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COVER

Computer illustration of streams of matter delineating the network of cosmic voids, each tens of millions of light years across. Matter accumulates where the voids meet, forming a cosmic web of walls, filaments, and clusters of galaxies. This illustration was awarded first place in the informational graphics category in the 2011 *Science*/NSF International Science & Engineering Visualization Challenge. The winning entries are featured in a special section starting on page 525 and at www.sciencemag.org/site/special/vis2011/.

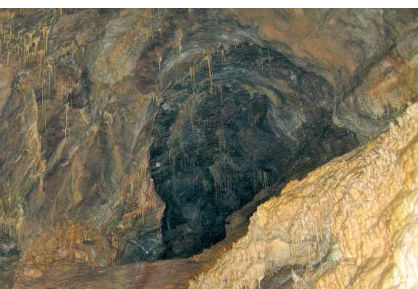
Image: Miguel A. Aragon Calvo, Julieta Aguilera, Mark Subbarao

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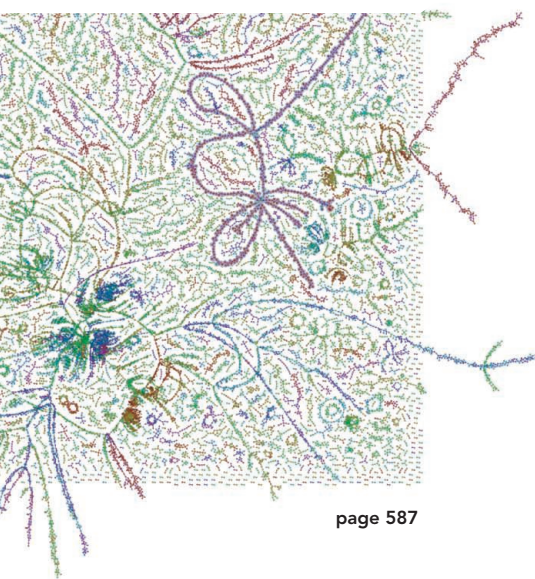
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Super high-resolution microscopy resolves neuron dynamics in the cerebral cortex of a living mouse.

RESEARCH ARTICLES

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G. A. Brar et al.
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- 557 **The Southern Ocean's Role in Carbon Exchange During the Last Deglaciation**
A. Burke and L. F. Robinson
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T. M. Tauris
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- 563 **Revealing the Superfluid Lambda Transition in the Universal Thermodynamics of a Unitary Fermi Gas**
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>> *Perspective p. 549*
- 567 **Iron Catalysts for Selective Anti-Markovnikov Alkene Hydrosilylation Using Tertiary Silanes**
A. M. Tondreau et al.
Iron catalysts offer a potentially cheaper route than platinum for certain commercially useful carbon-silicon compounds.
- 570 **High-Latitude Forcing of the South American Summer Monsoon During the Last Glacial**
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- 574 **Natural Variation in a Chloride Channel Subunit Confers Avermectin Resistance in *C. elegans***
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L. Beaman et al.
The effects of female leaders on girls occur via policy changes in the short run and parental aspirations in the longer run.
- 587 **Untangling Genomes from Metagenomes: Revealing an Uncultured Class of Marine Euryarchaeota**
V. Iverson et al.
Reconstruction of whole genomes from a complex microbial community has revealed an evolutionary surprise.
- 590 **Sequential Signaling Crosstalk Regulates Endomesoderm Segregation in Sea Urchin Embryos**
A. J. Sethi et al.
Separation of deuterostome endoderm and mesoderm occurs through sequential interactions between Notch and Wnt signaling.
- 593 **Growth of Western Australian Corals in the Anthropocene**
T. F. Cooper et al.
Cores taken from massive corals indicate that temperature rather than ocean acidification has governed reef growth.
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- 597 **Innate Response Activator B Cells Protect Against Microbial Sepsis**
P. J. Rauch et al.
A specialized population of B lymphocytes is important for controlling bacterial infections and preventing sepsis.
- 601 **Abnormal Brain Structure Implicated in Stimulant Drug Addiction**
K. D. Ersche et al.
A neurological marker of addiction vulnerability occurs in sibling pairs who do not take drugs.
>> *Perspective p. 546; Science Podcast*

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SCIENCEONLINE

SCIENCEEXPRESS

www.scienceexpress.org

Field-Effect Tunneling Transistor Based on Vertical Graphene Heterostructures

L. Britnell et al.

Boron nitride or molybdenum disulfide layers sandwiched between graphene sheets act as tunneling barriers to minimize device leakage currents.

10.1126/science.1218461

Extremely Long-Lived Nuclear Pore Proteins in the Rat Brain

J. N. Savas et al.

Individual components of rat brain nuclear pores can be almost as old as the animal itself.

10.1126/science.1217421

ER Cargo Properties Specify a Requirement for COPII Coat Rigidity Mediated by Sec13p

A. Čopič et al.

Membrane curvature of cellular vesicles is generated by altering the symmetry of the cargo and the rigidity of coat proteins.

