



COVER

Finite element method simulation of an *Arabidopsis* shoot apical meristem where two cells have been laser-ablated. The color map indicates the von Mises stress (a measure of distortional stress); the white lines mark the directions of maximal principal stress, which are circumferential around the ablated cells, in agreement with experimentally determined microtubule orientations. See page 1650.

Image: Pawel Krupinski/Lund University

DEPARTMENTS

- 1603 Science Online
- 1605 This Week in *Science*
- 1610 Editors' Choice
- 1612 Contact *Science*
- 1615 Random Samples
- 1617 Newsmakers
- 1721 New Products
- 1722 Science Careers

EDITORIAL

- 1609 Reduce Administrative Burden
by Alan I. Leshner

NEWS OF THE WEEK

- Delays in Mars Mission Will Ripple Across Space Science 1618
- A Fresh Start for Embryonic Stem Cells 1619
- Sotto Voce, LHC Repair Plan Points to Weaknesses in Original Design 1620
- How Kansas Nabbed the New Bio- and Agro-Defense Lab 1620
- SCIENCE SCOPE** 1621
- Researchers Could Face More Scrutiny of Outside Income 1622
- Malaria Vaccine Comes Another Step Closer 1622
- Biosummit Seeks to Draw Obama's Attention to the Life Sciences 1623

NEWS FOCUS

- Crazy Money 1624
>> Science Podcast
- FerryBoxes Begin to Make Waves 1627
Logbooks Record Weather's History
- When Juniper and Woody Plants Invade, Water May Retreat 1630



LETTERS

- Testing the Limits of "Concrete" and "Generic" 1632
J.-C. Mourrat
- "Concrete" Examples a Fraction Too Abstract
L. J. Cutrona Jr.
- Concrete Examples Must Jibe with Experience *S. K. Reed*
Response *J. A. Kaminski et al.*
- Gene Regulation in Evolution: A History *J. W. Guala*

CORRECTIONS AND CLARIFICATIONS 1634

BOOKS ET AL.

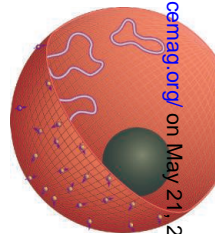
- Autism's False Prophets** Bad Science, Risky Medicine, and the Search for a Cure *P. A. Offit*, reviewed by *C. Lord* 1635
- The Fundamentals of Brain Development** Integrating Nature and Nurture *J. Stiles*, reviewed by *M. Sur* 1636

POLICY FORUM

- Bracing for Islamic Creationism 1637
S. Hameed

PERSPECTIVES

- Stringing Together a Solid State 1639
S. Hartnoll
- Chaperone Puts the Brakes On 1640
V. Lukacs-Kornek and S. J. Turley >> Report p. 1705
- Why Can't We Test Our Way to Absolute Food Safety? 1641
S. Kennedy
- On Growth and Force 1643
B. Mulder >> Research Article p. 1650
- An Almost-Complete Movie 1644
G. Diallinas >> Research Article p. 1655
- Clutch Dynamics 1646
Y. Aratyn-Schaus and M. L. Gardel >> Report p. 1687
- Pressing Levers or Pulling Strings? 1647
L. A. Amos >> Report p. 1691



1639

Downloaded from <http://science.sciencemag.org/> on May 21, 2019

CONTENTS continued >>

SCIENCE EXPRESS

www.sciencexpress.org

PHYSICS

Quantum Criticality in the Electrical Resistivity of $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$

R. A. Cooper et al.

High magnetic fields can strip away the superconducting regime of a cuprate superconductor, revealing the presence of an enigmatic quantum critical point.

10.1126/science.1165015

CHEMISTRY

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.

10.1126/science.1165733

MOLECULAR BIOLOGY

Chromatin-Associated Periodicity in Genetic Variation Downstream of Transcriptional Start Sites

S. Sasaki et al.

The periodic wrapping of DNA around nucleosomes in chromatin determines a periodic variation in mutation type and frequency around transcription start sites in a fish.

10.1126/science.1163183

DEVELOPMENTAL BIOLOGY

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.

10.1126/science.1167449

GENETICS

A Single Gene Causes Both Male Sterility and Segregation Distortion in *Drosophila* Hybrids

N. Phadnis and H. A. Orr

A *Drosophila* gene that causes sterility in the offspring of two species and may be important for speciation causes increased transmission of itself to progeny.

10.1126/science.1163934

GENETICS

A Mouse Speciation Gene Encodes a Meiotic Histone H3 Methyltransferase

O. Mihola et al.

A gene responsible for sterility in the offspring of two mouse species, and therefore important in speciation, regulates gene expression via methylation in chromatin.

