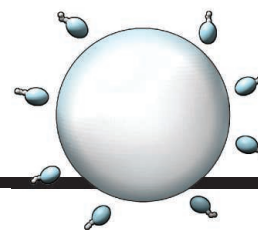


CONTENTS

19 MAY 2017 • VOLUME 356 • ISSUE 6339



701 & 753

Can ATP solubilize proteins?



FEATURES

677 SPECIAL SECTION: PEOPLE ON THE MOVE

By E. Culotta

678 BUSTING MYTHS OF ORIGIN

Despite their tales of origin, most people are the mixed descendants of many migrations *By A. Gibbons*

682 THE PAIN OF EXILE

Long-persecuted Yezidis unite to cope with the mental stress of forced migration *By E. Underwood*

687 BATTLING BIAS

How can we blunt prejudice against immigrants? *By J. Couzin-Frankel*

690 RESTLESS MINDS

Analysis of a vast set of public CVs reveals the world's most migratory scientists *By J. Bohannon*

691 Introducing ORCID

By J. Bohannon

SEE ALSO ► EDITORIAL ► PODCAST



ON THE COVER

In an extreme example of humans' migratory urge, many scientists study and work in multiple countries. The cover depicts the journeys of individual scientists over the course of their careers, as reconstructed from data in ORCID; the blue path represents the trajectory of Rimantas Kodzius, who may be the most migratory living scientist. See special section on human migration, pages 676 and 694. *Data analysis: John Bohannon and Jia You/Science; Visualization: Valerie Altounian/Science*

POLICY FORUM

694 CROSSING BORDERS ALONG AN ENDLESS FRONTIER *By B. Wible*

694 A mobility boost for research

By G. Scellato et al.

695 Private strategy, public policy

By W. Kerr

695 Countering European brain drain

By R. Veugelers

696 Mismatched supply and demand

By K. B. Doran

696 Migration of ideas: China and U.S.

By R. Freeman

697 Immigrant patents boost growth

By J. Hunt

697 Reservoir of foreign talent

By J. Bound et al.

LETTERS

698 MIGRATION TODAY: DISPLACED SCIENTISTS *By J. Sills*

699 OUTSIDE THE TOWER: GIVING REFUGEES A CHANCE

By C. Bachmann

NEWS

IN BRIEF

668 News at a glance

IN DEPTH

670 PLOT TO REDEFINE THE KILOGRAM NEARS CLIMAX

Metrologists present data needed to switch to standard based on constant of nature *By A. Cho*

671 SEA TRASH TRAPS FACE DOUBTS

The Ocean Cleanup envisions launching a fleet of drifting garbage collectors into the North Pacific Gyre *By E. Stokstad*

672 PAOLO MACCHIARINI'S ACADEMIC AFTERLIFE IN RUSSIA ENDS

Disgraced surgeon loses funding and job but won't face misconduct investigation *By A. Astakhova*

673 GENOME WRITING PROJECT CONFRONTS TECHNOLOGY HURDLES

Grand challenge founders seek advances in DNA synthesis *By K. Servick*

674 ISLAND EXTINCTIONS WEREN'T INEVITABLE

During the ice age, human colonizers often coexisted with vulnerable island fauna *By A. Reese*

INSIGHTS

PERSPECTIVES

700 NITROGEN POLLUTION KNOWS NO BOUNDS

Coral nitrogen isotope data reveal increasing anthropogenic nitrogen fluxes to the ocean *By E. Boyle*

► REPORT P. 749

701 ATP CONTROLS THE CROWD

A major energy carrier of the cell also promotes protein solubility *By A. M. Rice and M. K. Rosen*

► REPORT P. 753

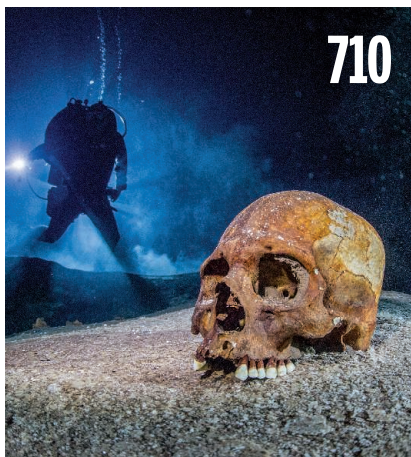
CONTENTS

19 MAY 2017 • VOLUME 356 • ISSUE 6339



704 & 739

Looking against
the grain



710

703 REPULSIVE BEHAVIOR IN GERMINAL CENTERS

B cell-T cell interactions are terminated by EPH receptors and ligands
By G. L. Moschovakis and R. Förster
► RESEARCH ARTICLE P. 716

