

RECENT ADVANCEMENTS IN PROTEINCHIP® ARRAY TECHNOLOGY FOR BIOAFFINITY STUDIES

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INTRODUCTION: Surface Enhanced Laser Desorption / Ionisation Mass Spectrometry (SELDI- MS) is an advanced analytical technique providing facile protein analysis of complex biological mixtures. Commercially, SELDI-MS has been embodied within Ciphergen's ProteinChip® Array technology (Fremont, CA, USA). ProteinChip Array surfaces function as solid phase extraction media that support on-probe isolation and cleanup of analytes prior to mass spectrometric investigation. Retained proteins are subsequently desorbed and ionised using matrix assisted, surface enhanced laser desorption / ionisation and detected using a time-of-flight mass spectrometer. ProteinChip Array technology has been successfully applied to the discovery and characterization of many valuable biomarkers of organic disease and cancer as well as extended to routine toxicological studies employing samples of various origin. Convenient sample preparation schemes for whole cell, biological fluids, and cellular lysates have been developed using this simplified approach.

This talk focuses upon some of the most recent SELDI technological advancements made in our laboratory. Recent progress in the realms of array development, tandem ms technology, and on-chip proteolysis will be reviewed with an emphasis upon their utility in analysing real world, complex biological samples.