

Scientists find evolutionary clues while examining microbes in far-flung hot springs

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Scientists conducted microbial DNA sampling at a Yellowstone National Park hot spring for a study sponsored by DOE's Biological and Environmental Research program, the National Science Foundation and NASA. Credit: Mircea Podar/ORNL, U.S. Dept. of Energy

Oak Ridge National Laboratory scientists studied hot springs on

different continents and found similarities in how some microbes adapted despite their geographic diversity.

The findings yield clues to the evolution of life and whether some of the hardiest microbes may be harnessed for biotechnology. The research is published in the journal *Environmental Microbiology*.

The [study](#) was the first of its kind to sample [hot springs](#) on three continents with [water temperatures](#) above 65° (149° Fahrenheit) in the United States, Iceland and Japan.

The environments have unique geology and chemistry, almost like a fingerprint, so it was surprising to find highly related microbes separated by thousands of miles, said ORNL's Mircea Podar, co-lead of the study with researchers at Montana State University.

"We found common [microbes](#), but also diversity as the microorganisms adapted to local conditions," Podar said. The scientists theorize that tectonic conditions and geology of the hot springs are at play, providing new insights into how life and the Earth have co-evolved.

More information: Daniel R. Colman et al, Tectonic and geological setting influence hot spring microbiology, *Environmental Microbiology* (2023). [DOI: 10.1111/1462-2920.16472](https://doi.org/10.1111/1462-2920.16472)

Provided by Oak Ridge National Laboratory

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