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Christopher Reddy

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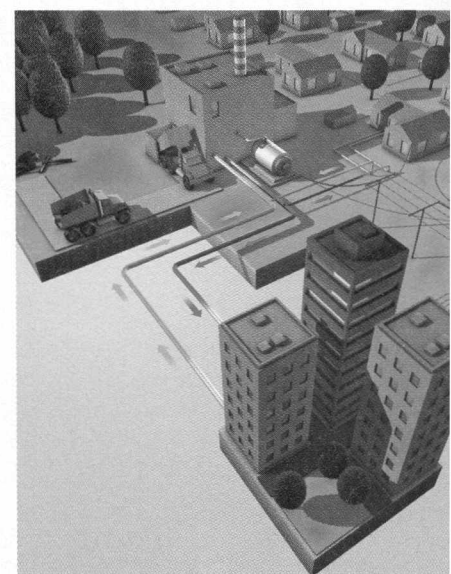
BREVIA

- 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.

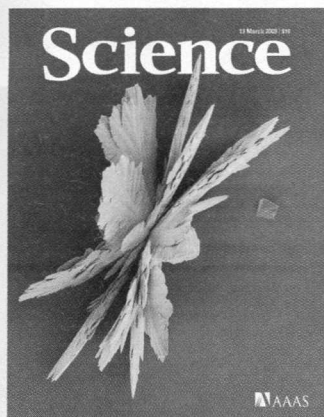
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COVER

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*

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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. Metrangola 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 Change Along 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.
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- 1485 **Paternal Control of Embryonic Patterning in *Arabidopsis thaliana***

M. Bayer et al.

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- 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**

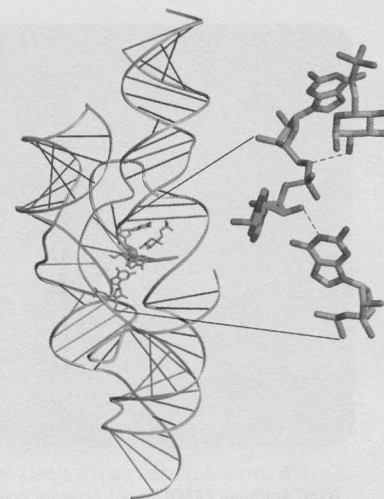
J.-H. Han et al.

Fear memory in mice is erased by experimental killing of a subpopulation of lateral amygdala neurons.
>> *Science Podcast*

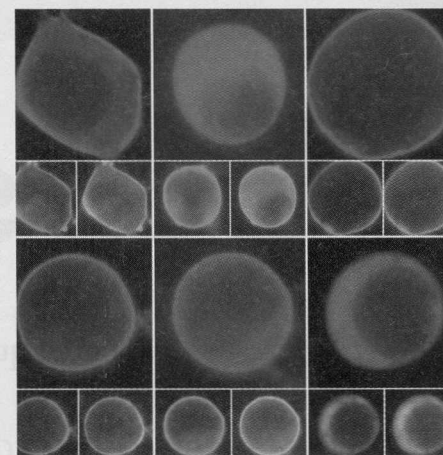
- 1496 **Human Substantia Nigra Neurons Encode Unexpected Financial Rewards**

K. A. Zaghloul et al.

Dopamine neurons in the human mid-brain are activated by unexpected rewards and differentiate positive and negative feedback.



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- 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.

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SCIENCEONLINE

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Local DNA Topography Correlates with Functional Noncoding Regions of the Human Genome

S. C. J. Parker et al.

The molecular shape of DNA, as well as the nucleotide sequence itself, can have functional consequences and constrain evolution.

10.1126/science.1169050

Circadian Control of the NAD⁺ Salvage Pathway by CLOCK-SIRT1

Y. Nakahata et al.

A transcriptional-enzymatic feedback loop controls interactions between metabolism and circadian rhythms in mouse cells.