10.1126/science.1163601

TECHNICAL COMMENT ABSTRACTS

GENETICS

Comment on "An Association Between the Kinship and Fertility of Human Couples" 1634

R. Labouriau and A. Amorim

[full text at www.sciencemag.org/cgi/content/full/322/5908/1634b](http://www.sciencemag.org/cgi/content/full/322/5908/1634b)

Response to Comment on "An Association Between the Kinship and Fertility of Human Couples"

A. Helgason et al.

[full text at www.sciencemag.org/cgi/content/full/322/5908/1634c](http://www.sciencemag.org/cgi/content/full/322/5908/1634c)

BREVIA

ECOLOGY

Compromised Survivorship in Zoo Elephants 1649

R. Clubb, M. Rowcliffe, P. Lee, K. U. Mar, C. Moss, G. J. Mason

Data from over 4500 elephants show that wild elephants live for approximately twice as long as those kept in European zoos.

>> [Science Podcast](#)

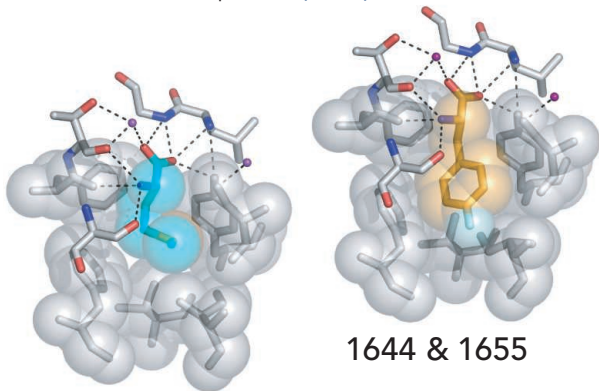
RESEARCH ARTICLES

PLANT SCIENCE

Developing Patterning by Mechanical Signals 1650

in *Arabidopsis*

O. Hamant et al.

The growth pattern of plant meristem, the group of stem cells at the tip of a growing shoot, is controlled by a microtubule-based mechanical feedback loop. >> [Perspective p. 1643](#)

1644 & 1655

RESEARCH ARTICLES CONTINUED...

BIOCHEMISTRY

A Competitive Inhibitor Traps LeuT in an Open-to-Out Conformation 1655

S. K. Singh, C. L. Piscitelli, A. Yamashita, E. Gouaux

A bacterial protein similar to mammalian neurotransmitter transporters is blocked when a competitive inhibitor prevents the formation of the normal intermediate state. >> [Perspective p. 1644](#)

REPORTS

CHEMISTRY

Gold-Catalyzed Synthesis of Aromatic Azo Compounds from Anilines and Nitroaromatics 1661

A. Grirrane, A. Corma, H. Garcia

Gold nanoparticles can catalyze a direct, environmentally friendly route to industrially important azobenzene dye compounds from either aniline or nitrobenzene precursors.

CHEMISTRY

Collective Reactivity of Molecular Chains Self-Assembled on a Surface 1664

P. Maksimovich, D. C. Sorescu, K. D. Jordan, J. T. Yates Jr.

The paired sulfur bonds in dimethyldisulfide molecules, which assemble in long chains on gold surfaces, can be rearranged by injecting an electron into the end of the chain.

CHEMISTRY

Mechanism of Threading a Polymer Through a Macrocyclic Ring 1668

A. B. C. Deutman et al.

A polymer threads through a large ring-shaped molecule faster when it is long enough to bind to the outside of the ring first, but not too long that it cannot easily loop into the hole.

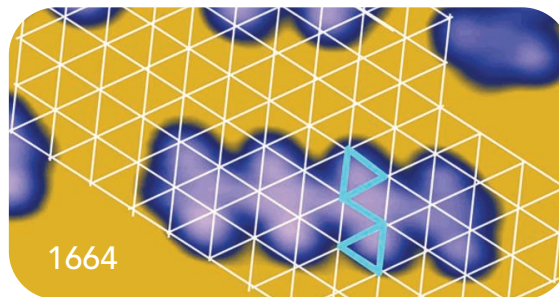
CLIMATE CHANGE

A Dynamic Marine Calcium Cycle During the Past 28 Million Years 1671

E. M. Griffith, A. Paytan, K. Caldeira, T. D. Bullen, E. Thomas

The isotopic composition of calcium in marine carbonates indicates that the calcium cycle has been dynamic over the past 28 million years and closely linked to climate.

CONTENTS continued >>>



REPORTS CONTINUED...

GEOLOGY

Earthquake Supercycles Inferred from Sea-Level Changes Recorded in the Corals of West Sumatra 1674
K. Sieh et al.

Uplift records from corals imply that the Sumatra plate boundary ruptured in the 1300s, 1500s, and in 1797 and 1833; a 2007 temblor may mark the initiation of a next series of quakes.

