31 July 2009 | $10

Science

Restoration Ecology

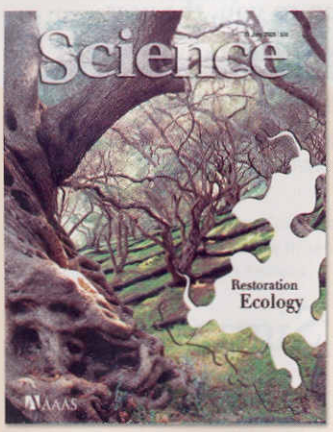
AAAS

SPECIAL SECTION

Restoration Ecology

page 528

CONTENTS continued >>



COVER

Like solving a puzzle whose pieces themselves change shape, ecologists around the world are developing techniques to restore degraded and exploited ecosystems. See the special section beginning on page 555.

Photo illustration: Nayomi Kevitiyagala (image: Grand Tour/Corbis)

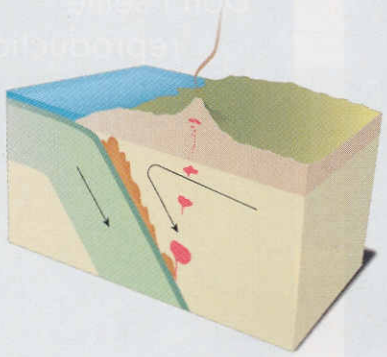
DEPARTMENTS

PERSPECTIVES

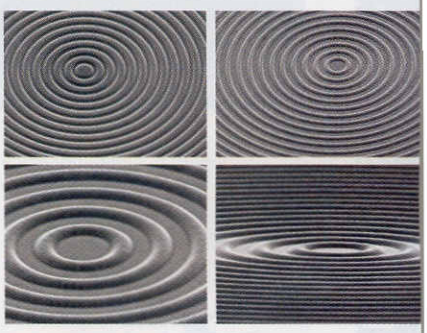
BREVIA

RESEARCH ARTICLES

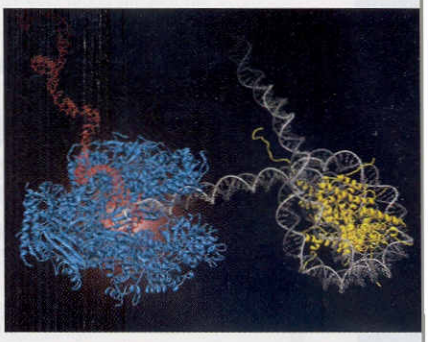
REPORTS



pages 545 & 605



page 594



pages 547 & 626

CONTENTS continued >>

SCIENCEONLINE

SCIENCEXPRESS
www.sciencexpress.org

Unprecedented Restoration of a Native Oyster Metapopulation
D. M. Schulte et al.

The height of oyster reefs above the river bed promotes their restoration in the Chesapeake Bay.
10.1126/science.1176516
>> *News story p. 525; Restoration Ecology section p. 555*

Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: a Meta-Analysis
J. M. Rey Benayas et al.

Restoration, biodiversity, and ecosystem services are positively linked in a wide range of ecosystem types across the globe.
10.1126/science.1172460
>> *Restoration Ecology section p. 555; Science Podcast*

Common Regulatory Variation Impacts Gene Expression in a Cell Type–Dependent Manner
A. S. Dimas et al.

Genetic variation in regulatory elements among humans affects gene expression in a tissue specific manner.
10.1126/science.1174148

Reassessing the Source of Long-Period Comets
N. A. Kaib and T. Quinn

Numerical simulations show that the inner Oort Cloud is a major source of long-period comets that cross Earth's orbit.
10.1126/science.1172676

Barcoding of Plants and Fungi
M. W. Chase and M. F. Fay

10.1126/science.1176906
>> *News story p. 526; Restoration Ecology section p. 555*

TECHNICALCOMMENTS

Comment on "Remeasuring the Double Helix"
N. B. Becker and R. Everaers

full text at www.sciencemag.org/cgi/content/full/325/5940/538-b

Response to Comment on "Remeasuring the Double Helix"
R. S. Mathew-Fenn et al.

full text at www.sciencemag.org/cgi/content/full/325/5940/538-c

SCIENCENOW
www.sciencenow.org
Highlights From Our Daily News Coverage

A 'Cloaking Device' for Earthquakes
Plastic rings could make buildings invisible to quake waves.

