



5 November 2010 | \$10

# Science

# glia



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# Glia

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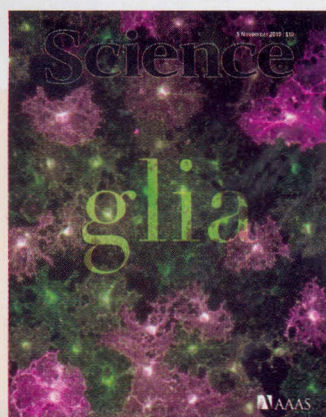
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Early (green) and mature (magenta) oligodendrocytes purified from the early postnatal mouse brain. These myelin-producing cells of the central nervous system belong to a highly complex group of cells known as glia, which are involved not only in the conduction of action potentials along neuronal axons, but also in the development of synapses and in immune processes in the nervous system. See the special section beginning on page 773.

*Image: Ben Emery, Centre for Neuroscience and Florey Neuroscience Institutes, University of Melbourne, Australia, and Sara Mulinyawe, Stanford University*

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*S. J. Brawley et al.*  
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## RESEARCH ARTICLES

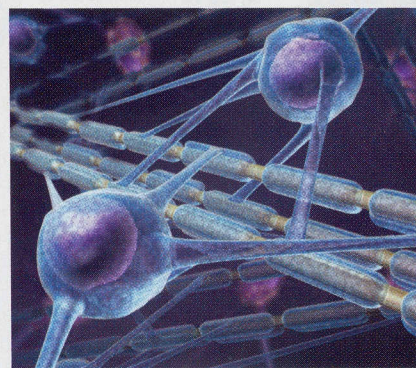
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 Spectral analysis of graphite reveals an unexpectedly low influence of electron interactions in graphene.
- 808 Large-Area Three-Dimensional Molecular Ordering of a Polymer Brush by One-Step Processing**  
*N. Hosono et al.*  
 The main and side chains of a polymer align in different directions when heated and pressed between Teflon plates.
- 812 Broken-Symmetry States in Doubly Gated Suspended Bilayer Graphene**  
*R. T. Weitz et al.*  
 Ferromagnetic quantum Hall states were observed in suspended bilayer graphene samples in both zero and high magnetic fields.
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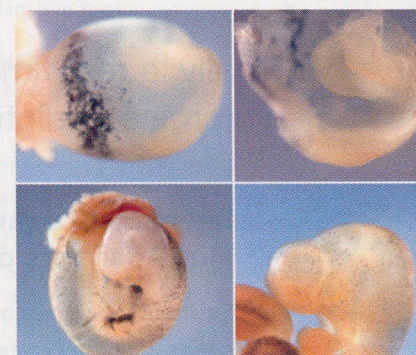
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## SCIENCEONLINE

## SCIENCEEXPRESS

[www.scienceexpress.org](http://www.scienceexpress.org)

### Micro-Optical Sectioning Tomography to Obtain a High-Resolution Atlas of the Mouse Brain

A. Li et al.

Acquisition of light microscopic data at 1-micrometer resolution for an entire mouse brain has been developed.

10.1126/science.1191776

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### Universality in the Evolution of Orientation Columns in the Visual Cortex

M. Kaschube et al.

Analysis of evolutionarily divergent species highlights constraint on brain structure imposed by self-organizing neural networks.

10.1126/science.1194869

### The Major Genetic Determinants of HIV-1 Control Affect HLA Class I Peptide Presentation

*The International HIV Controllers Study*

MHC class I alleles are the major genetic determinants associated with people able to control HIV infection without therapy.

10.1126/science.1195271

### Frequent Mutation of *BAP1* in Metastasizing Uveal Melanomas

J. W. Harbour et al.

A gene implicated in the control of protein degradation is mutated at high frequency in a metastatic eye cancer.

10.1126/science.1194472

### Toroidal Dipolar Response in a Metamaterial

T. Kaelberer et al.

A material that embeds metal wire loops in a dielectric has properties consistent with an exotic electromagnetic excitation.

10.1126/science.1197172

## SCIENCENOW

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Highlights From Our Daily News Coverage

### Fish Oil No Foil for Alzheimer's

Study finds omega-3s do not stave off cognitive decline.

### Bacteria Help Flies Select Mates

Microbes that live in and on the insects may foster the creation of new species.

### Hellish 'Super-Earths' Likely Prevalent Throughout Our Galaxy

Study suggests that many extrasolar planets will be too hot for life.

## SCIENCE SIGNALING

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The Signal Transduction Knowledge Environment

### EDITORIAL GUIDE: Focus Issue—Signals for Gene Expression

W. Wong

Signaling pathways can regulate gene expression, and vice versa.

### RESEARCH ARTICLE: Rewiring of Transcriptional Regulatory Networks—Hierarchy, Rather Than Connectivity, Better Reflects the Importance of Regulators

N. Bhardwaj et al.

Transcriptional regulatory networks appear to have an organization similar to a corporation, with top-level managers having the most influence.

### RESEARCH ARTICLE: DNMT1 Stability Is Regulated by Proteins Coordinating Deubiquitination and Acetylation-Driven Ubiquitination

Z. Du et al.

Degradation of a DNA methyltransferase implicated in cancer is determined by its acetylation status.

### PERSPECTIVE: Posttranscriptional Regulation of PTEN Dosage by Noncoding RNAs

L. He

The abundance of the tumor suppressor PTEN is modulated by microRNAs and pseudogenes.

### PERSPECTIVE: Intracellular Delivery Strategies for MicroRNAs and Potential Therapies for Human Cardiovascular Diseases

M. A. Shi and G.-P. Shi

MicroRNAs can help maintain healthy cardiovascular systems or contribute to the pathogenesis of cardiovascular diseases.

### REVIEW: Fibroblast Growth Factor Receptor Signaling Crosstalk in Skeletogenesis

H. Miraoui and P. J. Marie

Crosstalk of fibroblast growth factor signaling with other pathways may offer therapeutic strategies for skeletal dysplasias.

## SCIENCE CAREERS

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N. H. Steneck

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B. L. Benderly

Research suggests that social structure, not personal ethics, determines the frequency of scientific misconduct.

## SCIENCE TRANSLATIONAL MEDICINE

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Integrating Medicine and Science

### REVIEW: Mathematical Modeling of Molecular Data in Translational Medicine—Theoretical Considerations

N. F. Marko and R. J. Weil

Mining large databases requires better mathematical modeling.

### RESEARCH ARTICLE: Altered Functional Connectivity Within the Frontal Lobe of the Brain Is Associated with Variation in *CNTNAP2*

A. A. Scott-Van Zeeland et al.

A variant of a protein associated with autism correlates with altered neuronal connectivity in the brain's frontal lobe.

### RESEARCH ARTICLE: Cholesterol Oxidation Products Are Sensitive and Specific Blood-Based Biomarkers for Niemann-Pick C1 Disease

F. D. Porter et al.

Oxysterols are biomarkers for diagnosis and drug treatment of a childhood neurological disease.

## SCIENCE PODCAST

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Science Policy News and Analysis

## SCIENCEONLINE FEATURE

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**THE GONZO SCIENTIST: Why Do Scientists Dance?**  
To cap off the 2010 "Dance Your Ph.D." contest, our reporter explores the history of science dances and asks the contestants how online geek fame has affected their lives.

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