CONTENTS

EDITORIAL
1405 Scientist Citizens
Christopher Reddy

NEWS OF THE WEEK
1412 A First Step in Relaxing Restrictions on Stem Cell Research
1413 England Spreads Its Funds Widely, Sparking Debate
1414 Humane Society Launches Offensive to Ban Invasive Chimp Research
1415 Report Puts NASA’s Solar Program Under a Cloud
1416 Paul Keim on His Life With the FBI During the Anthrax Investigation
1417 Biologists Muscle Up With Major New Protein Facilities
1418 In Dune Map, Titan’s Winds Seem to Blow Backward
1419 Ice Age No Barrier to ‘Peking Man’
1419 From the Science Policy Blog

NEWS FOCUS
1420 How Much Coal Remains?
>> Science Podcast
1422 A Memorable Device
1424 Fathoming Matter’s Heart Unbound

LETTERS
1426 A National Initiative for Social Participation
B. Shneiderman
Indian Neutrino Detector: The Elephant in the Room
M. W. Fox
Indian Neutrino Detector: Environmental Costs
P. Davidar
Response
N. K. Mondal

CORRECTIONS AND CLARIFICATIONS
1429

TECHNICAL COMMENT ABSTRACTS
1429

BOOKS ET AL.
1430 Fermilab
L. Hoddeson et al., reviewed by R. W. Seidel
1431 Einstein’s Telescope
E. Gates, reviewed by P. Ferreira

POLICY FORUM
1432 Wood Energy in America
D. deB. Richter Jr. et al.

PERSPECTIVES
1434 Shifting Westerlies
J. R. Toggweiler
>> Research Article p. 1443
1435 Inducing Chirality with Circularly Polarized Light
R. J. Cave
1436 The Evolution of Ribozyme Chemistry
T. J. Wilson and D. M. J. Lilley
1438 Emergence of Connectivity in Networks
T. Bohman
>> Report p. 1453
1439 Paternal Patterning Cue
U. Grossniklaus
>> Report p. 1485
1440 Linking the Loops
C. R. McClung
>> Report p. 1481

BREVIA
1442 Time-Variable Deformation in the New Madrid Seismic Zone
E. Calais and S. Stein
Minimal strain has accumulated across the New Madrid seismic zone of the Central United States during the past several years.

CONTENTS continued >>

COVER
False-color scanning electron micrograph of oriented vaterite, a crystalline polymorph of calcium carbonate, formed through template-controlled nucleation. Formation starts with the aggregation of prenucleation clusters forming an amorphous phase from which the crystals develop at the template surface. This experimental process may be analogous to the natural formation of seashells and other marine skeletons. See page 1455.

Image: W. J. E. M. Habraken and C. J. van den Hoogen/ Eindhoven University of Technology

DEPARTMENTS
1401 This Week in Science
1406 Editors’ Choice
1408 Science Staff
1409 Random Samples
1411 Newsmakers
1507 New Products
1508 Science Careers
RESEARCH ARTICLES

1443 Wind-Driven Upwelling in the Southern Ocean and the Deglacial Rise in Atmospheric CO2
R. F. Anderson et al.
Ventilation of carbon dioxide from the Southern Ocean preceded the last deglaciation.
>> Perspective p. 1434

1448 The Dynamic Control of Kiss-And-Run and Vesicular Reuse Probed with Single Nanoparticles
Q. Zhang et al.
A transient form of vesicle fusion that allows vesicle reuse is more prevalent early during synaptic response to a train of stimuli.

REPORTS

1453 Explosive Percolation in Random Networks
D. Achlioptas et al.
Simulations show that transitions in the connectivity within a random network can occur discontinuously.
>> Perspective p. 1438

1455 The Initial Stages of Template-Controlled CaCO3 Formation Revealed by Cryo-TEM
E. M. Pouget et al.
Amorphous mineral particles attached to an ordered organic monolayer play a role in the crystallization of calcium carbonate.

1458 Self-Repairing Oxetane-Substituted Chitosan Polyurethane Networks
B. Ghosh and M. W. Urban
A polymer is modified to include a reactive group that can repair mechanical damage by exposure to ultraviolet light.
>> Science Podcast

1461 Nonporous Organic Solids Capable of Dynamically Resolving Mixtures of Diiodoperfluoroalkanes
P. Metrangolo et al.
An ionic crystal that traps iodine-capped fluorocarbons selectively and reversibly has potential for industrial separations.

1464 Time-Resolved Molecular Frame Dynamics of Fixed-in-Space CS2 Molecules
C. Z. Bisgaard et al.
Transient alignment of CS2 molecules by a short laser pulse allows resolution of otherwise obscured reaction dynamics.

1468 Clear Sky Visibility Has Decreased over Land Globally from 1973 to 2007
K. Wang et al.
The concentration of atmospheric aerosols has decreased over Europe but not over the tropics or the Southern Hemisphere.

1470 Recent Changes in Phytoplankton Communities Associated with Rapid Regional Climate ChangeAlong the Western Antarctic Peninsula
M. Montes-Hugo et al.
Chlorophyll concentration has decreased by 12% over 30 years of ice retreat, with consequences for vertebrate populations.

1473 A Recessive Mutation in the APP Gene with Dominant-Negative Effect on Amyloidogenesis
G. Di Fede et al.
A mutation in the amyloid precursor protein gene causes Alzheimer’s disease in homozygotic patients.

1477 Structure of the Anaphase-Promoting Complex/Cyclosome Interacting with a Mitotic Checkpoint Complex
F. Herzog et al.
Electron microscopy captures cell cycle checkpoint proteins in the act of inhibiting cell division in HeLa cells.

1481 A Functional Genomics Approach Reveals CHE as a Component of the Arabidopsis Circadian Clock
J. L. Pruneda-Paz et al.
A transcription factor (CHE) binds the promoter of the clock gene CCA1, adding to the molecular clock circuitry in plants.
>> Perspective p. 1440

1485 Paternal Control of Embryonic Patternin Arabidopsis thaliana
M. Bayer et al.
Transcripts of a cytoplasmic gene from sperm are translated after fertilization and control asymmetric zygotic division.
>> Perspective p. 1439

1488 Preferential Generation of Follicular B Helper T Cells from Foxp3+ T Cells in Gut Peyer’s Patches
M. Tsuji et al.
Suppressor T cells selectively differentiate into helper T cells in the mouse gut and thereby promote immune homeostasis.

1492 Selective Erasure of a Fear Memory
J.-H. Han et al.
Fear memory in mice is erased by experimental killing of a subpopulation of lateral amygdalear neurons.
>> Science Podcast

1496 Human Substantia Nigra Neurons Encode Unexpected Financial Rewards
K. A. Zaghoul et al.
Dopamine neurons in the human mid-brain are activated by unexpected rewards and differentiate positive and negative feedback.

1500 RSY-1 Is a Local Inhibitor of Presynaptic Assembly in C. elegans
M. R. Patel and K. Shen
The protein RSY-1 inhibits synapse formation by antagonizing assembly molecules during presynaptic development.

1503 The Role of Fingerprints in the Coding of Tactile Information Probed with a Biomimetic Sensor
J. Scheibert et al.
Fingertip ridges improve the tactile perception of fine features.

CONTENTS continued >>
Two Black Holes on a Collision Course

Series of unlikely events brings dead gene researchers say.

Stone-throwing ape’s actions are premeditated,