

## **Global distribution patterns of aerobic and anaerobic microbial communities in deep subseafloor sediments**

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Understanding of geographical distribution pattern of deep subseafloor life in marine sediments is of fundamental importance but challenging, because it requires extensive explorations involving scientific drilling at various geological and oceanographic settings. In this project, we extracted DNA from ~300 deep-frozen sediment cores obtained during the past 15 years from ~40 drilling sites off Peru and the eastern equatorial Pacific (Ocean Drilling Program Leg 201), the eastern flank of the Juan de Fuca Ridge (Integrated Ocean Drilling Program [IODP] Expedition 301), the Porcupine Seabight off Ireland (IODP Exp. 307), the Gulf of Mexico (IODP Expedition 308), the Mariana Trench (KR05-08), the Nankai Trough subduction zone (IODP Expeditions 315 and 316), off the Shimokita Peninsula of Japan (The *Chikyu* Shakedown Cruise CK06-06), the South Pacific Gyre (IODP Expedition 329), the Japan Sea (IODP Expedition 346), the Baltic Sea (IODP Expedition 347), the South Atlantic Ocean (KN223), and the Bengal Fan (International Ocean Discovery Program Expeditions 353 and 354). Using the worldwide DNA assemblage, we quantified archaeal and bacterial 16S rRNA (16S) genes using a microfluidic digital-PCR, and also sequenced all 16S gene fragments using the Illumina Miseq system. The analyses of taxonomic compositions and community structures as well as the statistic correlation analyses with various geological, geophysical and geochemical data provide the comprehensive distribution patterns of aerobic and anaerobic microbial communities in the global marine sedimentary biosphere.