New Zealand Tree Stuck in a Time Warp
Plant still harbors adaptations that protected it from a long-dead foe.

Catching a Giant Wave
New insights into tsunami behavior may help researchers better track them with radar.

SCIENCESIGNALING
www.sciencesignaling.org
The Signal Transduction Knowledge Environment

EDITORIAL GUIDE: Unraveling Signaling Complexity
N. R. Gough and J. F. Foley

Dynamics adds to the complexity of signaling networks.

RESEARCH ARTICLE: Cell Type–Specific Importance of Ras–c-Raf Complex Association Rate Constants for MAPK Signaling
C. Kiel and L. Serrano

Ras–c-Raf association rates affect downstream signaling in the absence of negative feedback but not in its presence.

RESEARCH ARTICLE: Comparative Analysis Reveals Conserved Protein Phosphorylation Networks Implicated in Multiple Diseases
C. S. H. Tan et al.

Comparing the human phosphoproteome to that of flies, worms, and yeast reveals insights into evolution and disease.

RESEARCH ARTICLE: Integrating Proteomic, Transcriptional, and Interactome Data Reveals Hidden Components of Signaling and Regulatory Networks
S.-S. C. Huang and E. Fraenkel

Analysis of multiple "omic" data sets with a prize-collecting Steiner tree algorithm reveals components of signaling networks that are not obvious by analyzing the data individually.

PERSPECTIVE: Understanding Modularity in Molecular Networks Requires Dynamics
R. P. Alexander et al.

Relating structure and dynamics of molecular networks remains very challenging.

PERSPECTIVE: Proteomic Revelation—SUMO Changes Partners When the Heat Is On
K. Flick and P. Kaiser

A system-level view of SUMOylation dynamics shows the importance of SUMOylation to the heat shock response.

PERSPECTIVE: The Complexity of Cell Signaling and the Need for a New Mechanics
W. S. Hlavacek and J. R. Faeder

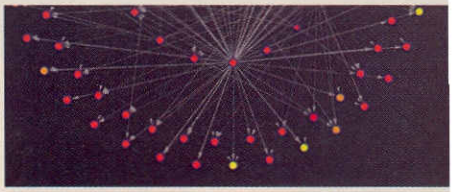
Studies that make sense of protein networks provide approaches to cope with complex signaling pathways.

PERSPECTIVE: Dynamic Advances in NF-κB Signaling Analysis
T. Kobayashi and R. Kageyama

Cytokine stimulation of cells at different time intervals produces distinct patterns of NF-κB–dependent gene transcription.

PODCAST
M. B. Yaffe and A. M. VanHook

Science Signaling's Chief Scientific Editor discusses complexity in signaling networks.



SCIENCESIGNALING
Kinase-substrate network.

SCIENCECAREERS
www.sciencecareers.org/career_magazine
Free Career Resources for Scientists

Perspective: How to Succeed in Big Science and Still Get Tenure
V. McGovern

You need to show that you are a serious scientist, separate from your work group.

Independent Postdocs: Early Autonomy
E. Pain

Demonstrate your independence by negotiating with advisers, seeking individual fellowships, or obtaining a junior-PI position.

Independent Postdocs: Resources
E. Pain

Here is a list of grants, fellowships, and junior-leader positions for postdocs in Europe and the United States.

SCIENCEPODCAST
www.sciencemag.org/multimedia/podcast
Free Weekly Show

Download the 31 July *Science* Podcast to hear about assessing ecological restoration, rethinking graduate student funding, science in Venezuela, and more.

ORIGINSBLOG
blogs.sciencemag.org/origins
A History of Beginnings

SCIENCEINSIDER
blogs.sciencemag.org/scienceinsider
Science Policy News and Analysis

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. Domestic individual membership and subscription (51 issues): $146 ($74 allocated to subscription). Domestic institutional subscription (51 issues): $835; Foreign postage extra: Mexico, Caribbean (surface mail) $55; other countries (air assist delivery) $85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 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:** $10.00 current issue, $15.00 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 $20.00 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.

AAAS
ADVANCING SCIENCE, SERVING SOCIETY

CREDIT: (*SCIENCE SIGNALING*) CHRIS SOON HENG TAN/SAMUEL LUNENFELD RESEARCH INSTITUTE AND RUNE LINDING/THE INSTITUTE OF CANCER RESEARCH