SOCIOLOGY
The Spreading of Disorder
K. Keizer, S. Lindenberg, L. Steg
Upon observing signs of social disorder (such as littering or graffiti), individuals are more likely to disobey a variety of social rules, including prohibitions against theft.
>> News story p. 1175
10.1126/science.1161405

CELL BIOLOGY
Dynamic Proteomics of Individual Cancer Cells in Response to a Drug
A. A. Cohen et al.
Cells that escape death from a chemotherapy drug express a different array of proteins from genetically identical ones that died, which may help to inform cancer therapeutics.
>> News story p. 1176
10.1126/science.1160165

REVIEW
PSYCHOLOGY
The Psychology of Transcending the Here and Now
N. Liberman and Y. Trope

BREVIA
ECOLOGY
Fossil Pollen as a Guide to Conservation in the Galápagos
J. F. N. van Leeuwen et al.
Fossil pollen shows that six plant species in the Galápagos, presumed to be invasive, had actually been native to the islands for thousands of years before human colonization.
>> Science Podcast

RESEARCH ARTICLES
CHEMISTRY
Time-Resolved Dynamics in N₂O₄ Probed Using High Harmonic Generation
W. Li et al.
Electrons can be ejected from multiple orbitals of N₂O₄ by exploiting different stages in its excited vibrations, yielding an attosecond light probe of molecular dynamics.
>> Perspective p. 1194

PHYSICS
Broadband Invisibility by Non-Euclidean Cloaking
U. Leonhardt and T. Tyc
In theory, materials with a negative refractive index deployed in a curved, non-Euclidean space can provide a route to cloaking and invisibility across a range of wavelengths.
10.1126/science.1166332

CHEMISTRY
Real-Time DNA Sequencing from Single Polymerase Molecules
J. Eid et al.
Arrays of narrow waveguides can record the action of a DNA polymerase stepping along a primer template, potentially providing a way to sequence DNA molecules.
>> Science Podcast
10.1126/science.1162986

RESEARCH ARTICLES CONTINUED...
BIOCHEMISTRY
The 2.6 Angstrom Crystal Structure of a Human A₂A Adenosine Receptor Bound to an Antagonist
V.-P. Jaakola et al.
The ligand binding pocket of the caffeine-binding human adenosine receptor has a different position and orientation than that of other G protein–linked receptors.

ASTRONOMY
The Fermi Gamma-Ray Space Telescope Discovers the Pulsar in the Young Galactic Supernova Remnant CTA 1
A. A. Abdo et al.
The Fermi Space Telescope has detected a gamma-ray pulsar associated with a young supernova remnant, implying that such stars may be unidentified gamma-ray sources.
>> Perspective p. 1193

ASTRONOMY
Observation of Pulsed γ-Rays Above 25 GeV from the Crab Pulsar with MAGIC
The MAGIC Collaboration
The MAGIC telescope has detected higher-energy, pulsed gamma rays from the Crab pulsar and a threshold suggesting that they are emitted from the outer magnetosphere.
>> Perspective p. 1193

PHYSICS
Ab Initio Determination of Light Hadron Masses
S. Dürr et al.
A quantum electrodynamics model that includes a full representation of quarks and their electromagnetic interactions accurately determines the masses of neutrons and protons.
>> Perspective p. 1198
REPORTS CONTINUED...

PHYSICS
4D Imaging of Transient Structures and Morphologies 1227 in Ultrafast Electron Microscopy
B. Barwick et al.
Imaging with single electrons can track structural dynamics of gold and graphite in real space with femtosecond temporal resolution and angstrom spatial resolution.

CHEMISTRY
High Harmonic Generation from Multiple Orbitals 1232 in N₂
B. K. McFarland et al.
Electron ejection from multiple N₂ orbitals, controlled by the molecule’s orientation relative to a laser, produces attosecond light spectra that can reveal molecular dynamics. >> Perspective p. 1194

PLANETARY SCIENCE
Radar Sounding Evidence for Buried Glaciers in the Southern Mid-Latitudes of Mars 1235
J. W. Holt et al.
Radar data from the Mars Reconnaissance Orbiter show that a series of lobate landforms at low latitudes are composed primarily of massive ice covered by debris.

EVOLUTION
Variation in Evolutionary Patterns Across the Geographic Range of a Fossil Bivalve 1238
M. Grey, J. W. Haggart, P. L. Smith
Within a fossil bivalve genus, evolution tended to occur as a random walk at the highest latitudes and to be in stasis mode in deep marine environments.

