CONTENTS
30 MAY 2014 • VOLUME 344 • ISSUE 6187

NEWS

IN BRIEF
950 Roundup of the week’s news

IN DEPTH
953 TIANANMEN’S BITTER LEGACY
The bloody crackdown 25 years ago left an indelible mark on China’s research culture By M. Hvistendahl
SCIENCE PODCAST

954 BRAIN PROJECT MEETS PHYSICS
Physicists provide a reality check for brain mappers By E. Underwood

955 PLAN TO INTERNATIONALIZE U.S. PROJECT MAY FACE HEADWIND
Washington may be reluctant to share physics facility on U.S. soil By A. Cho

957 PSYCHOLOGIST’S DEFENSE CHALLENGED
E-mails counter claimed location, timing of studies By F. van Kolfschooten

959 WHERE’S FRANCE CóRDova?
IN THE WASHINGTON HOT SEAT
New NSF director jumps into the frying pan served up by Congress By J. Mervis

960 VIEWS OF SCIENCE CLASH IN DEBATE OVER NSF BILL
Push for closer oversight of agency alarms university and science groups By J. Mervis

FEATURES
963 LOST AT SEA
As the hunt for the missing Malaysian jet grows more challenging, authorities are pondering how to avert future aviation vanishing acts By D. Normile
EDITORIAL P. 947

INSIGHTS

967 TARGET SMALL FIRMS FOR ANTIBIOTIC INNOVATION
Once in clinical trials, antibiotics are more likely to survive than drugs in other classes By T. J. Huang et al.

969 MAPPING BOND ORIENTATIONS WITH POLARIZED X-RAYS
Regions of bond order and disorder are revealed By S. Lidin
REPORT P. 1013

970 CLUES FROM THE RESILIENT
Genetic information from individuals who do not succumb to disease may point to new therapies and ideas about wellness By S. H. Friend and E. E. Schadt

972 A BACTERIAL SEEK-AND-DESTROY SYSTEM FOR FOREIGN DNA
Bacterial argonaute proteins defend the cell against exogenous DNA By J. Vogel

974 HOW SULFUR BEATS IRON
Iron-reducing bacteria switch to sulfur reduction as their main energy source in alkaline environments By M. W. Friedrich and K. W. Finster
REPORT P. 1039

975 MANAGING THE SIDE EFFECTS OF INVASION CONTROL
Efforts to control invasive species must be adapted to avoid unintended damage to native species and ecosystems By Y. M. Buckley and Y. Han
REPORT P. 1028

PERSPECTIVES

967 Hitting the Limit of Magnetic Anisotropy
Enhancing the magnetic properties of adatoms provides a route toward atom-scale memory By A. A. Khajetoorians and J. Wiebe
RESEARCH ARTICLE P. 988

BOOKS ET AL.
978 FOUR FIELDS
By T. Dee, reviewed by S. Knapp

980 THE PERFECT 46
B. R. Bonowicz, director, reviewed by D. Greenbaum

LETTERS
981 RETRACTION
By M. McNutt

981 CKDu IN SRI LANKA
By M. C. M. Iqbal and C. B. Dissanayake

981 FEAR BEYOND PREDATORS
By K. J. Hockings et al.

981 TECHNICAL COMMENT ABSTRACTS

DEPARTMENTS
947 EDITORIAL
The hunt for MH370 By Marcia McNutt
NEWS STORY P. 963

1054 WORKING LIFE
Winter is coming By Christina Reed

976 HITTING THE LIMIT OF MAGNETIC ANISOTROPY
Enhancing the magnetic properties of adatoms provides a route toward atom-scale memory By A. A. Khajetoorians and J. Wiebe
RESEARCH ARTICLE P. 988

978 FOUR FIELDS
By T. Dee, reviewed by S. Knapp

980 THE PERFECT 46
B. R. Bonowicz, director, reviewed by D. Greenbaum

981 RETRACTION
By M. McNutt

981 CKDu IN SRI LANKA
By M. C. M. Iqbal and C. B. Dissanayake

981 FEAR BEYOND PREDATORS
By K. J. Hockings et al.

981 TECHNICAL COMMENT ABSTRACTS

DEPARTMENTS
947 EDITORIAL
The hunt for MH370 By Marcia McNutt
NEWS STORY P. 963

1054 WORKING LIFE
Winter is coming By Christina Reed

947 & 963

976 & 988
Calculated valence spin density of a cobalt atom

Published by AAAS
900 CHILDHOOD DEVELOPMENT
Childhood stimulation intervention in Jamaica
F. Gertler et al.

902 WATER STRUCTURE
Vibrational spectral signature of the proton defect in the three-dimensional $\text{H}^\times(\text{H}_2\text{O})_{2n}$ cluster
J. A. Fournier et al.

903 SYNAPSES
Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins
B. G. Wilhelm et al.

904 TRANSscription
A pause sequence enriched at translation start sites drives transcription dynamics in vivo
M. H. Larson et al.

