

Microbe

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Features

Terabase Sequencing of
Terrestrial Metagenomes

Searching for Meaning in
the Protein Universe

Herbert Conn: Mark
Twain's Microbiologist
Muse

ASM News



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whereas deeper and older water samples contain less diverse microbial populations of chemoautotrophs with slow metabolic rates, Sherwood-Lollar continues. The water in these samples varies from tens of millions of years to as much as 2 billion years old, based on analysis of isotopic neon that formed at the same time as the rock. The age of these microbial populations is an open question, she says. "We have no suggestion that the microbial communities found are billions of years old, but . . . while many of the strains are novel, many others are most closely genetically related to thermophilic communities found at hydrothermal vents in the deep oceans."

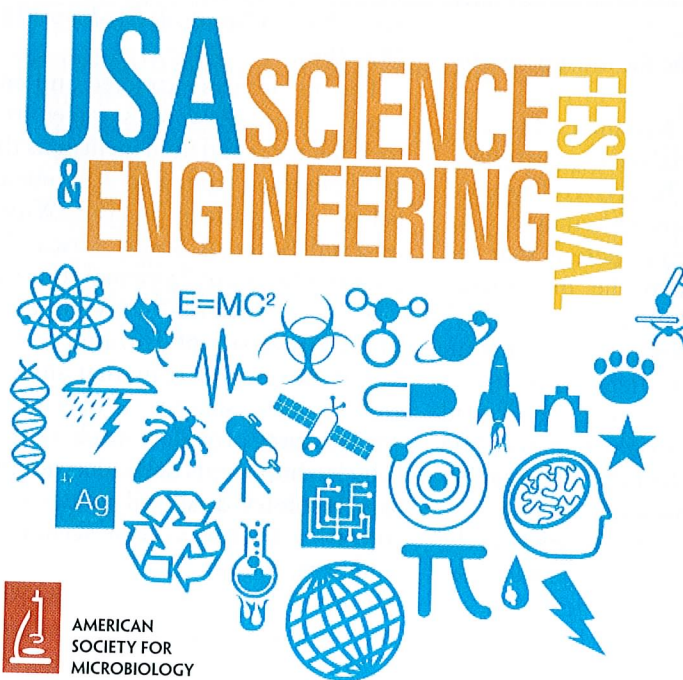
Barry E. DiGregorio

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Efflux Pumps Eyed for Solving Biofuel Toxicity Challenge in Microbial Producers

Endowing microorganisms with abundant efflux pumps might help such cells to overcome the toxicities that they face when overproducing biofuels, according to Aindrila Mukhopadhyay of the Lawrence Berkeley National Laboratory in California and her collaborators. "For microbial biofuel production to be cost effective, yields must exceed native microbial tolerance levels, necessitating the development of stress-tolerant microbe strains," she says. "It is crucial that we improve tolerance in parallel with the development of metabolic pathways for the production of next-generation biofuels." In survival competition experiments, the two microbial efflux pumps that performed best were the native *Escherichia coli* pump AcrAB and a previously uncharacterized pump from the marine microbe *Alcanivorax borkumensis*. In another set of tests, the efflux pump from the latter microbe enabled another microbial strain to produce more and to better tolerate limonene, a jet fuel precursor that otherwise is poorly tolerated by producer strains. Details appear in *Molecular Systems Biology* 2011 (7 DOI: 10.1038/msb.2011.21).

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