

주제발표 초록

1. Metagenome, the Untapped Microbial Genome, toward Discovery of Novel Microbial Resources and Application into the Plant Pathology

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Molecular ecological studies of microbial communities revealed that only tiny fraction of total microorganisms in nature have been identified and characterized, because the majority of them have not been cultivated. A concept, metagenome, represents the total microbial genome in natural ecosystem consisting of genomes from both culturable microorganisms and viable but non-culturable bacteria. The construction and screening of metagenomic libraries in culturable bacteria constitute a valuable resource for obtaining novel microbial genes and products. Several novel enzymes and antibiotics have been identified from the metagenomic approaches in many different microbial communities. Phenotypic analysis of the introduced unknown genes in culturable bacteria could be an important way for functional genomics of unculturable bacteria. However, estimation of the number of clones required to uncover the microbial diversity from various environments has been almost impossible due to the enormous microbial diversity and various microbial population structure. Massive construction of metagenomic libraries and development of high throughput screening technology should be necessary to obtain valuable microbial resources. This paper presents the recent progress in metagenomic studies including our results and potential of metagenomics in plant pathology and agriculture.

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