

644

NEWS

IN BRIEF

632 News at a glance

IN DEPTH

635 AMAZON RAINFOREST TO GET A GROWTH CHECK

Ambitious experiment will test whether rising CO₂ will boost the tropical carbon sink *By D. Grossman*

636 MORE DELAYS FOR ITER, AS PARTNERS BALK AT COSTS

Review warns that new timeline could still be too optimistic *By D. Clery and A. Cho*

637 A REBOOT FOR WAVE ENERGY

U.K. engineers and funders take stock of failures as they design new prototypes *By E. Stokstad*

639 WHY HUMANS ARE THE HIGH-ENERGY APES

Our metabolism runs faster than that of other apes, likely allowing us to evolve big brains *By A. Gibbons*

640 HUMAN EMBRYO RESEARCH CONFRONTS ETHICAL 'RULE'

Time to revise 14-day limit for growing IVF embryos? *By P. Monahan*

FEATURES

641 AN OASIS FOR ORCAS

Advocates dream of flying killer whales to an ocean sanctuary, but does science support the move? *By D. Grimm*

644 THE POWER OF PERSONALITY

From birds to spiders, individuals exhibit consistent differences in behavior that shape the fate of their species *By E. Pennisi*

► PODCAST

INSIGHTS

BOOKS ET AL.

648 FIGHTING FOR OUR FUTURE

PERSPECTIVES

654 MEASURING SLOW SLIP OFFSHORE

Monitoring changes in the seafloor might be used for earthquake and tsunami forecasting *By A. M. Tréhu*

► REPORT P. 701



656 SELF-ASSEMBLY CREATES 2D MATERIALS

Carefully chosen mixtures of polymers form rectangular platelets in solution

By M. Ballauff

► REPORT P. 697

657 INSPIRED BY NATURE

Designed proteins have structural features resembling those of natural active sites *By R. Netzer and S. J. Fleishman*

► RESEARCH ARTICLE P. 680; REPORT P. 687

658 THE "CANCER IMMUNOGRAM"

Visualizing the state of cancer-immune system interactions may spur personalized therapy

By C. U. Blank et al.



661 HOPE FOR AMERICA'S NEXT GENERATION

The gap in survival rates for children in the richest and poorest U.S. communities has shrunk

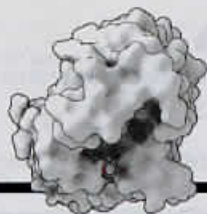
By M. J. Bailey and B. Tinpe

► REPORT P. 708

663 WHY PURSUE THE POSTDOC PATH?

Concise, diverse rationales require nuanced policies *By H. Sauermann and M. Roach*

Science Staff	630
New Products	730
Science Careers	731



LETTERS

666 AFTER FUKUSHIMA: COLLABORATION MODEL
By *N. Takamura et al.*

666 AFTER FUKUSHIMA: CREATING A DIALOGUE
By *M. Miyazaki et al.*

666 AFTER FUKUSHIMA: ADDRESSING ANXIETY
By *S. Midorikawa et al.*

667 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF

668 From *Science* and other journals

REVIEW

671 CELLULAR DYNAMICS
Nongenetic functions of the genome
M. Bustin and T. Misteli
REVIEW SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.aad6933

RESEARCH ARTICLES

672 NEUROSCIENCE
Autism-associated SHANK3 haploinsufficiency causes I_{h} channelopathy in human neurons
F. Yi et al.
RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.aaf2669

673 PRIMATE EVOLUTION
Oligocene primates from China reveal divergence between African and Asian primate evolution
X. Ni et al.

677 ASTROPARTICLE PHYSICS
Observation of the ^{60}Fe nucleosynthesis-clock isotope in galactic cosmic rays
W. R. Binns et al.

680 PROTEIN DESIGN
De novo design of protein homooligomers with modular hydrogen-bond network-mediated specificity
S. E. Boyken et al.
► PERSPECTIVE P. 657; REPORT P. 687

REPORTS

687 PROTEIN DESIGN
Design of structurally distinct proteins using strategies inspired by evolution
T. M. Jacobs et al.
► PERSPECTIVE P. 657;
RESEARCH ARTICLE P. 680

691 MICROFLUIDICS
Submillisecond organic synthesis: Outpacing Fries rearrangement through microfluidic rapid mixing
H. Kim et al.

694 GEOMORPHOLOGY
Self-organization of river channels as a critical filter on climate signals
C. B. Phillips and D. J. Jerolmack

697 POLYMER GROWTH
Uniform patchy and hollow rectangular platelet micelles from crystallizable polymer blends
H. Qiu et al.
► PERSPECTIVE P. 656

701 GEOPHYSICS
Slow slip near the trench at the Hikurangi subduction zone, New Zealand
L. M. Wallace et al.
► PERSPECTIVE P. 654

705 GEOBIOLOGY
Mass-dependent and -independent signature of Fe isotopes in magnetotactic bacteria
M. Amor et al.

708 DEMOGRAPHY
Inequality in mortality decreased among the young while increasing for older adults, 1990–2010
J. Currie and H. Schwandt
► PERSPECTIVE P. 661

712 NEURODEVELOPMENT
Complement and microglia mediate early synapse loss in Alzheimer mouse models
S. Hong et al.

717 EPIGENETICS
Single-molecule decoding of combinatorially modified nucleosomes
E. Shema et al.

721 CELL BIOLOGY
Microtubule doublets are double-track railways for intraflagellar transport trains
L. Stepanek and G. Pigino

725 PROTEIN STRUCTURE
Femtosecond structural dynamics drives the trans/cis isomerization in photoactive yellow protein
K. Pande et al.

DEPARTMENTS

631 EDITORIAL
Don't ignore the infrastructure
By *Alan I. Leshner*

738 WORKING LIFE
Learning the lessons of networking
By *Peter M. Grace*

ON THE COVER



Intraflagellar transport (IFT) in the cilium of a eukaryotic cell. IFT trains use microtubule doublets as bidirectional railways to transport ciliary building blocks. Assigning directionality to individual

microtubules ensures that trains moving forward (purple) and backward (red) do not collide. Thus, traffic jams are avoided during assembly and disassembly of the cilium. See page 721. *Illustration: C. Bickel/Science*

SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the 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. 484-660) paid at Washington, DC, and additional mailing offices. Copyright © 2016 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$1522. Foreign postage extra: Mexico, Caribbean (surface mail): \$65; other countries (air assist delivery): \$89. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request. GST #R1254 88122. Publications Mail Agreement Number: 1059624. 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, P.O. Box 96178, Washington, DC 20090-6178. Single-copy sales: \$15.00 current issue, \$20.00 back issue prepaid includes surface postage; bulk rates on request. Authorization to photocopy material for internal or personal use, under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that \$35.00 per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. The identification code for Science is 0036-8075. Science is indexed in the Reader's Guide to Periodical Literature and in several specialized indexes.