Analysis of Archaea Community in Hydrothermal Fluid collected at SuiyoSeamount on the Izu-Ogasawara Arc

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Archaeal communities in extreme environment have been analyzed by amplifying and cloning 16S rDNA. The culture-independent method revealed archaeal communities with much higher diversities than those found by conventional culture methods. In this work we have extended the culture-independent method to the analysis of microbial diversity in a deep-sea sub-floor.

As a part of the Archaean Park Project supported by Special Coordination Fund, several holes (APSK01, 02-07) were bored in the crater of the Suiyo seamount on the Izu-Ogasawara arc, Japan (about 1,400 depth). Hydrothermal fluid from the bored holes was sampled at 2 sites (APSK03, 04) on Suiyo seamount. Chimney sample (HY#12-CM) was also sampled. The fluids were filtered to collect the microbial cells. Filters and chimney samples were crushed and DNA was extracted and purified. The DNA was used to amplify archaeal 16S rDNA fragments by PCR using an archaea specific primer set. The PCR fragments were cloned and sequenced. We obtained several types of clones; clones related to H2-dependent anaerobic hyperthermophilic archaea, clones related to methanogens, and the clones related to uncultured Crenarchaeota and Euryarchaeota. H2-dependent anaerobic community is expected to be present under the sub-sea floor of Suiyo seamount.