

## Ecology and physiology of uncultivated Archaea in the sediments from deep-sea hydrothermal field

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Based on 16S rRNA gene clone analyses in many environments, it is revealed that only some classes of Archaea have been cultivated and characterized. Especially in deep-sea sediments, most of the archaeal 16S rRNA gene sequences obtained by PCR amplification belong to uncultivated classes except for few methanogens. In addition, we have no idea for the ecology and physiology of these uncultivated archaeal lineages besides ANME (Anaerobic methanotroph) Archaea. In this study, we conducted multidisciplinary approach including microbiology, geochemistry and geophysics to sediments with steep chemical and physical cline associated with hydrothermal activity. Sediment cores were obtained by 'Shinkai 6500' during YK03-05 (2003) and YK04-05 (2004) from Yonaguni Knoll IV hydrothermal field located at the Southern Okinwa Trough. The sampling station was around the Abyss vent discharging 80C fluid. Before the coring from the sea floor, in situ temperature of sediments was determined by temperature probe. In this study, we conducted culture-independent analysis: 16S rRNA gene and mcrA (Methl CoM reductase subunit I) clone analysis and quantitative PCR, and culture dependent analysis. In this presentation, we will discuss about physiology and ecology of uncultivated Archaea comparing in situ geochemistry and temperature.