

Bio-Plex: 100 Multiplex Protein Array System

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The advent of combinatorial chemistry, automated high-throughput screening (HTS) and genomics have led to a new paradigm for drug discovery and biochemical assays. The combination of these technologies has removed the historical drug discovery bottleneck at lead generation. While primary, high throughput screening typically provides plenty of data for a single compound, lead validation requires more precise quantitative data, and a deeper understanding of the effects of drug candidates, inflammation and signal transduction pathway within cells or animals. This secondary, "high content" screening is based on panels of tests that determine molecular activities in cells or animals, allowing decisions on advancing compounds to be based on the aggregate results. An ideal tool for quantitating the key molecules is one that can simultaneously monitor the expression levels and functional state of numerous proteins. The Bio-Plex protein array system is a flexible, easy-to-use protein analysis system that permits simultaneous quantitative analysis of up to 100 different proteins and peptides in a single microtiter well. By multiplexing with the Bio-Plex system, researchers can dramatically increase the amount of useful information from rare or volume-limited samples, and decipher complex interrelationships between proteins involved in signal transduction pathways.

The Bio-Plex Suspension Array System is a bead-based, highly multiplexed fluorescent microplate analysis system that is capable of simultaneously quantitating up to 100 bioassays in individual wells of 96-well microtiter plates. With such a "multiplexing" capability, biochemical markers can be evaluated as synergistic groups rather than evaluated individually, resulting in an assay that sheds more light on the biological processes. The microtiter plate based system uses a dual laser detector with real-time digital signal processing to distinguish, in a single drop of sample, up to 100 different families of color-coded, each bearing a different homogenous capture assay. Integrated Bio-Plex Manager™ software facilitates and simplifies template set-up, data analysis, determination of concentration and CV, standard curve plots, qualitative and quantitative analyses, and automated start-up and shut-down, maintenance, and validation(IQ/OQ) functions to ensure optimum performance of the Bio-Plex assay kits. It is amenable to a wide variety of bioassay formats, including immunoassays, genotyping, protein-protein interactions, and post-translational modification. Multiplex assays directed towards common cytokines and phosphoproteins are available in pre-packaged forms to simplify the assay development process. This system offers the advantage of sample saving, reagent, time and labor saving, as well as increased data output. This is important in instances where sample is in limited quantity. Alternatively, users can create their own assays using their own proteins with a Amine coupling kit. In a word, the simultaneous analysis of multiple analytes increases the amount of useful contents, facilitating more informed decisions in the biological and pharmaceutical researches.