ON THE COVER
A realistic, molecular-scale view of a synapse, showing a few hundred thousand proteins. The synapse organization was measured by a combination of electron microscopy, quantitative biochemistry, and super-resolution microscopy. This three-dimensional computational model now enables a quantitative understanding of synaptic processes. See page 1023. Image: Burkhard Rammer/Bizzoli Laboratory, University of Göttingen Medical Center

1001 SOLAR CELLS
Coherent ultrafast charge transfer in an organic photovoltaic blend
S. M. Falke et al.

1002 BIODIVERSITY STATUS
The biodiversity of species and their rates of extinction, distribution, and protection
S. L. Pimm et al.

RESEARCH ARTICLES

988 MOLECULAR MAGNETISM
Reaching the magnetic anisotropy limit of a 3d metal atom
I. G. Rou et al. ▶ PERSPECTIVE P. 976

992 ION CHANNEL STRUCTURE
Crystal structure of a heterotetrameric NMDA receptor ion channel
E. Karakas and M. Furakawa

998 CHILDHOOD DEVELOPMENT
Labor market returns to an early childhood stimulation intervention in Jamaica
P. Gertler et al.

1005 WATER SPLITTING
Amorphous TiO$_2$ coatings stabilize Si, GaAs, and GaP photoanodes for efficient water oxidation
S. Hu et al.

1008 WATER STRUCTURE
Vibrational spectral signature of the proton defect in the three-dimensional $\text{H}^\times(\text{H}_2\text{O})_{2n}$ cluster
J. A. Fournier et al.

1013 IMAGING TECHNIQUES
X-ray birefringence imaging
B. A. Palmer et al. ▶ PERSPECTIVE P. 969

1016 MARINE BIOGEOGRAPHY
Quaternary coral reef refugia preserved fish diversity
L. Pellissier et al.

1020 NEURAL DEVELOPMENT
Retrograde semaphorin signaling regulates synapse elimination in the developing mouse brain
N. Uesaka et al.

1023 SYNAPSES
Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins
B. G. Wilhelm et al.

1025 WATER SPLITTING
Amorphous TiO$_2$ coatings stabilize Si, GaAs, and GaP photoanodes for efficient water oxidation
S. Hu et al.

1028 CONSERVATION ECOLOGY
Optimal approaches for balancing invasive species eradication and endangered species management
A. Lampert et al. ▶ PERSPECTIVE P. 975

1031 CELLULAR DYNAMICS
High-resolution mapping of intracellular fluctuations using carbon nanotubes
N. Fakhri et al.

1035 STRUCTURAL BIOLOGY
Structures of P14KIIIβ complexes show simultaneous recruitment of Rab11 and its effectors
J. E. Burke et al.

1039 SUBSURFACE MICROBES
Sulfur-mediated electron shuttling during bacterial iron reduction
T. M. Flynn et al. ▶ PERSPECTIVE P. 974

IN BRIEF

984 From Science and other journals

987 BIODIVERSITY STATUS
The biodiversity of species and their rates of extinction, distribution, and protection
S. L. Pimm et al.

REVIEW

987 BIODIVERSITY STATUS
The biodiversity of species and their rates of extinction, distribution, and protection
S. L. Pimm et al.

REVIEW SUMMARY; FOR FULL TEXT:
HTTP://DX.DOI.ORG/10.1126/SCIENCE.1246752

ON THE COVER
A realistic, molecular-scale view of a synapse, showing a few hundred thousand proteins. The synapse organization was measured by a combination of electron microscopy, quantitative biochemistry, and super-resolution microscopy. This three-dimensional computational model now enables a quantitative understanding of synaptic processes. See page 1023. Image: Burkhard Rammer/Bizzoli Laboratory, University of Göttingen Medical Center

1001 SOLAR CELLS
Coherent ultrafast charge transfer in an organic photovoltaic blend
S. M. Falke et al.

1008 WATER STRUCTURE
Vibrational spectral signature of the proton defect in the three-dimensional $\text{H}^\times(\text{H}_2\text{O})_{2n}$ cluster
J. A. Fournier et al.

1013 IMAGING TECHNIQUES
X-ray birefringence imaging
B. A. Palmer et al. ▶ PERSPECTIVE P. 969

1016 MARINE BIOGEOGRAPHY
Quaternary coral reef refugia preserved fish diversity
L. Pellissier et al.

1020 NEURAL DEVELOPMENT
Retrograde semaphorin signaling regulates synapse elimination in the developing mouse brain
N. Uesaka et al.

1023 SYNAPSES
Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins
B. G. Wilhelm et al.

1028 CONSERVATION ECOLOGY
Optimal approaches for balancing invasive species eradication and endangered species management
A. Lampert et al. ▶ PERSPECTIVE P. 975

1031 CELLULAR DYNAMICS
High-resolution mapping of intracellular fluctuations using carbon nanotubes
N. Fakhri et al.

1035 STRUCTURAL BIOLOGY
Structures of P14KIIIβ complexes show simultaneous recruitment of Rab11 and its effectors
J. E. Burke et al.

1039 SUBSURFACE MICROBES
Sulfur-mediated electron shuttling during bacterial iron reduction
T. M. Flynn et al. ▶ PERSPECTIVE P. 974

1042 TRANScription
A pause sequence enriched at translation start sites drives transcription dynamics in vivo
M. H. Larson et al.