



120 & 166

NEWS

IN BRIEF

106 News at a glance

IN DEPTH

109 SHUTDOWN STARTS TO TAKE A BITE OUT OF SCIENCE

As agency closures enter third week, effects ripple across research community *By D. Malakoff*

110 JAPAN'S EXIT FROM WHALING GROUP MAY BENEFIT WHALES

Commercial whaling will replace a controversial research program, but the market for whale meat is declining *By D. Normile*

111 HOW TO SHINE IN INDONESIAN SCIENCE? GAME THE SYSTEM

Researchers object to a metric that was easy to manipulate *By D. Rochmyaningsih*

112 SHIPS BANNED FROM THROWING UNWANTED FISH OVERBOARD

Controversial European policy worries industry while environmentalists fear rampant cheating *By E. Stokstad*

114 RESEARCHERS OBJECT TO CENSUS PRIVACY MEASURE

New approach to preserving confidentiality could harm data quality, critics say *By J. Mervis*

115 NEW HORIZONS INSPECTS A DISTANT TIME CAPSULE

Kuiper belt "snowman" supports idea that planetary building blocks coalesced from clumps of pebbles *By P. Voosen*

FEATURE

116 SEEING THE DAWN

Evidence lines up to offer a new view of how life on our planet may have emerged *By R. S. Service*

INSIGHTS

PERSPECTIVES

120 ARE CLEVER MALES PREFERRED AS MATES?

Testing this Darwinian hypothesis is a tough nut to crack *By G. F. Striedter and N. T. Burley*
▶ REPORT P. 166

122 DEMOCRATIZING SYNTHESIS BY AUTOMATION

Computer code directs interconnected modules that perform primary steps of synthesis *By A. Milo*
▶ RESEARCH ARTICLE P. 144

123 NEURONAL FUNCTION OF ALZHEIMER'S PROTEIN

Cleavage products of an Alzheimer's disease protein are involved in synaptic homeostasis *By M. Korte*
▶ RESEARCH ARTICLE P. 143

124 MANY PATHS TO PRESERVE THE BODY CLOCK

Daily clocks in astrocytes in the brain can drive behavioral rhythmicity *By C. B. Green*
▶ REPORT P. 187

126 ASSEMBLING HUMAN BRAIN ORGANIDS

Three-dimensional assembloids can be used to study human development and disease *By S. P. Pasca*

128 HOW FAST ARE THE OCEANS WARMING?

Observational records of ocean heat content show that ocean warming is accelerating *By L. Cheng et al.*

POLICY FORUM

130 THE MOOC PIVOT

What happened to disruptive transformation of education? *By J. Reich and J. A. Ruipérez-Valiente*
▶ PODCAST

BOOKS ET AL.

132 CHEAP OIL VS. CLIMATE CHANGE

The Gulf struggles to reform subsidies as temperatures and domestic energy demand rise *By M. R. Aczel*

133 THE FUTURE IS FIBER

Faster, cheaper, and more versatile than traditional telecom hardware, U.S. fiber networks still face policy hurdles *By V. Mayer-Schönberger*

LETTERS

134 INTEGRATED DATA COULD AUGMENT RESILIENCEBy *F. Vahedifard et al.***134 WILDFIRES: OPPORTUNITY FOR RESTORATION?**By *A. B. Leverkus et al.***135 PROTECT CATALONIA'S CORALS DESPITE POLITICS**By *N. Arafeh-Dalmau et al.***136 TECHNICAL COMMENT ABSTRACTS****RESEARCH**

IN BRIEF

137 From *Science* and other journals

REVIEW

140 IMMUNOMETABOLISMAn evolutionary perspective on immunometabolism *A. Wang et al.*

REVIEW SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aar3932

RESEARCH ARTICLES

141 MOLECULAR BIOLOGYCap-specific terminal N⁶-methylation of RNA by an RNA polymerase II-associated methyltransferase *S. Akichika et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aav0080

142 IMMUNOLOGYChronic TLR7 and TLR9 signaling drives anemia via differentiation of specialized hemophagocytes *H. M. Akilesh et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aao5213

143 NEUROSCIENCESecreted amyloid- β precursor protein functions as a GABA_B1a ligand to modulate synaptic transmission *H. C. Rice et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aao4827

▶ PERSPECTIVE P. 123

144 CHEMISTRYOrganic synthesis in a modular robotic system driven by a chemical programming language *S. Steiner et al.*

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:

dx.doi.org/10.1126/science.aav2211

▶ PERSPECTIVE P. 122



REPORTS

145 MEMBRANESComplete steric exclusion of ions and proton transport through confined monolayer water *K. Gopinadhan et al.***148 TOPOLOGICAL OPTICS**Observation of chiral zero mode in inhomogeneous three-dimensional Weyl metamaterials *H. Jia et al.***151 ORGANIC CHEMISTRY**Finite phenine nanotubes with periodic vacancy defects *Z. Sun et al.***155 SURFACE CHEMISTRY**Site-specific reactivity of molecules with surface defects—the case of H₂ dissociation on Pt *R. van Lent et al.***158 CHEMICAL PHYSICS**The Sommerfeld ground-wave limit for a molecule adsorbed at a surface *L. Chen et al.***161 CHEMISTRY**Nematic-to-columnar mesophase transition by in situ supramolecular polymerization *K. Yano et al.***166 SEXUAL SELECTION**Problem-solving males become more attractive to female budgerigars *J. Chen et al.*

▶ PERSPECTIVE P. 120

168 NEUROSCIENCEEmergence of preconfigured and plastic time-compressed sequences in early postnatal development *U. Farooq and G. Dragoi***174 TROPICAL ECOLOGY**Termites mitigate the effects of drought in tropical rainforest *L. A. Ashton et al.***177 PALEOECOLOGY**A 90,000-year record of Afromontane forest responses to climate change *A.-M. Lézine et al.***181 ANTIBIOTIC RESISTANCE**Invertible promoters mediate bacterial phase variation, antibiotic resistance, and host adaptation in the gut *X. Jiang et al.***187 CIRCADIAN RHYTHMS**Cell-autonomous clock of astrocytes drives circadian behavior in mammals *M. Brancaccio et al.*

▶ PERSPECTIVE P. 124

DEPARTMENTS

105 EDITORIALA fresh look at nuclear energy *By John Parsons et al.***198 WORKING LIFE**The scars we bear *By Robert S. Schick*

ON THE COVER



Worker termites (*Longipeditermes longipes*) carry masticated leaves back to their colony in the rainforest of Malaysian Borneo. Processionary termites are important decomposers of leaf

litter and can confer ecosystem resilience, as these insects often thrive during periods of environmental stress. Consequently, during drought, an uptick in termite activity and abundance leads to increased soil moisture, soil nutrient heterogeneity, leaf litter decomposition, and seedling survival. See page 174. Photo: *Chien C. Lee*

New Products..... 193
Science Careers..... 194

Science

363 (6423)

Science **363** (6423), 105-198.

ARTICLE TOOLS

<http://science.sciencemag.org/content/363/6423>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.