

EDITORIAL

- 579 Meeting Global Challenges
Phillip A. Sharp and Alan I. Leshner

NEWS OF THE WEEK

- 583 A roundup of the week's top stories

NEWS & ANALYSIS

- 586 Top Choice for French Post Drops Out in Industry Flap
- 587 Heat Wave Forecasts Debut in Scorching Australia
- 588 Southern Hemisphere Storms Pulsate to a 25-Day Beat, New Papers Show
>> *Report p. 641*
- 589 A Former Surgeon General Lends His Support to E-Cigarettes
- 590 China Builds Mammoth Detector to Probe Mysteries of Neutrino Mass
- 591 As Lionfish Invade, Divers Defend Threatened Ecosystems

NEWS FOCUS

- 592 The Mountaintop Witness
- 596 Peering Into Peer Review
Making Every Scientist a Research Funder

SPECIAL FEATURE

- 599 2013 International Science & Engineering Visualization Challenge
*For related online content, go to <http://scim.ag/vischall2013>
>> Slideshow*

LETTERS

- 611 Airline Policies: Sickening Results?
B. Rothschild
- China's Ivory Market: The Elephant in the Room
S. Huang and Q. Weng
- Maritime Biosecurity Adrift
P. E. Hulme
- Science for Sale: Inflated Collaboration Claims
M. Wang
- Response
M. Hvistendahl

612 CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.

- 613 Life Out of Sequence
H. Stevens, reviewed by M. Fortun
- 614 Medical Illuminations
H. Wainer, reviewed by B. Shneiderman

POLICY FORUM

- 615 Scientific Diversity Interventions
C. A. Moss-Racusin et al.

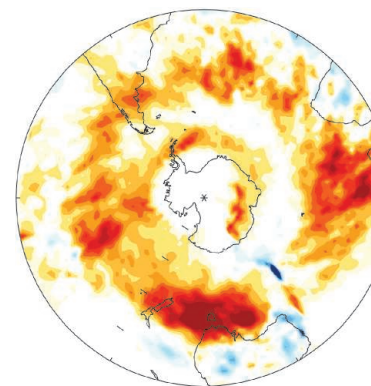
PERSPECTIVES

- 617 Limits of Soil Production?
A. M. Heimsath
>> *Report p. 637*
- 618 Next Season's Hurricanes
G. A. Vecchi and G. Villarini
- 620 Could Autism Be Treated Prenatally?
A. W. Zimmerman and S. L. Connors
>> *Report p. 675*
- 621 Envisioning the Bioconversion of Methane to Liquid Fuels
R. J. Conrado and R. Gonzalez
- 623 There Can Be Only One
J. D. Kovach and R. S. Lamb
>> *Report p. 645*
- 624 Cells Listen to Their Inner Voice
A. J. Lee and L. You
>> *Research Article p. 628*
- 626 Retrospective: Janet Rowley (1925–2013)
M. Greaves

CONTENTS continued >>



page 596



pages 588 & 641

ON THE WEB THIS WEEK

>> Science Podcast

This week's show features a study on tracing autism's developmental roots and a roundup of stories from our daily news site.

>> Find More Online

Check out the latest in a series of Perspectives on Challenges in Climate Science at www.sciencemag.org/extra/climate.



COVER

Water swirls in a vortex above two millimeter-sized coral polyps (pink and purple) in "Invisible Coral Flows," which won first place in the photography category of the 2013 *Science*/NSF International Science & Engineering Visualization Challenge. The vortex, driven by the polyps' wafting cilia, helps the coral draw in nutrients and sweep away waste products. The winning entries are featured in a special section starting on page 599 and at <http://scim.ag/vischall2013>.

Photo: Vicente I. Fernandez, Orr H. Shapiro, Melissa S. Garren, Assaf Vardi, Roman Stocker/Massachusetts Institute of Technology

DEPARTMENTS

- 577 This Week in *Science*
- 580 Editors' Choice
- 582 *Science* Staff
- 680 Information for Authors
- 683 New Products
- 684 *Science* Careers

RESEARCH ARTICLE

- 628 **Secreting and Sensing the Same Molecule Allows Cells to Achieve Versatile Social Behaviors**

H. Youk and W. A. Lim

The etiquette of yeast cells that secrete signals that influence themselves and their neighbors is explored.

Research Article Summary; for full text:

<http://dx.doi.org/10.1126/science.1242782>

>> *Perspective p. 624*

REPORTS

- 629 **Classification of Interacting Electronic Topological Insulators in Three Dimensions**

C. Wang et al.

Six symmetry-protected topological phases that have no counterpart in noninteracting systems are identified.

