DNA Microarray Chip for Environmental Biomonitoring

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The DNA microarray technology allows high-throughput analysis of hundreds or thousands of genes in parallel. Its huge high-throughput character enables researchers to investigate whole-genome transcription profiling at one time, which was previously impossible, although the activity of specific genes could be investigated in parallel using blotting techniques. Recently, microarray technology was enhanced to understand the ecology, physiology, structure and function of complex environmental systems. DNA microarray technology is emerging into environmental biomonitoring fields.

The main purpose of this presentation is the introduction of application of the DNA microarray chip as a diagnostic tool for environmental biomonitoring fields. This presentation consists of the development of DNA microarray chip for detection of bacterial species with random genomic DNA probes, toxicogenomic analysis of toxic chemicals using bacterial cDNA microarray chip, development of whole cell-based biosensors using DNA microarray information, and transcriptome analysis of continuous water toxicity monitoring system.