Bacterial Community in the Hydrothermal System at Suiyo Seamount on the Izu-Ogasawara Arc.

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Microbial community in hydrothermal area at seafloor has been analyzed by culture-independent methods. Hydrothermal fluid from natural vents and vent chimneys have been analyzed by PCR (Takai et al. 1999, 2001; Summit et al. 2001; Wery et al. 2002). They contain varieties of microbes including hyperthermophilic Bacteria and Archaea. Hyperthermophilic microbes have been isolated from these environments. Though the analysis of these samples can provide the window to penetrate the microbial community under the seafloor, more direct analysis is desired for better understanding of the sub-seafloor microbial community.

In the Archaean Park Project supported by Special Coordination Fund, several holes were bored and cased in the crater of the Suiyo seamount on the Izu-Ogasawara arc, Japan (about 1,400 m depth) in 2001 and 2002. Hydrothermal fluids were sampled at various sites of cased hole at Suiyo seamount. The fluids were filtered to collect the microbial cells. The DNA was used to amplify bacterial 16S rDNA fragments by PCR using a bacterial specific primer set. The PCR fragments were cloned and sequenced. FISH analysis revealed from 6 x10*3 to 2.5 x 10*6 cells/ml in these hydrothermal fluids. Clone-analysis showed significant variation in Eubacterial sequences found in these samples. The species-patterns suggest that the contamination of ambient seawater to hydrothermal fluid of APSK08 is low and that to hydrothermal fluid samples of the other sites are negligible. Difference in the dominant species depending on the location was found, suggesting that the Eubacterial community at sub-sea floor is not monotonous but has gradual shift from the hydrothermal center to peripheral area.