cuprate Probed by Quasi-Particle Scattering off Vortices
T. Hanaguri et al.
The momentum-dependent coherence factors in a high-temperature superconductor are revealed by introducing magnetic vortices.
10.1126/science.1166138

The Formation of Warm Dense Matter: Experimental Evidence for Electronic Bond Hardening in Gold
R. Ernstorfer et al.
Injecting energy into a gold film can create a transient excited state with stronger bonds prior to melting.
10.1126/science.1162697

Analysis of the Drosophila Segmentation Network Identifies a JNK Pathway Factor Overexpressed in Kidney Cancer
J. Liu et al.
A developmental marker in fruit flies also acts as a marker of renal cell cancer in humans.
10.1126/science.1157669

Axon Regeneration Requires a Conserved MAP Kinase Pathway
M. Hammarlund et al.
Axon regeneration in adult nematode worms has distinct signals that are independent of earlier developmental programs.
10.1126/science.1165527

PROTOCOL: Genome to Kinome—Species-Specific Peptide Arrays for Kinome Analysis
S. Jalal et al.
Marrying bioinformatics and phosphorylation assays enables the empirical analysis of kinomes of multiple species.
CONNECTIONS MAP: Neuro2A Differentiation by Gαo/i Pathway
A. Ma’ayan et al.
Neurite outgrowth can be stimulated by G protein–coupled receptors that signal through Gαi and Gαo proteins.
GLOSSARY
Find out what IRAP, Spred, and DOPA mean in the world of cell signaling.

SCIENCE CAREERS
www.sciencecareers.org/career_magazine
Free Career Resources for Scientists
Mind Matters: Stress, an Uninvited Lab Visitor
I. Levine
Work-related stress is an insidious health hazard.
Lost in Translation
C. Rey
America needs more science writers of color, just as it needs more scientists of color.
Consulting Experience for Doctoral Students in France
E. Pain
A program launched by the French government allows Ph.D. students to sell their skills to nonacademic clients.

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Hazard in the lab.
An active kinase.
Not gone after all.

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Editor's Summary

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