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On the Web This Week
>> Science Podcast  
Listen to stories on the fate of topsoil microbes under climate change, observations from Voyager 1 at the fringes of the solar system, attacking cancer with T cells, and more.

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Cover
False-colored laser confocal fluorescence photomicrograph of Microcoleus vaginatus PCC9802 (blue) and Microcoleus steenstrupii SON82 (red) (image width: 0.3 millimeters).

These two cyanobacterial strains are representative of the most abundant microbes in soil crusts of the arid lands in the western United States. M. vaginatus favors cooler climates, whereas M. steenstrupii prefers warmer areas. See pages 1533 and 1574.

Image: Estelle Couradeau and Ferran Garcia-Pichel/  
W. M. Keck Bioimaging Laboratory, Arizona State University

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D. S. Tournig et al.
Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1235490

1543 Crystal Structures of EF-G–Ribosome Complexes Trapped in Intermediate States of Translocation
J. Zhou et al.
Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1236086

1544 Control of Ribosomal Subunit Rotation by Elongation Factor G
A. Pulk and J. H. D. Cate
Crystal structures reveal how messenger RNA and transfer RNAs transition through the prokaryotic ribosome during translation. Research Article Summary; for full text: http://dx.doi.org/10.1126/science.1235970

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N. Bozinovic et al.
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T. Shima et al.
The collective reactivity of three hydride-bridged titanium centers cleaves dinitrogen under mild conditions.

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H. J. Melosh et al.
A detailed model of impact basin formation explains the gravity signatures near two lunar craters.

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L. Xue et al.
Measurements of permeability inside a fault zone after a major earthquake reveal rapid healing of fractures.

1556 Dynamic Topography Change of the Eastern United States Since 3 Million Years Ago
D. B. Rowley et al.
Mantle flow has deformed the presumed passive eastern margin of North America by up to 60 meters during the past 5 million years.

1564 Varied Response of Western Pacific Hydrology to Climate Forcings over the Last Glacial Period
S. A. Carolin et al.
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N. G. Hausdor et al.
An antibacterial peptide can tunnel through cell-surface pores to deliver an epitope signal and initiate cell death.

1574 Temperature Drives the Continental-Scale Distribution of Key Microbes in Topsoil Communities
F. Garcia-Pichel et al.
Climate change is likely to shift the distribution of key cyanobacteria species in desert soils.

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1577 Mechanism of Eukaryotic RNA Polymerase III Transcription Termination
S. Nielsen et al.
Formation of the secondary structure of the transcribed RNA facilitates termination during transcription.

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J. Mo et al.
RNA polymerase is a potent DNA-based torsional motor than can restart transcription after release of DNA supercoiling stress.

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Mechanical forces allow immune B cells to extract high-affinity antigens from membrane surfaces.

Deep Cortical Layers Are Activated Directly by Thalamus
C. M. Constantinople and R. M. Bruno
A direct pathway is used to evoke sensory responses in neurons in multiple layers of the rat barrel cortex.