704 MULTISCALE MEASUREMENTS FOR MATERIALS MODELING

Tracking defect motion in polycrystalline materials can help model emergent properties
By R. Suter
► REPORT P. 739

706 RIGHTSIZING CARBON DIOXIDE REMOVAL

Betting the future on planetary-scale carbon dioxide removal from the atmosphere is risky
By C. B. Field and K. J. Mach

708 DEFINING THE TOPOGRAPHY OF A PLANETARY BODY

River and landscape topography, combined, can reveal the geologic history of a planet
By D. Burr
► REPORT P. 727

BOOKS ET AL.

709 THE NEXT ENERGY ECONOMY

Mapping emerging trends in energy innovation, an economist anticipates a fossil fuel-free future
By A. S. Hopkins

710 CHEW ON THIS

A paleoecological exploration probes the evolution of human diets
By K. C. Beard

RESEARCH

IN BRIEF

712 From *Science* and other journals

RESEARCH ARTICLES

715 NEUROSCIENCE

Three-dimensional Ca²⁺ imaging advances understanding of astrocyte biology
E. Bindocci et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
[dx.doi.org/10.1126/science.aai8185](https://doi.org/10.1126/science.aai8185)

716 GERMINAL CENTERS

Ephrin B1-mediated repulsion and signaling control germinal center T cell territoriality and function
P. Lu et al.

RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
[dx.doi.org/10.1126/science.aai9264](https://doi.org/10.1126/science.aai9264)

► PERSPECTIVE P. 703

717 CELL FATE

Blocking promiscuous activation at cryptic promoters directs cell type-specific gene expression
J. Kim et al.

722 NEURODEVELOPMENT

Lineage-dependent spatial and functional organization of the mammalian enteric nervous system
R. Lasrado et al.

REPORTS

727 PLANETARY TOPOGRAPHY

Global drainage patterns and the origins of topographic relief on Earth, Mars, and Titan
B. A. Black et al.

► PERSPECTIVE P. 708

731 MOLECULAR SORPTION

Hydrolytically stable fluorinated metal-organic frameworks for energy-efficient dehydration
A. Cadiou et al.

736 OPTICS

High-harmonic generation in graphene enhanced by elliptically polarized light excitation
N. Yoshikawa et al.

739 MATERIALS SCIENCE

Bragg coherent diffractive imaging of single-grain defect dynamics in polycrystalline films
A. Yau et al.

► PERSPECTIVE P. 704

742 LATITUDINAL GRADIENTS

Higher predation risk for insect prey at low latitudes and elevations
T. Roslin et al.

745 NEUROSCIENCE

A dedicated network for social interaction processing in the primate brain
J. Sliwa and W. A. Freiwald

749 NITROGEN CYCLE

21st century rise in anthropogenic nitrogen deposition on a remote coral reef
H. Ren et al.

► PERSPECTIVE P. 700

753 BIOCHEMISTRY

ATP as a biological hydrotrope
A. Patel et al.

► PERSPECTIVE P. 701

757 DEVELOPMENTAL BIOLOGY

A placental growth factor is silenced in mouse embryos by the zinc finger protein ZFP568
P. Yang et al.

DEPARTMENTS

667 EDITORIAL

Migration—the choices we face
By Mohamed H. A. Hassan
► MIGRATION SECTION P. 677

774 WORKING LIFE

The journey of a scientist mother
By Paula de Tezanos Pinto

Science Staff 664
New Products 764
Science Careers 765

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. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2017 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): \$1659. Foreign postage extra; Mexico, Caribbean (surface mail) \$55; 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 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, P.O. Box 96178, Washington, DC 20090-6178. Single-copy sales: \$23.00 current issue, \$28.00 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.



356 (6339)
(May 19, 2017)
Science **356** (6339), 667-774.

Editor's Summary

This copy is for your personal, non-commercial use only.

- Article Tools** Visit the online version of this article to access the personalization and article tools:
<http://science.sciencemag.org/content/356/6339>
- Permissions** Obtain information about reproducing this article:
<http://www.sciencemag.org/about/permissions.dtl>

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published weekly, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. Copyright 2016 by the American Association for the Advancement of Science; all rights reserved. The title *Science* is a registered trademark of AAAS.