

Hydrothermal microbial ecosystem at the Suiyo Seamount: of where microbes in extremely hot fluid came?

Akihiko Maruyama[1], Michinari Sunamura[1], Yowsuke Higashi[1], Junichiro Ishibashi[2], Koji Mori[3], Satoshi Hanada[4], Chiwaka Miyako[5], Kenji Nanba[5], Tatsunori Nakagawa[6], Kurt Hara[7]

[1] AIST-BR, [2] Dept. Earth & Planet. Sci., Kyushu Univ., [3] AIST, [4] Natl. Inst. of Adv. Ind. Sci. & Tech. (AIST), [5] Aquat Biosci, Tokyo Univ, [6] Biological Sci., Tokyo Metro. Univ, [7] Mol. Biol., Tokyo Univ. of Pharm. and Life Sci.

From June to December 2001, we participated in 4 research cruises for the Suiyo Seamount on the Izu-Ogasawara Arc to elucidate microbial life in this deep-sea hydrothermal system, as part of special coordination funds for the promotion of -the Archaean Park Project-. For BMS excavation core samples, hydrothermal fluid and in situ incubator samples collected from natural vents and drill holes using manned/unmanned submersibles, and hydrothermal plume samples collected inside/outside the caldera, molecular and cellular analyses were advanced on phylogenetic diversity, standing crop and metabolic activity of microorganisms. As the result, not only from low-temperature fluid and hydrothermal plume, but considerable number of microbes was also detected in extremely hot hydrothermal fluid. Most of these microbes could be assigned to the Bacteria domain in fluorescent in situ hybridization analysis. Phylogenetic analysis indicated that microbial community in hydrothermal fluid and in situ incubator samples consisted mainly of the epsilon group of Proteobacteria. Archaea clones were also detected in samples from some specific sites and samples. Here, we overview our microbiological data and present some hypothesis on - of where microbes in extremely hot fluids came?