

SPECIAL SECTION

Glia

INTRODUCTION

- 773 Glee for Glia

REVIEWS

- 774 Specification and Morphogenesis of Astrocytes
M. R. Freeman
- 779 Regulation of Oligodendrocyte Differentiation and Myelination
B. Emery

PERSPECTIVE

- 783 Changing Face of Microglia
-
- M. B. Graeber*

>> *Perspective p. 768; Research Article p. 790; Report p. 841; and Science Signaling at www.sciencemag.org/special/glia/*



page 738

EDITORIAL

- 731 Lifebelt for UK Science
-
- Martin Rees*

NEWS OF THE WEEK

- 738 Haiti's Outbreak Is Latest in Cholera's New Global Assault
>> *Science Podcast*
- 741 Questions From China Snag U.S. Trial of Nerve-Rerouting Procedure
- 742 U.N. Biodiversity Summit Yields Welcome and Unexpected Progress
- 743 From the *Science* Policy Blog
- 744 Slew of Landslides Unmask Hidden Geological Hazards
- 745 From *Science's* Online Daily News Site
- 746 Supercomputer Leaves Competition—and Users—in the Dust
- 746 Amicus Brief Unfriendly to Gene Patents
- 747 China's Brain Mappers Zoom In on Neural Connections
>> *Science Express Report by A. Li et al.*

NEWS FOCUS

- 748 Panning for Science
- 750 Out of the Mist
- 752 Using Old Insects to Sleuth Out New Clues to Ancient Cultures

LETTERS

- 754 The Hazy Details of Early Earth's Atmosphere
M. J. Russell
Response
E. T. Wolf and O. B. Toon
- Response
C. F. Chyba
Funding for Chinese Collaboration
S. X. Chang

756 CORRECTIONS AND CLARIFICATIONS

BOOKS ET AL.

- 757 The Mind's Eye
O. Sacks, reviewed by C. Koch
- 758 Life from an RNA World
M. Yarus, reviewed by I. A. Chen

POLICY FORUM

- 759 Open mHealth Architecture: An Engine for Health Care Innovation
-
- D. Estrin and I. Sim*

PERSPECTIVES

- 761 Awakening Immunity
H. Schreiber and D. A. Rowley
>> *Report p. 827*
- 762 Antimatter Atomic Physics
H. R. J. Walters
>> *Brevia p. 789*
- 763 Increased Atmospheric CO₂ During the Middle Eocene
P. N. Pearson
>> *Report p. 819*
- 764 A New Viewpoint on Faces
C. E. Connor
>> *Report p. 845*
- 766 Targeting Bacteria to Improve Cancer Therapy
A. G. Patel and S. H. Kaufmann
>> *Report p. 831*
- 767 Pollen Gets More Complex
E. Indriolo and D. R. Goring
>> *Research Article p. 796; Science Podcast*
- 768 Change in the Brain's White Matter
R. D. Fields
>> *Glia section p. 773*

ESSAY

- 770 Eppendorf Winner: Parental Control over the Brain
-
- C. Gregg*

CONTENTS continued >>



COVER

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

DEPARTMENTS

- 727 This Week in *Science*
- 732 Editors' Choice
- 734 *Science* Staff
- 737 Random Samples
- 856 New Products
- 857 *Science* Careers

BREVIA

- 789 **Electron-Like Scattering of Positronium**
S. J. Brawley et al.
The atom formed from an electron and positron interacts with molecules almost as if it were a free electron.
>> *Perspective p. 762*

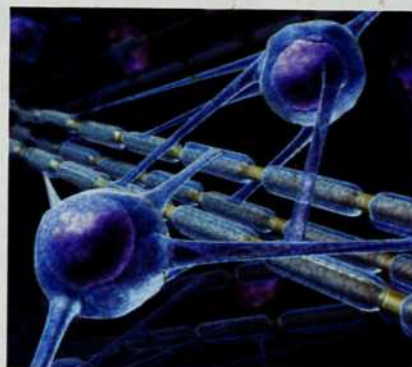
RESEARCH ARTICLES

- 790 **Channel-Mediated Tonic GABA Release from Glia**
S. Lee et al.
The neurotransmitter GABA is tonically released from cells through an anion channel with an unusually large pore.
>> *Glia section p. 773*
- 796 **Collaborative Non-Self Recognition System in S-RNase-Based Self-Incompatibility**
K. Kubo et al.
A highly diverse set of (male) pollen-determinant proteins in *Petunia* recognizes non-self (female) pistil determinants.
>> *Perspective p. 767; Science Podcast*
- 800 **The Detection of a Population of Submillimeter-Bright, Strongly Lensed Galaxies**
M. Negrello et al.
Data from the Herschel Space Observatory unveils distant, dusty galaxies invisible to optical telescopes.

REPORTS

- 805 **The Effective Fine-Structure Constant of Freestanding Graphene Measured in Graphite**
J. P. Reed et al.
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.
- 816 **Efficient Atmospheric Cleansing of Oxidized Organic Trace Gases by Vegetation**
T. Karl et al.
Deciduous trees enzymatically remove oxygenated volatile organic compounds from the atmosphere.

- 819 **Transient Middle Eocene Atmospheric CO₂ and Temperature Variations**
P. K. Bijl et al.
Elevated concentrations of atmospheric carbon dioxide played a major role in a global warming event during the Middle Eocene.
>> *Perspective p. 763*
- 822 **Intestinal Stem Cell Replacement Follows a Pattern of Neutral Drift**
C. Lopez-Garcia et al.
Intestinal stem cells form an equipotent population where loss of a stem cell is compensated for by multiplication of a neighbor.
- 825 **Mutational Robustness of Ribosomal Protein Genes**
P. A. Lind et al.
The distribution of the fitness effects of silent mutations is not different from that of amino acid-altering mutations.
- 827 **Suppression of Antitumor Immunity by Stromal Cells Expressing Fibroblast Activation Protein- α**
M. Kraman et al.
Tumor connective-tissue cells of mesenchymal origin suppress antitumor immune responses.
>> *Perspective p. 761*
- 831 **Alleviating Cancer Drug Toxicity by Inhibiting a Bacterial Enzyme**
B. D. Wallace et al.
Targeting an enzyme in human microbial symbiotes might prevent a chemotherapeutic side effect.
>> *Perspective p. 766*
- 835 **The Mechanism for Activation of GTP Hydrolysis on the Ribosome**
R. M. Voorhees et al.
The ribosome stabilizes the active conformation of the guanosine triphosphatase elongation factor Tu to facilitate delivery of transfer RNA.
- 838 **Evolution of Yeast Noncoding RNAs Reveals an Alternative Mechanism for Widespread Intron Loss**
Q. M. Mitrovich et al.
Introns of noncoding genes can be lost by splice-site degeneration.
- 841 **Fate Mapping Analysis Reveals That Adult Microglia Derive from Primitive Macrophages**
F. Ginhoux et al.
The developmental origins of adult microglia are revealed.
>> *Glia section p. 773*
- 845 **Functional Compartmentalization and Viewpoint Generalization Within the Macaque Face-Processing System**
W. A. Freiwald and D. Y. Tsao
Recognition of faces from different viewpoints involves several distinct stages of neural processing.
>> *Perspective p. 764*



page 768



page 812



page 841

CONTENTS continued >>