

Protein Chip for Protein Expression Profiling and Diagnosis

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In a post-genomic era, a wealth of proteomic information and complexity of intracellular signaling processes have required an efficient analytical approach to unravel the complexity and accomplish a rapid, low-volume and multiplexed assay in a high throughput way. Such methods can be effectively used for basic biological research, diagnosis of diseases, identification of therapeutic markers and targets, and profiling of response to toxins and pharmaceuticals [3-9]. A great deal of studies have shown the utility of antibody (Ab) microarrays for the quantitation of specific proteins and the discovery of biomarkers based on comparative profiling of protein expression between sample and reference pools. Despite a number of studies regarding the construction and use of protein chips, however, its reliability in expression profiling remains a challenge. In this talk, I will demonstrate the use of antibody microarray for comparative expression profiling of proteins in L-threonine biosynthetic pathway of *E. coli* between wild type and high-producing counterpart. Feasibility and performance of Ab microarray were evaluated with respect to parallel quantitation for antigen-antibody interactions and parameters for microarray fabrication. In another example of protein chip, we illustrate the possibility of diagnosing lung cancer. Based on the mRNA expression levels, potential biomarkers were selected, and antibodies against them were used for construction of Ab microarray. Reliability and potential of the Ab microarray will be discussed.