EDITORIAL

1021 A New Focus on Plant Sciences Steven J. McCormick and Robert Tjian

NEWS OF THE WEEK

- 1028 Massive Cost Overrun to Webb Threatens Other NASA Missions
- 1029 Key Indicator of Ocean Health May Be Flawed
- 1030 GM Mosquito Trial Alarms Opponents, Strains Ties in Gates-Funded Project
- 1031 From Science's Online Daily News Site
- 1032 Handful of U.S. Schools Claim Larger Share of Output
- 1033 New Spin on Solid Helium Bolsters Case for Bizarre Flow >> Science Express Report by H. Choi et al.
- 1033 From the Science Policy Blog
- 1034 A World of Changes Prepares Subra Suresh to Tackle Change at NSF

NEWS FOCUS

1036 | SCIENCE IN RUSSIA

Russian Science: Waking From Hibernation University Research Should Compete With Russian Academy, Science Minister Argues Uncertain Future for Academy's Biology Experiment

>> Science Podcast

LETTERS

1044 Time to Take Action on Climate Communication

T. E. Bowman et al.

Overbuilding: Doctoral Degree Surplus

R. L. Juliano

Overbuilding: Under Pressure

K. G. Mann

Overbuilding: Overhead Revisions

M. Wab

Overbuilding: Boosting School Ratings

R. D. Burk

1047 CORRECTIONS AND CLARIFICATIONS

1047 TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.

1048 Biology's First Law
D. W. McShea and R. N. Brandon,
reviewed by R. L. Millstein

1049 From Populations to Ecosystems
M. Loreau, reviewed by T. Fukami

POLICY FORUM

1052 Genetically Modified Salmon and Full Impact Assessment M. D. Smith et al.

PERSPECTIVES

- 1054 Nanosilver Revisited Downstream

 B. Nowack
- 1055 γ-Secretase and Human Disease R. J. Kelleher III and J. Shen >> Brevia p. 1065
- 1056 Magnetic Resonance and Microfluidics
 M. Utz and J. Landers
 >> Report p. 1078
- 1058 Topping Off a Multiscale Balancing Act
 J. Lerman and B. O. Palsson
 >> Report p. 1099
- 1059 π = Visual Cortex

 K. D. Miller

 >> Report p. 1113

REVIEW

1061 Plant and Animal Sensors of Conserved Microbial Signatures P. C. Ronald and B. Beutler

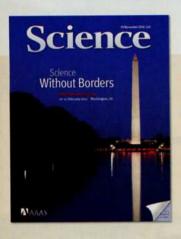
CONTENTS continued >>



page 1036



page 1049



COVER

View of the Washington Monument in Washington, DC, site of the AAAS Annual Meeting, 17 to 21 February 2011. The meeting's theme—Science Without Borders—integrates the practice of science, in both research and teaching, which uses multidisciplinary approaches to problem-solving, crosses conventional borders, and takes into consideration the diversity of investigators and students. The preliminary program begins on page 1118.

Photo: iStockphoto.com/Sportstock

DEPARTMENTS

1019 This Week in Science

1022 Editors' Choice

1024 Science Staff

1027 Random Samples

1117 New Products

1118 AAAS Meeting Program

1128 Science Careers

BREVIA

1065 \(\gamma\)-Secretase Gene Mutations in Familial Acne Inversa \(B. \) Wang et al. \(\) Mutations causing a rare skin disease reveal a signaling pathway that is a drug target for Alzheimer's disease. \(>> \) Perspective p. 1055

RESEARCH ARTICLE

1066 Structures of the CXCR4 Chemokine GPCR with Small-Molecule and Cyclic Peptide Antagonists B. Wu et al.
Five crystal structures provide insight into chemokine and HIV-1 recognition.

REPORTS

1072 The Uncertainty Principle Determines
the Nonlocality of Quantum Mechanics
J. Oppenheim and S. Wehner
The two central elements of quantum theory,
once assumed to be distinct concepts,
are shown to be linked.
>> Science Podcast

1075 Faster Interprotein Electron Transfer in a [Myoglobin, b₅] Complex with a Redesigned Interface P. Xiong et al.

Faster electron transfer in a redesigned protein complex provides insights into the role of conformational distributions.

1078 Zooming In on Microscopic Flow by Remotely Detected MRI V. S. Bajaj et al. A magnetic resonance imaging system allows finer analysis of fluid flow. >> Perspective p. 1056

1081 Probing the Ultimate Limit of
Fiber-Optic Strain Sensing
G. Gagliardi et al.
The precisely spaced teeth of an optical
frequency comb can be used as a highly
accurate strain gauge.

1084 Loss of Carbon from the Deep Sea
Since the Last Glacial Maximum
J. Yu et al.
Carbon loss from the ocean to the atmosphere
and terrestrial biosphere occurred at different
rates in the last deglaciation.

1088 Glacial Silicic Acid Concentrations in the Southern Ocean M. J. Ellwood et al.
Silicon isotope distributions in sponges contain the signature of ocean nutrient distributions during the last glacial period.

1091 Structure of the Human Dopamine D3
Receptor in Complex with a D2/D3
Selective Antagonist
E. Y. T. Chien et al.
Discovery of a binding site in the extracellular domain of a dopamine receptor offers hope for more selective therapeutics.

1095 Mcl-1 Is Essential for Germinal Center
Formation and B Cell Memory

1. Vikstrom et al.

A protein that inhibits apoptosis is essential
for the survival of immune memory cells.

1099 Interdependence of Cell Growth and Gene Expression: Origins and Consequences M. Scott et al.

Simple mathematical models describe the relationship between bacterial replication, cellular resources, and protein expression.

>> Perspective p. 1058

1102 Symbiotic Bacterium Modifies
Aphid Body Color
T. Tsuchida et al.
Infection with a symbiotic bacterium leads to
a spectacular phenotypic change in its host,
making red aphids turn green.

1104 PiggyBac Transposon Mutagenesis:
A Tool for Cancer Gene Discovery in Mice
R. Rad et al.
Mutations induced by a transposable
element in mice can be used to identify
cancer-causing genes.

1108 Calcium-Permeable AMPA Receptor
Dynamics Mediate Fear Memory Erasure
R. L. Clem and R. L. Huganir
The subunit composition of AMPA receptors
at lateral amygdala synapses changes after
the acquisition of associative fear.

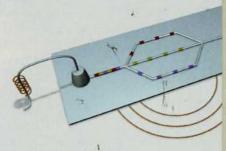
1113 Universality in the Evolution of Orientation Columns in the Visual Cortex

M. Kaschube et al.

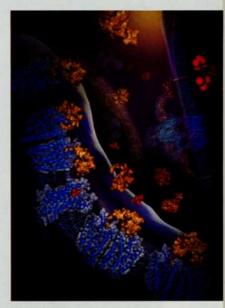
Analysis of evolutionarily divergent species highlights constraint on brain structure imposed by self-organizing neural networks.

>> Perspective p. 1059

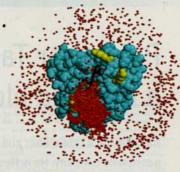
CONTENTS continued >>



pages 1056 & 1078



page 1066



page 1075