EVOLUTION
Selfish Genetic Elements Promote Polyandry in a Fly 1241
T. A. R. Price et al.
Genes that confer a deleterious sex ratio in Drosophila also decrease male fertility and promote repetitive mating in females, providing a possible explanation of polyandry.

CELL BIOLOGY
Regulation of Microtubule Dynamics by Reaction Cascades Around Chromosomes 1243
C. A. Athale et al.
A reaction-diffusion model involving regulatory molecules and a microtubule-stabilizing phosphoprotein predicts the spatial distribution of microtubules during cell division.

DEVELOPMENTAL BIOLOGY
Canonical Wnt Signaling Regulates Organ-Specific Assembly and Differentiation of CNS Vasculature 1247
J. M. Stenman et al.
In mice, two specialized ligands for a key developmental signaling pathway are produced by neuroepithelial cells and direct endothelial cells to form the blood-brain barrier. >> Perspective p. 1195

MEDICINE
Regulation of Pancreatic β Cell Mass by Neuronal Signals from the Liver 1250
J. Imai et al.
In obese mice, fat tissue stimulates proliferation of insulin-producing pancreatic cells via a neural relay through the liver, contributing to symptoms of metabolic syndrome.

ECOLOGY
Control of Toxic Marine Dinoflagellate Blooms by Serial Parasitic Killers 1254
A. Chambouvet, P. Morin, D. Marie, L. Guillou
As successive populations of protists have caused summer red tides in France, each has been killed off by a distinct, persistent parasite, establishing a self-regulating ecosystem.

IMMUNOLOGY
Antimicrobial Defense and Persistent Infection in Insects 1257
E. R. Haine, Y. Moret, M. T. Siva-Jothy, J. Roff
Flies fight some infections by quickly engulfing bacteria in phagocytic cells then deploying antimicrobial peptides, a system that avoids bacterial resistance. >> Perspective p. 1199

SOCIOLGY
Multi-University Research Teams: Shifting Impact, Geography, and Stratification in Science 1259
B. F. Jones, S. Wuchty, B. Uzzi
Over the past 30 years, scientific papers have become increasingly likely to be written by teams of authors from more than one of a small number of elite universities.

Special Feature
Scientists as Financial Analysts

Finance’s Quant(u)m Mechanics 1264
Analyzing Scientific Investments 1266
>> See Science Careers section p. 1157
or go to www.sciencemag.org: Science Podcast

Printed on
30% post-consumer recycled paper.

CONTENTS continued >>
Regulating TGF-β signaling from the nucleus.

SCIENCE SIGNALING
www.sciencesignaling.org
THE SIGNAL TRANSDUCTION KNOWLEDGE ENVIRONMENT

EDITORIAL GUIDE: Focus Issue—An Expanding World for TGF-β Signaling
N. R. Gough
With new modes of regulation and new functions for members of the pathway, TGF-β breaks the canonical barrier.

PERSPECTIVE: Holding Their Own—The Noncanonical Roles of Smad Proteins
L. L. Hoover and S. W. Kubalak
There are TGF-β–independent regulatory mechanisms and functions of Smads.

PERSPECTIVE: PCTA—A New Player in TGF-β Signaling
F. Liu
The distribution of promyelocytic leukemia protein between the nucleus and cytoplasm controls Smad activation.

FORUM: Highlights from a TGF-β Workshop
N. R. Gough
In addition to talks emphasizing the role of TGF-β in cancer, many speakers shared memories of Anita Roberts, scientist mentor, colleague, and friend.

NETWATCH: Cell Biology Promotion
Find an array of images, animations, and slides for teaching cell biology and signal transduction; in Educator Sites.

NETWATCH: Pfam
Explore the structures and functions of thousands of protein domain families; in Protein Databases.

SCIENCE CAREERS
www.sciencecareers.org/career_development
FREE CAREER RESOURCES FOR SCIENTISTS

Special Feature: Scientists as Financial Analysts
A. Kotok
Despite today’s headlines, it might be a good time to plan for a career as a financial analyst.

Science Careers Podcast: Scientists as Quants
C. Wald
Financial systems executive Lee Maclin explains why scientists often succeed as quantitative analysts.

>> See Scientists as Financial Analysts feature p. 1264

Separate individual or institutional subscriptions to these products may be required for full-text access.