S4-3

Ultra-Sensitive Microarray Protein Chip for Molecular Diagnostics.

Yunsuk Lee, Eunkyung Lee, Moon Hi Han and In-Cheol Kang[1]
[1]Department of Oncology, Graduate School of East-West Medical Science, Kyunghee University and Proteogen Inc

We have developed ProteoChips coated with ProLinkers that permit efficient high-throughput analysis of proteins via protein-protein interactions. ProLinkers contain two recognition sites that are essential for protein immobilization onto microarray chip by molecular recognition. One of the recognition sites is able to interact with amino group of protein while the other is able to bind tightly to the solid surface on chip. ProLinkers allow the formation of a SAM, which is useful for a process of protein immobilization without loss of activity. In terms of biological application of ProteoChips, the antigenic specificity, sensitivity and accuracy of ProteoChip were clearly demonstrated through antigen-antibody interactions using b-Galactosidase, CRP, and PSA. The detection limit of CEA, a cancer marker, which was spotted in the array on the ProteoChips was extremely low with a concentration of 1.0 femtogram/ml which has not been reported yet. Several lines of experimental evidence suggested that ProteoChips coated with Prolinkers should be a powerful tool for proteomics research including high-throughput analysis.

S4-4

Drug Discovery in Information Era: The Role of Bioinformatics

Seung-Moak Kim
I.D.R. Tech. Inc

Over the past ten years the term "bioinformatics" has ceased to be the domain of experts. The tools of the trade for Bioinformatics-databases, search engines, alignment and data mining, analysis tools-such as chip based technology have become accessible to and are increasingly widely used by a wide range of scientists from engineers to biologists to clinicians. How data base providers, software developers, chip designers and bioinformatics experts- indeed the whole world wide community of biological scientists-use the immense information resources that are becoming available will have a major impact on future human and environmental health. The key components of Bioinformatics include: Ability to analyze the data bases, and conversant with data mining tools; Identification of genes of interest to follow-up-choosing genes may be a difficult task for new sequences; Establishing functions for the gene of interest-functional genomics and establishment of model systems, a no simple task at this point; Diagnostic implications of the new genes as early markers in early intervention and patient stratification; Pharmaco-genomics or the ability to identify patient population that would respond to a given treatment because of a genetic markers- for ex. Alzheimer's patients, Hypertension and cancer etc., Medical informatics-clinician's ability to use the genomics and bioinformatics to benefit patient; Genes to drugs- ability to take the new gene and convert it into a therapeutic target; Finally, identification of new drug targets for therapeutic intervention. Computer-based drug design has caused a "quiet explosion" in modern drug discovery, transforming and accelerating every step in the drug discovery process. Starting with the computer- generated bar codes that go on DNA samples arriving in the lab for analysis, to the massive databases of genetic information that can be accessed over the Internet, computers have magnified the capability of scientists to collect, access, and analyze information, and even do "virtual" experiments