SPECIAL SECTION

Drug Resistance

INTRODUCTION
Deadly Defiance 355

NEWS
The Bacteria Fight Back 356
Collateral Damage: The Rise of Resistant C. difficile
Trench Warfare in a Battle With TB 362
Anti-TB Drugs: And Then There Were None

PERSPECTIVES
Antibiotics and Antibiotic Resistance Genes in Natural Environments 365
J. L. Martinez
Outwitting Multidrug Resistance to Antifungals 367
B. C. Monk and A. Goffeau

>> For related online content, see the Science Podcast, p. 311

NEWS OF THE WEEK
Bush Takes a Final Swipe, and Salute, at CO₂ Emission Curbs 324
Old Samples Trip Up Tokyo Team 324
New Policy Tries to Ease Security Restrictions 325
Stalled Trial for Autism Highlights Dilemma of Alternative Treatments 326
Caribbean Megaeruptions Drove a Global Ocean Crisis 327

SCIENCESCOPE
Two U.S. Labs Vie for Long-Delayed Exotic Nuclei Source 328
Survey Finds Citations Growing Narrower as Journals Move Online 329
>> Report p. 395

NEWS FOCUS
Reinventing Rice to Feed the World 330
Sowing the Seeds of Expertise
Simple Sleepers 334
>> Research Article p. 372
Acoustics ’08 Meeting 338
Sound Science Maps Venetian Canals and Peruvian Ruins
Ultrasound Uses in Medicine Heat Up
Listening to Distant Ice Crack
Snapshots From the Meeting
PLANT SCIENCE
Plant Immunity Requires Conformational Changes of NPR1 via S-Nitrosylation and Thioredoxins
Y. Tada et al.
After a pathogen invades a plant, a protein, usually kept in a multimeric state by S-nitrosylation, is dissociated by thioredoxin, freeing the monomers for defense responses.
10.1126/science.1156970

GEOCHEMISTRY
Ferruginous Conditions Dominated Later Neoproterozoic Deep-Water Chemistry
D. E. Canfield et al.
Low sulfur input caused the deeper ocean to become anoxic and rich in ferrous iron 750 million years ago, a reversal from the more oxidizing conditions of the previous 1 billion years.
10.1126/science.1154499

CELL BIOLOGY
Essential Cytoplasmic Translocation of a Cytokine Receptor–Assembled Signaling Complex
A. Matsuzawa et al.
Degradation of one member of a protein complex that forms when a cytokine receptor is activated causes the complex to move to the cytoplasm, triggering the downstream pathway.
10.1126/science.1157340

TECHNICAL COMMENT ABSTRACTS
MICROBIOLOGY
Comment on “A 3-Hydroxypropionate/4-Hydroxybutyrate Autotrophic Carbon Dioxide Assimilation Pathway in Archaea”
T. J. G. Ettema and S. G. E. Andersson
full text at www.sciencemag.org/cgi/content/full/321/5887/342b
Response to Comment on “A 3-Hydroxypropionate/4-Hydroxybutyrate Autotrophic Carbon Dioxide Assimilation Pathway in Archaea”
I. A. Berg, D. Kockelkorn, W. Buckel, G. Fuchs
full text at www.sciencemag.org/cgi/content/full/321/5887/342c

BREVIAR
ICE SCIENCE
Ice Scour Disturbance in Antarctic Waters
D. A. Smale et al.
Icebergs have increasingly scoured the coastlines along the West Antarctic Peninsula as its ice shelves and glaciers have waned, affecting benthic marine communities.

RESEARCH ARTICLE
NEUROSCIENCE
Identification of SLEEPLESS, a Sleep-Promoting Factor
K. Koh et al.
A search for genetic modulators of sleep in Drosophila identified a gene encoding a brain protein that is likely secreted and is required for recovery from sleep deprivation. >> News story p. 334

REPORTS
ASTRONOMY
Properties of Gamma-Ray Burst Progenitor Stars
P. Kumar, R. Narayan, J. L. Johnson
Analysis of the x-ray afterglow of intense gamma-ray bursts shows that the bursts result from consumption of the outer part of a dense star and define the star’s rotation rate.

347 & 417
A newly described type of protein kinase found in the Golgi
H. O. Ishikawa

Four-jointed Is a Golgi Kinase That Phosphorylates
A Subset of Cadherin Domains
H. O. Ishikawa et al.

The abnormally low activation in the frontal cortex of individuals with
Obsessive-Compulsive Disorder and Their
Orbitofrontal Dysfunction in Patients with
A. H. Bass, E. H. Gilland, R. Baker

Bottom-Up Dependent Gating of Frontal Signals in
Early Visual Cortex
L. B. Ekstrom et al.

The conserved neural circuitry for vocal communication in fish and
other tetrapods suggests that this function may have originated prior to
the evolution of bony vertebrates.
A. H. Bass, E. H. Gilland, R. Baker

Orbitofrontal Dysfunction in Patients with
Obsessive-Compulsive Disorder and Their
Unaffected Relatives
S. R. Chamberlain et al.

The abnormally low activation in the frontal cortex of individuals with
obsessive compulsive disorder and their close relatives may confer a
risk for the disease.
A new drug discovery paradigm focuses on identifying and targeting cellular elements of the host that are exploited by pathogens.

**GLOSSARY**
Find out what DILP, HRE, and OGT mean in the world of cell signaling.

**EVENTS**
Check out the more than 50 cell signaling–related meetings happening in the second half of 2008.

Separate individual or institutional subscriptions to these products may be required for full-text access.
Science 321 (5887), 313-423.

ARTICLE TOOLS
http://science.sciencemag.org/content/321/5887

PERMISSIONS
http://www.sciencemag.org/help/reprints-and-permissions