Scientists leave no stone unturned in their hunt for unique desert-adapted microbes

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Abstract

The Atacama Desert in northern Chile is the driest nonpolar desert on Earth. The almost complete lack of precipitation means that it can support very little life, especially in its hyperarid core. But this core region harbors expansive fields of ancient boulders that scientists think could shelter unique microbes from the extreme desert environment. To find out, researchers used DNA sequencing techniques to compare the microbes inhabiting the soil directly beneath the Atacama Desert boulders and in the open areas beside them. They found a substantial difference in these microbial communities, with significantly more archaea occupying the soil below the boulders than beside them. Remarkably, the team also discovered that many of these archaea belong to a completely new genus of Thaumarchaeota archaea, which they named *Candidatus Nitrosodeserticola*. These archaea harbor genes involved in ammonia oxidation, carbon fixation, acetate metabolism, and the ability to tolerate extreme environmental conditions. Together, these results not only provide further insight into the diversity of microorganisms and nutrient cycling processes in extreme desert environments but may also facilitate the development of strategies to manage nutrient depletion in regions undergoing desertification.