CONTENTS

EDITORIAL
9  Climate Change Conversations
   Bassam Z. Shakhashiri and Jerry A. Bell

NEWS OF THE WEEK
14  A roundup of the week’s top stories

NEWS & ANALYSIS
17  New Coronavirus Reveals Some of Its Secrets
19  Fluttering From the Ashes?
   >> Policy Forum p. 32
21  How to Build a Dream-Reading Machine
   >> Science Express Report by T. Horkawa et al.

NEWS FOCUS
22  The Deep Earth Machine Is Coming Together
   >> Science Podcast
25  ‘Dead’ Enzymes Show Signs of Life
   Dead or Alive?

LETTERS
28  NextGenVOICES

BOOKS ET AL.
31  Naked Statistics
   C. Wheelan, reviewed by E. J. Lamb
31  Browsings

POLICY FORUM
32  What If Extinction Is Not Forever?
   J. S. Sherkow and H. T. Greely
   >> News story p. 19; Science Podcast

PERSPECTIVES
34  Dynamics of Coral Reef Recovery
   B. Polidoro and K. Carpenter
   >> Report p. 69
35  A Trace of Your Place
   B. Pouget and F. Sargolini
   >> Research Article p. 44
36  The Perfect Hypnotic?
   E. Mignot
38  Breathing Perchlorate
   R. Nerenberg
   >> Report p. 85
39  Programmed Cell Death in Neuronal Development
   M. P. J. Dekkers and Y. A. Barde
41  Revealing the Positive Side of Fluorine
   U. Hennecke
   >> Report p. 57
42  Modeling the Solar Dynamo
   P. Charbonneau and P. K. Smolarkiewicz

RESEARCH ARTICLE
44  Optogenetic Dissection of Entorhinal-Hippocampal Functional Connectivity
   S.-J. Zhang et al.
The place-cell population of the hippocampus receives direct input from a variety of medial entorhinal neurons.
Research Article summary; for full text: http://dx.doi.org/10.1126/science.1232627
   >> Perspective p. 35

CONTENTS continued >>

ON THE WEB THIS WEEK
   >> Science Podcast
Listen to stories on de-extinction, decoding dreams, Earth’s inner movements, and more.
   >> Find More Online
Check out Science Express, our podcast, videos, daily news, our research journals, and Science Careers at www.sciencemag.org.

DEPARTMENTS
7  This Week in Science
10  Editors’ Choice
12  Science Staff
99  New Products
100  Science Careers

COVER
A network of picoliter aqueous droplets generated by 3D printing. After printing, the droplet network folded into a hollow sphere (diameter: 0.4 millimeters). In these designed tissue-like materials, adjacent compartments are separated by lipid bilayers and can communicate with each other and the environment. Such printed materials might be used to deliver drugs or, in the long term, to augment failing organs. See page 48.

Photo: Gabriel Villar

www.sciencemag.org  SCIENCE  VOL 340  5 APRIL 2013  Published by AAAS
REPORTS

45  An Integral View of Fast Shocks Around Supernova 1006
S. Nikolić et al.
Spatially resolved spectroscopy of a supernova remnant reveals its high-velocity shocks in great detail.

48  A Tissue-Like Printed Material
G. Villar et al.
A tissue-like printed material with communicating microcompartments employs membrane proteins and can be programmed to fold.

52  Broadband 2D Electronic Spectroscopy Reveals a Carotenoid Dark State in Purple Bacteria
E. E. Ostroumov et al.
A sophisticated spectroscopic technique pinpoints an intermediate electronic state in light-harvesting pigments.

57  Evidence for a Symmetrical Fluoruron Ion in Solution
M. D. Struble et al.
Fluoride appears to form a dicoordinate carbon-bridging intermediate previously seen only for the heavier halogens.

60  Photochemical Route for Accessing Amorphous Metal Oxide Materials for Water Oxidation Catalysis
R. D. L. Smith et al.
Amorphous oxides of earth-abundant metals catalyze water oxidation with performance approaching that of noble metal catalysts.

63  Europe-Wide Dampening of Population Cycles in Keystone Herbivores
T. Cornulier et al.
Synchronicity in vole population fluctuations across Europe suggests a common climatic driver.

66  Detection and Learning of Floral Electric Fields by Bumblebees
D. Clarke et al.
Flower-specific electric fields are used by bumblebees to enhance discrimination and memory of floral rewards.

69  Recovery of an Isolated Coral Reef System Following Severe Disturbance
J. P. Gilmour et al.
Isolated reefs with thriving herbivorous fish populations can recover rapidly after major bleaching events.

71  Mechanism-Based Covalent Neuraminidase Inhibitors with Broad-Spectrum Influenza Antiviral Activity
J.-H. Kim et al.
Looking deeply into the mechanism of enzyme inhibition provides a clue for the development of new drugs to fight flu.

75  Decameric SelA•tRNA^Sec Ring Structure Reveals Mechanism of Bacterial Selenocysteine Formation
Y. Itoh et al.
Structural and biochemical data reveal how selenocysteine is produced from serine on transfer RNA.

78  Drosohia H1 Regulates the Genetic Activity of Heterochromatin by Recruitment of Su(var)3-9
X. Lu et al.
The "fifth" histone, H1, acts to recruit a histone-methylating enzyme to silence specific regions of the genome.

82  Translational Repression and eIF4A2 Activity Are Critical for MicroRNA-Mediated Gene Regulation
H. A. Meijer et al.
MicroRNAs repress target messenger RNAs with structured 5' ends through a protein translation initiation factor.

85  Archaeal (Per)Chlorate Reduction at High Temperature: An Interplay of Biotic and Abiotic Reactions
M. G. Liebensteiner et al.
Reduction of perchlorate by a hyperthermophilic archaeon suggests early evolution of enzymes using chlorine oxanions.

87  Influence of HLA-C Expression Level on HIV Control
R. Apps et al.
Increased levels of human leukocyte antigen C are associated with control of HIV infection but increased susceptibility to Crohn’s disease.

91  Transposition-Driven Genomic Heterogeneity in the Drosohia Brain
P. N. Perrat et al.
Transposon movement in memory-relevant neurons in fruit flies increases neuronal diversity within and between animals.

95  Rats and Humans Can Optimally Accumulate Evidence for Decision-Making
B. W. Brunton et al.
A model of decision-making that is based on the accumulative processing of noisy information is described.