GEOCHEMISTRY

Shock Metamorphism of Bosumtwi Impact Crater Rocks, Shock Attenuation, and Uplift Formation 1678

L. Ferrière, C. Koeberl, B. A. Ivanov, W. U. Reimold
Microscale deformation features in a drill core through an impact crater and a model of the impact history show that the central uplift in the crater was produced by brittle faults.

SOCIOLOGY

The Spreading of Disorder 1681
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.

DEVELOPMENTAL BIOLOGY

Germ Cell–Intrinsic and –Extrinsic Factors Govern Meiotic Initiation in Mouse Embryos 1685

Y. Lin, M. E. Gill, J. Koubova, D. C. Page
Mouse germ cells begin meiosis for sperm or egg production only when they both are stimulated by the hormone retinoic acid and express a particular RNA-binding protein.

BIOPHYSICS

Traction Dynamics of Filopodia on Compliant Substrates 1687

C. E. Chan and D. J. Odde
A model that predicts that substrate/surface stiffness acts through a cellular motor-clutch mechanism to alter retrograde flow rates and traction is confirmed in chick neurons. >> *Perspective p. 1646*

BIOCHEMISTRY

Structure and Functional Role of Dynein’s Microtubule-Binding Domain 1691

A. P. Carter et al.
ATP hydrolysis by the molecular motor dynein transmits a structural change to its microtubule-binding domain, determining movement direction along the microtubule. >> *Perspective p. 1647*

MEDICINE

Genomic Loss of microRNA-101 Leads to Overexpression of Histone Methyltransferase EZH2 in Cancer 1695

S. Varambally et al.
In some human prostate cancers, a genomic deletion eliminates a key regulatory microRNA, which results in disruption of gene-silencing mechanisms.

NEUROSCIENCE

Modafinil Shifts Human Locus Coeruleus to Low-Tonic, High-Phasic Activity During Functional MRI 1700

M. J. Minzenberg et al.
Brain images of humans treated with a cognitive enhancing drug show increased task-oriented activity in a brainstem nucleus and confirm that this region controls cognition.

GENETICS

A Null Mutation in Human *APOC3* Confers a Favorable Plasma Lipid Profile and Apparent Cardioprotection 1702

T. J. Pollin et al.
A mutation resulting in a lifelong decrease in the expression of a protein that inhibits triglyceride hydrolysis may protect against cardiovascular disease.

IMMUNOLOGY

Regulation of Dendritic Cell Migration by CD74, the MHC Class II–Associated Invariant Chain 1705

G. Faure-André et al.
By binding to a myosin, an immune-specific protein known to control antigen processing also regulates the migration of dendritic cells, possibly coordinating the two functions. >> *Perspective p. 1640*

CELL BIOLOGY

A Role for the ESCRT System in Cell Division in Archaea 1710

R. Y. Samson, T. Obita, S. M. Freund, R. L. Williams, S. D. Bell
A class of proteins required for membrane trafficking and cytokinesis in eukaryotes is also unexpectedly required in some Archaea for cell division.

CELL BIOLOGY

De Novo Formation of a Subnuclear Body 1713

T. E. Kaiser, R. V. Intine, M. Dundr
The Cajal body, a nuclear structure for small ribonucleoprotein metabolism, can self-assemble from any one of its components immobilized on a substrate.

MOLECULAR BIOLOGY

The *Air* Noncoding RNA Epigenetically Silences Transcription by Targeting G9a to Chromatin 1717

T. Nagano et al.
Air, a large noncoding RNA, interacts with chromatin at a particular promoter, recruiting a histone methyltransferase to silence gene expression in an allele-specific manner.



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CONTENTS continued >>>



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A. M. VanHook

Cell signaling events play a key role in the induction, regulation, and maintenance of organ development.

RESEARCH ARTICLE: Analysis of Metagene Portraits Reveals Distinct Transitions During Kidney Organogenesis

I. Tsigelny, V. Kouznetsova, D. E. Sweeney, W. Wu, K. T. Bush, S. K. Nigam

Grouping microarray expression data into metagenes, followed by organization of these gene clusters into self-organizing maps, reveals distinct stages of kidney organogenesis.

REVIEW: De Novo Organ Formation from Differentiated Cells—Root Nodule Organogenesis

M. Crespi and F. Frugier

Root nodule organogenesis in legumes is initiated by bacterial signals and directed by plant signaling pathways.

PERSPECTIVE: Intercellular Peptide Signals Regulate Plant Meristematic Cell Fate Decisions

J. E. Gray, S. Casson, L. Hunt

By controlling stem cell fate, secreted peptides control the formation of many plant cell types.



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