INTRODUCTION

56 Scientific Discourse: Buckling at the Seams
R. Stone and B. Jasny

NEWS

58 The Rise of Open Access
60 Who’s Afraid of Peer Review?

>> Science Podcast

66 The Seer of Science Publishing

68 The Power of Negative Thinking

>> Science Podcast

70 Hey, You’ve Got To Hide Your Work Away

LETTERS

36 NextGenVoices

BOOKS ET AL.

39 From Strange Simplicity to Complex Familiarity
M. Eigen, reviewed by A. Traulsen

40 The Power Surge
M. Levi, reviewed by S. H. Ali

POLICY FORUM

80 Scholarly Communication: Cultural Contexts, Evolving Models
D. Harley

>> Editorial p. 13; Perspectives pp. 44, 49, and 53; Report p. 127; Science Careers, Survey, Interactive, and Podcast at www.sciencemag.org/special/scicomm

PERSPECTIVES

44 Future Science
J. A. Evans

>> Communication in Science section p. 56; Report p. 127

45 Small RNA—the Secret of Noble Rot
D. Baulcombe

>> Report p. 118

46 Turn the Molecule This Way for a Faster Reaction
M. C. Heaven

>> Report p. 98

47 Social Factors in Epidemiology
C. T. Bauch and A. P. Galvani

>> Perspective p. 53

49 Public Science 2.0—Back to the Future
C. Könneker and B. Lugger

>> Communication in Science section p. 56

50 Fine-Tuning Photosynthesis
J.-D. Rochaix

>> Report p. 114

52 A Looser Clock to Cure Jet Lag
M. H. Hastings

>> Research Article p. 85

53 A Risky Science Communication Environment for Vaccines
D. M. Kahan

>> Perspective p. 47; Communication in Science section p. 56; Science Podcast

CONTENTS continued >>

ON THE WEB THIS WEEK

>> Science Podcast
Listen to a special show dedicated to science communication in which we explore pressures and predators.

>> Find More Online
Check out Science Express, our podcast, videos, daily news, our research journals, and Science Careers at www.sciencemag.org.

COVER
The ability to publish papers and underlying data in full on the Internet is changing how scientists communicate. However, trust in the integrity of submissions and in peer reviewers is being tested by a recent disruptive change: open access. In a special section, *Science* probes the dramatic shifts in the landscape of scientific communication. See page 56.

Image: David Plunkert

DEPARTMENTS

11 This Week in Science
15 Editors’ Choice
18 Science Staff
133 New Products
134 Science Careers
**REPORTS**

91 Selective Gas Transport Through Few-Layered Graphene and Graphene Oxide Membranes
H. W. Kim et al.
Stacked graphene and graphene oxide membranes prepared with gas flow channels exhibit tunable gas separation performance.

95 Ultrathin, Molecular-Sieving Graphene Oxide Membranes for Selective Hydrogen Separation
H. Li et al.
Ultrapure graphene oxide membranes show enhanced separation selectivity for hydrogen gas.

98 Specific Chemical Reactivities of Spatially Separated 3-Aminophenol Conformers with Cold Ca+ Ions
Y.-P. Chang et al.
A molecular beam technique measures the different reactivities of a compound’s distinct rotational conformations.

**RESEARCH ARTICLES**

84 Integrative Annotation of Variants from 1092 Humans: Application to Cancer Genomics
E. Khurana et al.
Regions under strong selection in the human genome identify noncoding regulatory elements with possible roles in disease. Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1235587

85 Mice Genetically Deficient in Vasopressin V1a and V1b Receptors Are Resistant to Jet Lag
Y. Yamaguchi et al.
In mice, the pace of recovery from jet lag is partly determined by vasopressin signaling in a certain region of the brain.

104 Following Gene Duplication, Paralog Interference Constrains Transcriptional Circuit Evolution
C. R. Baker et al.
Interactions between recent gene duplicates may create functional interference, selecting for regulatory complexity.

108 Surviving in a Marine Desert: The Sponge Loop Retains Resources Within Coral Reefs
J. M. de Goeri et al.
Sponges take up dissolved organic matter and convert it into consumable cellular material.

111 Allele-Specific Silencing of Mutant Mvh6 Transcripts in Mice Suppresses Hypertrophic Cardiomyopathy
J. Jiang et al.
In a mouse model, heart disease can be delayed by a therapy that prevents expression of the disease-causing mutation.

114 A Thylakoid-Located Two-Pore K+ Channel Controls Photosynthetic Light Utilization in Plants
L. Carraretto et al.
The electrochemical gradient used to make adenosine triphosphate in photosynthesis is modulated by potassium counterflow.

118 Fungal Small RNAs Suppress Plant Immunity by Hijacking Host RNA Interference Pathways
A. Weiberg et al.
A pathogenic fungus delivers small RNA molecules to disable gene regulatory systems in the target plant.

123 Crystal Structure of Na+, K+-ATPase in the Na+-Bound State
M. Nyblom et al.
The location of three bound sodium ions and the mechanism of sodium release in a key plasma membrane ion pump are revealed.

127 Quantifying Long-Term Scientific Impact
D. Wang et al.
Early citation history can be used to model the total number of citations a paper will receive and to compare journals.