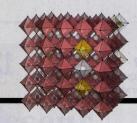
12 APRIL 2019 • VOLUME 364 • ISSUE 6436



116

Perovskite gives a boost to a tandem solar cell

116 SOLAR CELL BUILT FOR TWO LOOKS SWEET

Simple tandem design uses perovskite layer to feed photons to silicon cell *By R. F. Service*

FEATURES

118 THE TRESPASSER

Physicist Danielle Bassett searches for simple rules that govern the brain's tangled networks *By K. Servick*

INSIGHTS

PERSPECTIVES

122 POLLINATORS, HERBIVORES, AND THE EVOLUTION OF FLORAL TRAITS

Floral characters reflect plant adaptation to both bumble bees and leaf-eating insects *By J. Ågren*• REPORT P. 193

123 LOST IN THE FIRE

Thyroid hormones tip the balance between regeneration and temperature regulation *By S. Marchianò and C. E. Murry* • REPORT P. 184

125 AN EXOTIC QUANTUM FLUID IN GRAPHENE

Under the right conditions, electrons can move as fluids in graphene $By\ A.\ Lucas$

▶ REPORTS PP. 158 & 162

126 PLATE TECTONICS, CARBON, AND CLIMATE

Enhanced weathering of uplifted rocks in the tropics may have driven past glaciations $By\ J.\ Hartmann$

► REPORT P. 181

127 HAZARDS OF HUMAN SPACEFLIGHT

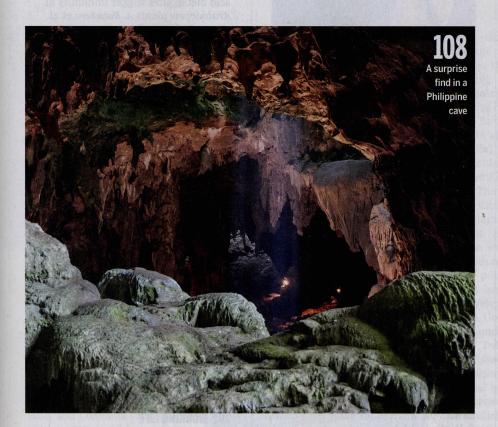
A 1-year mission in space has many biological consequences
By M. Löbrich and P. A. Jeggo

RESEARCH ARTICLE P. 144

129 DO ANTIDEPRESSANTS RESTORE LOST SYNAPSES?

Ketamine triggers changes in behavior, neuron microcircuitry, and dendritic spines *By A. Beyeler*

► RESEARCH ARTICLE P. 147



NEWS

IN BRIEF

106 News at a glance

IN DEPTH

108 NEW SPECIES OF ANCIENT HUMAN UNEARTHED

Homo luzonensis, from the Philippines, may have been a small-bodied tree climber By L. Wade

▶ PODCAST

109 CLOSURE OF U.S. TOXOPLASMA LAB DRAWS IRE

Scientists say political pressure threatens research on cause of blindness and birth defects *By M. Wadman*

110 BELIEFS IN ALIENS, ATLANTIS ARE ON THE RISE

Researchers take to Twitter, blogs to counter pseudoarchaeology's outlandish ideas $By\ L.\ Wade$

111 BRAZILIAN SCIENTISTS LAMENT 'FREEZE' ON RESEARCH BUDGET

Block on 42% of the science ministry's funds, coming on top of other cuts, puts flagship synchrotron at risk *By H. Escobar*

112 ATMOSPHERIC SCIENTISTS JOIN PHEROMONE QUEST

Can measuring volatile compounds in real time save a field that is "in a bit of a crisis"? *By K. Kupferschmidt*

114 POLITICS COULD UPEND GLOBAL TRADE IN RARE EARTH ELEMENTS

Malaysian government asks "flagship" company to remove radioactive waste from the country or shut down *By Y.-H. Law*

▶ PODCAST

115 REPORT URGES MASSIVE DIGITIZATION OF BIOSPECIMENS

"Extended specimens" would link images and data *By E. Pennisi*

SCIENCE sciencemag.org

130 IMMUNOTHERAPY FOR NEURODEGENERATION?

The role of innate and adaptive immunity in neurodegeneration remains controversial By Y. Liu and A. Aguzzi

POLICY FORUM

132 SENSITIVE INTERVENTION POINTS IN THE POST-CARBON TRANSITION

We must exploit socioeconomic tipping points and amplifiers By J. D. Farmer et al.

BOOKS ET AL.

