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Analysis of Genetic Diversity of Phytoplankton in Lake Biwa using Molecular Biological Technique

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Seasonal variation of phytoplankton in Lake Biwa was investigated by denaturing gradient gel electrophoresis (DGGE) of polymerase chain reaction (PCR) amplified fragments of 16S rDNA from April 2009 to March 2010.

Water samples were collected at a pelagic site (water depth >90 m) of the north basin of Lake Biwa. Samples were collected at every 10 m depths. After extracting all DNA from the samples, 16S rDNA fragments were amplified using primers GC-341F/CYA781R, and the PCR product was analyzed by DGGE. The DNA sequences of DGGE bands were searched BLAST and constructed phylogenetic trees to estimate related species.

From December to April, diatom and cryptophyceae were mainly detected, and from May to November, cyanobacteria were dominant. In addition, unknown species were detected such as *Radiocystis* sp. and *Acaryochloris* sp., and various unknown genotypes were found in *Synechococcus* sp. By using this method, unknown species and diversity can be detected in Lake Biwa.

Keywords: phytoplankton, diversity, seasonal variation, PCR-DGGE