10.1126/science.1215909

Pollinator-Mediated Selection on Flower Color Allele Drives Reinforcement

R. Hopkins and M. D. Rausher

Butterfly behavior reduces hybridization and reinforces speciation among *Phlox* plants.

10.1126/science.1215198

Founder Effects Persist Despite Adaptive Differentiation: A Field Experiment with Lizards

J. J. Kolbe et al.

Introduced populations of anoles retain characteristics of their founders and acquire adaptations to their new environment.

10.1126/science.1209566

Adaptations of Avian Flu Virus Are a Cause for Concern

K. I. Berns et al.

10.1126/science.1217994

TECHNICAL COMMENTS

Comment on "Abiotic Pyrite Formation Produces a Large Fe Isotope Fractionation"

A. D. Czaja et al.

Full text at www.sciencemag.org/cgi/content/full/335/6068/538-c

Response to Comment on "Abiotic Pyrite Formation Produces a Large Fe Isotope Fractionation"

R. Guilbaud et al.

Full text at www.sciencemag.org/cgi/content/full/335/6068/538-d

SCIENCE NOW

www.sciencenow.org

Highlights From Our Daily News Coverage

North Star May Be Wasting Away

Polaris could be casting off the equivalent of Earth's mass every year, observations suggest.

http://scim.ag/North_Star

Breaking the Law or Bending the Terminology?

One team of physicists skirts a fundamental limit on a phenomenon called diffraction—sort of.

http://scim.ag/Law_Diffraction

Killer Whale Menu Finally Revealed
Inuit hunters provide a glimpse of what these giant predators eat in the remote Arctic.

http://scim.ag/Killer_Whales

SCIENCE SIGNALING

www.sciencesignaling.org

The Signal Transduction Knowledge Environment

31 January issue: <http://scim.ag/ss013112>

RESEARCH ARTICLE: PAS Kinase Promotes Cell Survival and Growth Through Activation of Rho1

C. M. Cardon et al.

PODCAST

J. Rutter and A. M. VanHook

Signaling through PAS kinases bypasses the pro-growth requirement of Tor2 in yeast.

RESEARCH ARTICLE: Myosin I Links PIP₃ Signaling to Remodeling of the Actin Cytoskeleton in Chemotaxis

C.-L. Chen et al.

Some myosin motor proteins use the phospholipid PIP₃ to link membrane and cytoskeletal dynamics.

ST NETWORK: Mouse Genome Informatics

This site includes information about genes, phenotypes, and disease models.

SCIENCE TRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org

Integrating Medicine and Science

1 February issue: <http://scim.ag/stm020112>

RESEARCH ARTICLE: Massage Therapy Attenuates Inflammatory Signaling After Exercise-Induced Muscle Damage

J. D. Crane et al.

Massage abrogates inflammatory processes resulting from exercise-induced muscle damage.

RESEARCH ARTICLE: CXCL12-Induced Monocyte-Endothelial Interactions Promote Lymphocyte Transmigration Across an In Vitro Blood-Brain Barrier

S. Man et al.

In an in vitro model of the human blood-brain barrier, chemokine receptors regulate the transmigration of leukocytes.

REPORT: The Anti-Trypanosome Drug Fexinidazole Shows Potential for Treating Visceral Leishmaniasis

S. Wyllie et al.

Fexinidazole, a drug in clinical testing for African sleeping sickness, may prove useful for another neglected tropical disease.

MEETING REPORT: Using Health Information Technology to Engage Communities

L. K. Marriott et al.

The Internet can be used for personal health management and to facilitate partnerships and data-sharing in a community setting.

MEETING REPORT: Real-Time Assessment of Community Health Needs and Concerns

L. B. Cottler and R. Nagarajan

Interfacing the efforts of community health workers with Web-based systems will facilitate ongoing assessment of community needs.

MEETING REPORT: Meaningful Use of Electronic Behavioral Health Data in Primary Health Care

B. Tai et al.

Treatment of mental health and substance abuse issues requires the delivery of services through a primary-care-based integrated system.

MEETING REPORT: Geomapping Health-Related Data

S. Sayani

Geographical information systems can be used to analyze health data and drive improvements.

SCIENCE CAREERS

www.sciencereers.org/career_magazine

Free Career Resources for Scientists

The America Invents Act for Academic Scientists

J. Austin

Here is what academic scientists need to know about the biggest change to U.S. patent law in 60 years.

<http://scim.ag/AmericanInvents>

Game On: Education as Play

D. Strain

Game designer and former biologist Jeremy Friedberg won an honorable mention in this year's Science and Engineering Visualization Challenge.

<http://scim.ag/JeremyFriedberg>

Content Collection: Mentoring Advice

E. Pain

A good mentor at each career stage can greatly enhance your professional and personal achievement.

http://scim.ag/CC_Mentoring

SCIENCE PODCAST

www.sciencemag.org/multimedia/podcast

Free Weekly Show

On the 3 February *Science* Podcast: how corals respond to climate change, inherited factors for drug addiction, 2011 Visualization Challenge winners, and more.

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Science Policy News and Analysis

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