- 631 **1D-1D Coulomb Drag Signature of a Luttinger Liquid**

D. Laroche et al.

An upturn in the temperature dependence of the drag resistance of two closely-spaced conducting wires is observed.

- 634 **Elastic Instability of a Crystal Growing on a Curved Surface**

G. Meng et al.

Constant-background Gaussian curvature alters crystal growth and favors the formation of anisotropic, ribbon-like domains.

- 637 **Rapid Soil Production and Weathering in the Southern Alps, New Zealand**

I. J. Larsen et al.

Fast weathering rates in the New Zealand Alps point to a strong influence of tectonic processes on global climate.

>> *Perspective p. 617*

- 641 **Periodic Variability in the Large-Scale Southern Hemisphere Atmospheric Circulation**

D. W. J. Thompson and E. A. Barnes

Large-scale atmospheric circulation in the Southern Hemisphere oscillates on a time scale of roughly 20 to 30 days.

>> *News story p. 588*

- 645 **A Promiscuous Intermediate Underlies the Evolution of LEAFY DNA Binding Specificity**

C. Sayou et al.

Comparative and structural studies reveal how an essential plant transcription factor evolved different specificities.

>> *Perspective p. 623*

- 649 **PCP and Septins Compartmentalize Cortical Actomyosin to Direct Collective Cell Movement**

A. Shindo and J. B. Wallingford

A mechanism is revealed for orchestrated cell movement during gastrulation in *Xenopus*.

- 653 **Distribution of ESCRT Machinery at HIV Assembly Sites Reveals Virus Scaffolding of ESCRT Subunits**

S. B. Van Engelenburg et al.

ESCRT-III proteins scaffold within assembling HIV particles to mediate viral membrane abscission.

- 656 **A Structurally Distinct Human Mycoplasma Protein that Generically Blocks Antigen-Antibody Union**

R. K. Grover et al.

High-affinity binding of Protein M to a very broad range of human antibodies may find widespread immunochemical applications.

- 661 **Interchromosomal Communication Coordinates Intrinsically Stochastic Expression Between Alleles**

R. J. Johnston Jr. and C. Desplan

A stochastic, cell-autonomous decision to express a particular transcription factor is nevertheless coordinated.

- 665 **Loose Coupling Between Ca²⁺ Channels and Release Sensors at a Plastic Hippocampal Synapse**

N. P. Vyleta and P. Jonas

The mossy fiber to the CA3 synapse operates via loose calcium microdomains established by local calcium buffering.

- 670 **Local Impermeant Anions Establish the Neuronal Chloride Concentration**

J. Glykys et al.

Imaging of a fluorescent chloride indicator reveals a role for impermeant anions in setting intraneuronal chloride levels.

- 675 **Oxytocin-Mediated GABA Inhibition During Delivery Attenuates Autism Pathogenesis in Rodent Offspring**

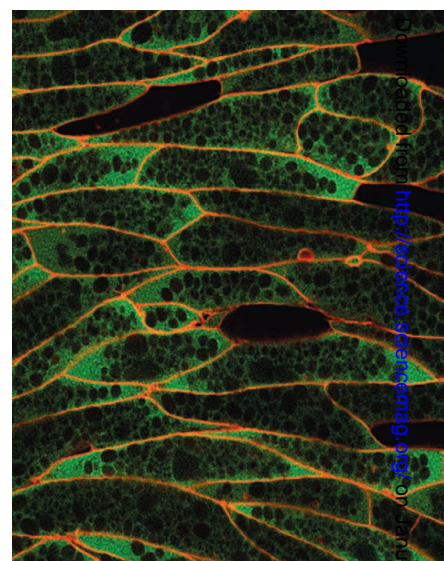
R. Tyzio et al.

Maternal administration of bumetanide before delivery reduces the autistic phenotype in rodent models of autism.

>> *Perspective p. 620; Science Podcast*



pages 623 & 645



page 649

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals Mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2014 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$149 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$990; Foreign postage extra: Mexico, Caribbean (surface mail) \$55; other countries (air assist delivery) \$85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. Publications Mail Agreement Number 1069624. Printed in the U.S.A.

Change of address: Allow 4 weeks, giving old and new addresses and 8-digit account number. Postmaster: Send change of address to AAAS, P.O. Box 96178, Washington, DC 20090-6178. Single-copy sales: \$10.00 current issue, \$15.00 back issue prepaid includes surface postage; bulk rates on request. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that \$30.00 per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. The identification code for Science is 0036-8075. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.

Science

343 (6171)

Science **343** (6171), 577-683.

ARTICLE TOOLS

<http://science.sciencemag.org/content/343/6171>

PERMISSIONS

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

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.