135 DIVING DEEP INTO THE **SOUTHERN OCEAN**

A major player in weather, climate, and biodiversity, the waters around Antarctica take center stage in a new history By L. Fabiani

136 HELPING EINSTEIN

Efforts to identify Mileva Marić's contributions highlight the trouble with telling the tales of early women in science By M. Frappier

LETTERS

138 ROHINGYA REFUGEES AND THE ENVIRONMENT

Bu S. A. Mukul et al.

139 ADDRESS THE ROOTS OF **ENVIRONMENTAL CRIME**

By B. Neimark

139 CONCERNS OF YOUNG PROTESTERS ARE JUSTIFIED

By G. Hagedorn et al.

RESEARCH

IN BRIEF

141 From Science and other journals

RESEARCH ARTICLES

144 HUMAN PHYSIOLOGY

The NASA Twins Study: A multidimensional analysis of a year-long human spaceflight F. E. Garrett-Bakelman et al. RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aau8650 ▶ PERSPECTIVE P. 127



145 PLANT SCIENCE

Glycosidase and glycan polymorphism control hydrolytic release of immunogenic flagellin peptides P. Buscaill et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aav0748

146 NEUROSCIENCE

Ultrapotent chemogenetics for research and potential clinical applications C. J. Magnus et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aav5282

147 NEUROSCIENCE

Sustained rescue of prefrontal circuit dysfunction by antidepressant-induced spine formation R. N. Moda-Sava et al. RESEARCH ARTICLE SUMMARY; FOR FULL TEXT: dx.doi.org/10.1126/science.aat8078 PERSPECTIVE P. 129

148 STRUCTURAL BIOLOGY

Structure and dynamics of the active human parathyroid hormone receptor-1 L.-H. Zhao et al.

REPORTS

154 PHYSICS

Electron-phonon instability in graphene revealed by global and local noise probes T. I. Andersen et al.

GRAPHENE

158 Quantum-critical conductivity of the Dirac fluid in graphene P. Gallagher et al.

162 Measuring Hall viscosity of graphene's electron fluid A. I. Berdyugin et al. ▶ PERSPECTIVE P. 125

166 THIN FILMS

Spin coating epitaxial films M. V. Kelso et al.

170 PHYSICS

Anti-parity-time symmetry in diffusive systems Y. Li et al.

173 TROPHIC CASCADES

Cascading impacts of large-carnivore extirpation in an African ecosystem J. L. Atkins et al.

178 PLANT SCIENCE

Bacterial medium-chain 3-hydroxy fatty acid metabolites trigger immunity in Arabidopsis plants A. Kutschera et al.

181 GLACIAL CYCLES

Arc-continent collisions in the tropics set Earth's climate state F. A. Macdonald et al.

▶ PERSPECTIVE P 126

184 HEART REGENERATION

Evidence for hormonal control of heart regenerative capacity during endothermy acquisition K. Hirose et al. PERSPECTIVE P. 123

188 SIGNAL TRANSDUCTION

Deubiquitinase USP10 regulates Notch signaling in the endothelium R. Lim et al.

193 EVOLUTIONARY BIOLOGY

Rapid plant evolution driven by the interaction of pollination and herbivory S. E. Ramos and F. P. Schiestl

▶ PERSPECTIVE P. 122; PODCAST

DEPARTMENTS

105 EDITORIAL

Reverse global vaccine dissent By Heidi J. Larson and William S. Schulz

202 WORKING LIFE

The way I am By Artaza Gilani

ON THE COVER



A study of identical twins identifies molecular, physiological, and cognitive changes specific to one twin who spent a year living aboard the **International Space**

Station. The cover depicts the twins and their respective Earth-bound and space residencies, with a rocket and the International Space Station in the background. See pages 127 and 144. Illustration: Ray Oranges @ Machas

New Products	197
Science Careers	198

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2019 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership, including subscription (12 months): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$1971; Foreign postage extra: Mexico, Caribbean (surface mail) \$565 (other countries (air assist delivery): \$98. First class, airmail, student, and emeriture rates on request. Canadian rates with GST available upon request, GST #125488122. Publications Mail Agreement Number 1069624. Printed in the U.S.A. Change of address: Allow 4 weeks, giving old and new addresses and 8-digit account number. Postmaster: Send change of address to AAAS, PO. Box 96178. Washington, DC 20090-6178. Single-copy sales: \$15 each plus shipping and handling; bulk rate on request. Authorization to reproduce material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act can be obtained through the Copyright Clearance Center (CCC), www.copyright.com. The identification code for Science is 0036-8075. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.