

Metagenome analysis of Dome Fuji ice cores

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In Antarctica, the possibility of microbial activity in the ice sheet is very small due to the cold and dry environment. The ice cores from Antarctica, however, could preserve microorganisms in the ancient atmosphere trapped in the snow and ice of the ice sheet. The subglacial environment is thought to have maintained ancient ecosystems. The Japanese Antarctic Research Expedition has dug a deep ice core down to 3,035.22m in depth at Dome Fuji station in 2007. Around 3,030m, a special type of small ice pieces in ice and refrozen ice samples leaked into the borehole were collected. The water in the basal ice (or the subglacial water) possibly flowed out to the borehole and was frozen again. We examined microorganisms in the ice core samples near the bedrock by molecular DNA technique. We extracted the inner part of ice core samples using the melting head special designed for biological analysis. Our preliminary data support that microorganism have existed and been preserved in this subglacial environment.