10.1126/science.1170803

In Vivo Analysis of Dendritic Cell Development and Homeostasis

K. Liu et al.

The developmental pathway of lymphoid dendritic cells from myeloid progenitors is traced in mice.

10.1126/science.1170540

Solar Power Wires Based on Organic Photovoltaic Materials

M. R. Lee et al.

A transparent polymer coating allows optics to compensate for the shadowing effects of a metal wire electrode.

10.1126/science.1168539

TECHNICALCOMMENTS

Comment on "Detection, Stimulation, and Inhibition of Neuronal Signals with High-Density Nanowire Transistor Arrays"

P. Fromherz and M. Voelker

full text at www.sciencemag.org/cgi/content/full/323/5920/1429b

Response to Comment on "Detection, Stimulation, and Inhibition of Neuronal Signals with High-Density Nanowire Transistor Arrays"

B. P. Timko et al.

full text at www.sciencemag.org/cgi/content/full/323/5920/1429c

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Stone-throwing ape's actions are premeditated, researchers say.

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Series of unlikely events brings dead gene back to life.

Two Black Holes on a Collision Course

Astronomers find cosmic beasts in close orbit.

SCIENCE SIGNALING

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RESEARCH ARTICLE: Rac1 Is a Critical Mediator of Endothelium-Derived Neurotrophic Activity

N. Sawada et al.

Rac1 drives transcriptional programs in endothelial cells that alter endothelial barrier property and expression of neurotrophic factors.

PERSPECTIVE: When the Endogenous Hallucinogenic Trace Amine N,N-Dimethyltryptamine Meets the Sigma-1 Receptor

T.-P. Su et al.

An endogenous hallucinogenic compound binds to a ligand-gated chaperone.

PERSPECTIVE: Reversible Phosphorylation of Histidine Residues in Proteins from Vertebrates

S. Klumpp and J. Kriegelstein

The importance of kinases and phosphatases to signaling mechanisms is extended by their regulation of histidine residues.

NETWATCH: PubChem

Access a database of structural, chemical, and functional attributes of small bioactive molecules; in Bioinformatics Resources.

NETWATCH: Oncomine Research Platform

Compare data from various sources to identify commonalities in cancer gene expression profiles; in Bioinformatics Resources.

SCIENCECAREERS

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Free Career Resources for Scientists

The One-Minute Talk

V. McGovern

You need to know how to respond quickly when asked "Tell me about yourself," whether in an elevator or anywhere else.

Opportunities: Kauffman's Twelve

P. Fiske

A new fellowship program will prepare 12 life scientists each year to commercialize their research findings.

Adding an Artistic Dimension to Science

E. Pain

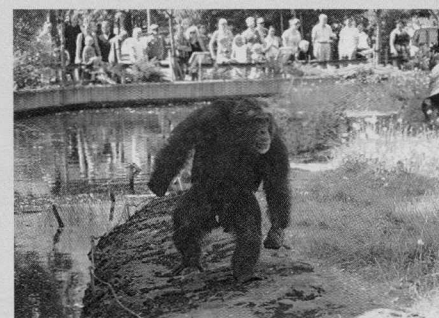
Blending a passion for arts into a scientific career can greatly enrich both experiences.

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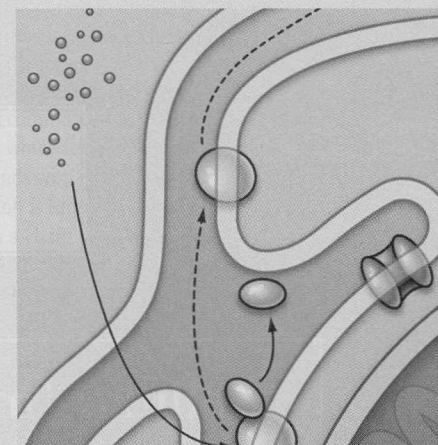
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Translocating the sigma-1 receptor.

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Science Policy News and Analysis

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