Diversity of Thermophilic archaea isolated from the hot spring
Unzen and Obama in Japan

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We have been isolating thermophilic archaea from hot springs in Japan to explore novel taxa and to apply comparative taxonomic researches. The isolates were initially determined the partial 16S rRNA gene sequences to allocate their phylogenetic positions. Several isolates that are thought to represent new genera or species in the orders Thermoplasmatiales and Sulfolobales are currently characterized taxonomically to decide their taxonomic positions. In this paper, we isolate and group another thermophilic archaea from Unzen and Obama hot springs in Nagasaki, Japan.

We collected hot spring samples from Unzen and Obama in Nagasaki prefecture on April 1, 2004. Isolates were obtained by the enrichment method using a modified Sulfolobus medium under several growth conditions by changing gas phase, temperature and pH, followed by purification by the repeated serial-dilution method under the same growth conditions. So far, we have isolated 9 bacterial and 15 archaeal strains from these samples. According to the 16S rRNA gene sequence comparison, 13 out of the 15 archaeal strains were seemed to relate to Acidianus infernus, Metallosphaera sedula, Sulfurisphaera ohwakuensis, Thermoplasma acidophilum and Vulcanisaeta distributa. Another two isolates were closed to Caldisphaera lagunensis, but significantly distant from the species to warrant that the isolates should represent at least a new species (similarity values <97%). The Vulcanisaeta distributa-like strains were slightly separated from currently known strains (similarity values >98%). Thus, all of Vulcanisaeta distributa strains can be subdivided in accordance with the isolation sites, and the set of the Vulcanisaeta distributa strains may be helpful to consider how the thermophilic archaea speciate by the geographic separation.