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Forests in Flux

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The Future of Forests

NEWS
A Second Chance for Rainforest Biodiversity
Critical Time for African Rainforests
Letting 1000 Forests Bloom

REVIEW
Forests and Climate Change: Forcings, Feedbacks, and the Climate Benefits of Forests
G. B. Bonan

PERSPECTIVES
Forests of the Past: A Window to Future Changes
R. J. Petit, F. S. Hu, C. W. Dick
Predictive Models of Forest Dynamics
D. Purves and S. Pacala
Reducing Greenhouse Gas Emissions from Deforestation and Forest Degradation: Global Land-Use Implications
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NEUROSCIENCE
The Spread of Ras Activity Triggered by Activation of a Single Dendritic Spine
C. D. Harvey, R. Yasuda, H. Zhong, K. Svoboda
When strengthened, individual synapses on dendritic spines contain an activated small regulatory protein that spreads to nearby spines, possibly altering their sensitivity.
10.1126/science.1159675

BIOCHEMISTRY
Micelles Protect Membrane Complexes from Solution to Vacuum
N. P. Barrera, N. Di Bartolo, P. J. Booth, C. V. Robinson
Gas-phase lipid micelles protect a large complex of membrane proteins, allowing its subunit composition and ligand binding to be assessed by mass spectrometry.
10.1126/science.1159292

PHYSICS
Entangled Images from Four-Wave Mixing
V. Boyer, A. M. Marino, R. C. Pooser, P. D. Lett
Passing light through a warm cloud of rubidium atoms creates quantum mechanically entangled twin images.
10.1126/science.1158275

ASTRONOMY
Supernova Shock Breakout from a Red Supergiant
K. Schawinski et al.
A burst of ultraviolet light reveals the initial expansion of a star leading to a supernova and identifies the star as a red supergiant.
10.1126/science.1160456

LETTERS
Biofuels: Waste Not Want Not
L. P. Koh, H. T. W. Tan, N. S. Sodhi
Biofuels: Too Soon to Give Up D. Arvizu
Biofuels: Think Outside the Cornfield R. A. Sedjo
Response J. Fargione et al.

BOOKS
When We Left Earth The NASA Missions R. Dale and B. Howard, Executive Producers, reviewed by J. M. Pasachoff

CORRECTIONS AND CLARIFICATIONS

RESEARCH ARTICLES
CELL BIOLOGY
An in Vivo Map of the Yeast Protein Interactome K. Tarassov et al.
A method that identifies pairs of proteins that are 8 nanometers apart produces a map of interacting proteins in living yeast, finding known and previously unknown networks.

BIOCHEMISTRY
Recognition Dynamics Up to Microseconds Revealed from an RDC-Derived Ubiquitin Ensemble in Solution O. F. Lange et al.
In solution, ubiquitin assumes all conformations seen in crystal structures of its complexes, indicating that it binds by conformational selection rather than induced fit. >> Perspective p. 1429

PLANT SCIENCE
Germination, Genetics, and Growth of an Ancient Date Seed S. Sallon et al.
A 2000-year-old date seed—recovered from archaeological excavations near the Dead Sea in Israel—successfully germinated and grew. >> Science Podcast

ASTRONOMY
Supernova Shock Breakout from a Red Supergiant K. Schawinski et al.
A burst of ultraviolet light reveals the initial expansion of a star leading to a supernova and identifies the star as a red supergiant.
10.1126/science.1160456
CELL SIGNALING
The Rag GTPases Bind Raptor and Mediate Amino Acid Signaling to mTORC1
Y. Sancak et al.
Nutrients, specifically amino acids, are sensed by small guanosine triphosphatases, which bind to a signaling complex, moving it close to the nucleus where it initiates cell growth.

ECOLOGY
Animal Versus Wind Dispersal and the Robustness of Tree Species to Deforestation
D. Montoya, M. A. Zavala, M. A. Rodriguez, D. W. Purves
In Spanish forests, tree species with seeds that are dispersed by animals are more resilient in a fragmented forest than those with wind-dispersed seeds.

DEVELOPMENTAL BIOLOGY
VelB/VeA/LaeA Complex Coordinates Light Signal with Fungal Development and Secondary Metabolism
Ö. Bayram et al.
The multiprotein velvet complex in the fungus Aspergillus nidulans coordinates light-responsive development and the generation of secondary metabolites such as antibiotics and toxins.

MOLECULAR BIOLOGY
Activation of the Cellular DNA Damage Response in the Absence of DNA Lesions
E. Soutoglou and T. Misteli
Protein complexes that usually assemble on and repair damaged DNA can form at undamaged sites to halt the cell cycle if several of the proteins are first tethered there.

NEUROSCIENCE
Transfer of Learning After Updating Training Mediated by the Striatum
E. Dahlin, A. S. Neely, A. Larsson, L. Bäckman, L. Nyberg
Individuals who become better at a letter recognition test through practice also improve at a different task, even without practice, when both tasks utilize the same brain region.

SPECIAL FEATURE
Careers in Forest Ecology
www.sciencemag.org/careers
Sustaining Forests in a Changing World
A Self-Made Climber
Measuring the Impact of Invasive Plants
An Adventurous Physicist

>> Science Podcast
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>> Petsite p. 1435; for related online content, see p. 1391 or go to www.sciencemag.org/forests/
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Science Careers Podcast: An Interview With Catherine Cardelús
K. Travis
The young rainforest ecologist talks about what it’s like to work in the forest canopy.

SCIENCE ONLINE FEATURE
VIDEO: Forests in Flux
An accompaniment to this week’s special section on the future of forests in light of climate change and human activity.

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