COVER
Wet bark of a Pacific yew tree ( Taxus brevifolia ) in Union, Washington, USA (vertical dimension ~15 centimeters). Wild Pacific yew thrives in the damp coastal forests of northwestern North America, with thin bark ranging in color from rose to auburn. The anticancer agent paclitaxel was originally derived from yew trees. Such complex and useful compounds are just one of the many outputs from plant metabolic networks, as analyzed in the special issue beginning on page 1657.

Photo: Don Paulson, www.donpaulson.com
**SCIENCE PRIZE ESSAY**

1654 Engaging Students in Earthquakes via Real-Time Data and Decisions
A. E. Egger

**REVIEW**

1676 A Decade of Imaging Cellular Motility and Interaction Dynamics in the Immune System
R. N. Germain et al.

**BREVIA**

1683 Hesperian Age for Western Medusae Fossae Formation, Mars
J. R. Zimbelman and S. P. Scheidt
Counts of impact craters provide age for a region on Mars close to the landing site of rover Curiosity.

**REPORTS**

1684 Synthesis of Self-Pillared Zeolite Nanosheets by Repetitive Branching
X. Zhang et al.
Single-step synthesis of pillared zeolite nanosheets is achieved with a common structure-directing agent.

1687 Seemingly Anomalous Angular Distributions in H + D₂ Reactive Scattering
J. Jankunas et al.
An elementary chemical reaction manifests unexpectedly complex rotational dynamics.

1690 Major Earthquakes Occur Regularly on an Isolated Plate Boundary Fault
K. R. Berryman et al.
Evidence of past earthquakes from sediments along New Zealand’s Alpine Fault improves seismic hazard estimates.

1693 Bilateral Burrows and Grazing Behavior at >585 Million Years Ago
E. Pecoits et al.
Neoproterozoic trace fossils from Uruguay indicate that early animals appeared at a time between global glaciations.

1696 Early Pottery at 20,000 Years Ago in Xianrendong Cave, China
X. Wu et al.
Shards from a cave in China imply that humans had invented pottery and used it for cooking by about 20,000 years ago.

1700 Photonic Crystal Light Collectors in Fish Retina Improve Vision in Turbid Water
M. Kreysing et al.
Layering cones on top of rods allows the elephantnose fish to see low-contrast objects in a murky environment.

1704 A *Papaver somniferum* 10-Gene Cluster for Synthesis of the Anticancer Alkaloid Noscapine
T. Winzer et al.
A biosynthetic pathway inherited as a gene cluster generates a pharmaceutically useful alkaloid in poppies.

1708 Structural Basis for Prereceptor Modulation of Plant Hormones by GH3 Proteins
C. S. Westfall et al.
Crystal structures of plant GH3 proteins reveal how these enzymes accommodate jasmonates, auxins, and benzoxates.

1711 *Uniform ripening* Encodes a Golden 2-like Transcription Factor Regulating Tomato Fruit Chloroplast Development
A. L. T. Powell et al.
Controlling when tomatoes turn from green to red requires knocking out the gene that adds flavor.

1715 The Paleozoic Origin of Enzymatic Lignin Decomposition Reconstructed from 31 Fungal Genomes
D. Floudas et al.
The enzyme family that enables fungi to digest lignin expanded around the end of the coal-forming Carboniferous period.

1719 Leucine-tRNA Initiates at CUG Start Codons for Protein Synthesis and Presentation by MHC Class
S. R. Starck et al.
T cells can use leucyl–transfer RNA (tRNA), instead of methionyl-tRNA, to initiate translation.

1723 CTD Tyrosine Phosphorylation Impairs Termination Factor Recruitment to RNA Polymerase II
A. Mayer et al.
Phosphorylation of a tyrosine inhibits the binding of termination factors and promotes the binding of elongation factors.

1726 Elastic Coupling Between RNA Degradation and Unwinding by an Exoribonuclease
G. Lee et al.
Rrp44 stores the energy from snipping off four bases and then uses it to unwind duplex RNA spasmodically.

CONTENTS continued >>
Response to Comments on "Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality"
R. E. Ricklefs and S. S. Renner
Full text at www.sciencemag.org/cgi/content/full/336/6089/1639-f

RESEARCH ARTICLE: Engineering a Prostate-Specific Membrane Antigen–Activated Tumor Endothelial Cell Prodrug for Cancer Therapy
S. R. Denneheide et al.
A prostate-specific membrane antigen–activated prodrug is being tested in patients with advanced cancer.

RESEARCH ARTICLE: AAV-Directed Persistent Expression of a Gene Encoding Anti-Nicotinic Antibody for Smoking Cessation
M. J. Hicks et al.
Gene therapy with an anti-nicotinic monoclonal antibody limits nicotine access to the brain in mice.

RESEARCH ARTICLE: Transplantation of Genetically Corrected Human iPSC-Derived Progenitors in Mice with Limb-Girdle Muscular Dystrophy
F. S. Tedesco et al.
Genetically corrected mesangioblasts contribute to muscle in mice with limb-girdle muscular dystrophy.

SCIENCE NEWS
www.sciencenews.org
Highlights From Our Daily News Coverage

Why Stress Makes You Miserable
Boosting a stress-related gene alleviates depression in rats.
http://scim.ag/Stress_Miserable

Who Controls Social Networks?
A Facebook study separates the leaders from the followers.
http://scim.ag/Social-Networks

The Elephant in the Womb
Ultrasound reveals how elephants remain pregnant for 22 months.
http://scim.ag/Elephant_Womb

PERSPECTIVE: How Plant Lysin Motif Receptors Get Activated—Lessons Learned from Structural Biology
R. Willmann and T. Nünzberger
A plant immune receptor is activated by chitin fragments that trigger receptor dimerization.

SCIENCE TRANSLATIONAL MEDICINE
www.sciencetranslationalmedicine.org
Integrating Medicine and Science

Comment on “Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality”
R. S. Etienne and J. Rosindell
Full text at www.sciencemag.org/cgi/content/full/336/6089/1639-b

Comment on “Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality”
C. Moran
Full text at www.sciencemag.org/cgi/content/full/336/6089/1639-c

Comment on “Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality”
A. Chen et al.
Full text at www.sciencemag.org/cgi/content/full/336/6089/1639-d

Comment on “Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality”
F. Monoz et al.
Full text at www.sciencemag.org/cgi/content/full/336/6089/1639-e

Comment on “Global Correlations in Tropical Tree Species Richness and Abundance Reject Neutrality”
J. N. Kheir et al.

FOCUS: Boosting Oxygenation During Acute Respiratory Failure
R. C. Koehter
A foam containing oxygen gas–filled microparticles delivers oxygen during asphyxia.

STATE OF THE ART REVIEW: Fresh Approaches to Anti-Infective Therapies
C. Nathan
Characterization of resistant pathogens, new government policies, and creative discovery efforts are needed to maintain an effective antibacterial arsenal.
Science 336 (6089), 1616-1730.