

Biomarker - Discovery, Detection & Screening Services

Custom high density biomarker assays based on the flexible μ ParaFlo[®] microfluidics technology.

An important but challenging part of combating tough diseases like cancer and heart disease is the identification of key biomarkers at early stages of the disease from samples that are easily obtained by the least invasive methods.

LC Sciences is a genomics and proteomics company offering innovative, customizable, and comprehensive microarray services for nucleic acid/protein profiling, functional analysis and biomarker-discovery, detection and screening services. We provide unique one-stop products and services for assays of DNA, RNA, protein, enzymes, antibodies, or small molecule biomarkers based on our miniature microfluidic assay device, μ ParaFlo[®].

LC Sciences is the only one-stop shop for developing an integrated microarray assay for both nucleic acids and proteins, giving researchers the most comprehensive picture of biomarker activities ever available from a single platform. Synthesis of totally custom sequences of such a broad range of biomolecules makes these devices suitable for both discovery and detection/sensing applications.

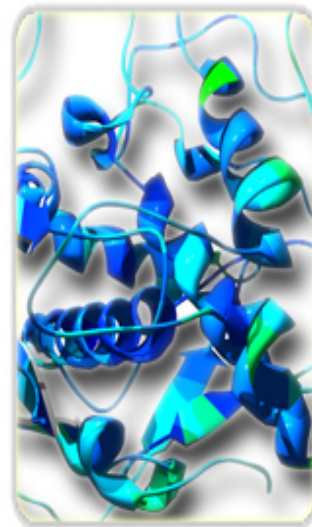
- **MICRORNA BIOMARKERS**
- **APTAMER BINDING BIOMARKERS**
- **PROTEIN KINASE BIOMARKERS**
- **AUTOANTIBODY BIOMARKERS**
- **PHOSHOPEPTIDE-BINDING PROTEIN BIOMARKERS**

Our genomics products and comprehensive services include sequence retrieval from public databases and literature, and/or assistance with your sequence designs, nucleic acid hybridization assays using samples provided by you, single or dual color detection of the hybridization using a suitable method, image data processing, and signal data processing.

Our proteomics products and comprehensive services include the use of custom synthesized peptide microarrays based on the PepArray[™] technology which enables the total customization of content on each individual microarray to suit your needs. The technology allows us to synthesize thousands of custom peptides (sequences can be defined to each single amino acid residue) on an addressable array to act as kinase substrates, antibody epitopes, or protein binding ligands. We can perform enzymatic/binding reactions in a high-throughput format and generate quantitative results in a controllable, enclosed environment with minimal sample usage.

MICRORNA BIOMARKERS

miRNAs are showing great potential as biomarkers as their control over cellular biological processes and contributions to the pathogenesis of diseases is slowly elucidated. It is now known that they influence cellular functionality by key regulation of gene expression, causing either translational inhibition or mRNA degradation. It is this regulation and deregulation that has been shown to influence the development of normal cells into diseased cells. Understanding exactly when and how miRNA expression is influencing this development will undoubtedly help lead to improved diagnosis and possibly treatment for certain disease types. Microarray detection is proving to be an important tool in this endeavor as it enables global expression profiling of miRNA, creating an expression signature for cells at particular stages of development or disease progression and so offers



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LC Sciences provides a genome-wide microRNA (miRNA) expression profiling service using μ Paraflo[®] technology and proprietary probe design, which enable highly sensitive and specific direct detection of miRNAs. We have standard arrays for mature miRNA of all species available in the latest version of the miRBase database (Release 15.0). Our service is comprehensive and includes sample preparation of your total RNA sample, single or dual color labeling, hybridization, image data processing and in-depth data analysis.

APTAMER BINDING BIOMARKERS

Custom DNA, RNA (2'-OMe), or peptide aptamer microarrays can be used as molecular detection agents for aptamer biomarker binding. LC Sciences provides unique aptamer microarray services using a novel μ Paraflo[®] technology, a list of aptamer sequences, and sequence design software. The aptamer microarrays are applied for protein bindings, drug candidate screening, and biosensor engineering. Our comprehensive service includes assistance with sequence design, synthesis of standard or custom DNA, RNA (2'-OMe), or peptide aptamer microarrays, and binding assays using protein targets provided by you. Our aptamer binding assays use single or dual color detection as well as quantitative measurements of the binding using a suitable method, image data processing, and signal data processing.

PROTEIN KINASE BIOMARKERS

Through the use of peptides as specific kinase substrates, we can make quantitative measurements of protein kinase biomarker activities. Measuring kinase biomarker activity on a peptide microarray offers the opportunity to study thousands of specific substrates in a single experiment.

LC Sciences provides a comprehensive kinase analysis service utilizing high density protein kinase substrate (PKS) peptide microarrays synthesized on PepArray[™] microfluidic chips for proteomic scale kinase profiling, quantitative measurement of kinase kinetic activities in the absence or presence of protein kinase inhibitors, and biomarker discovery research. This comprehensive service includes synthesis of standard or customized peptide array, performing enzymatic assay, array data acquisition, data analysis and completion of report. LC Sciences kinase microarrays may contain a comprehensive sets of known kinase substrates or your custom sequences.

AUTOANTIBODY BIOMARKERS

Detect the presence of autoantibodies in response to any diseased condition in your biological sample. Through the use of overlapping peptides as specific antibody epitopes on a custom synthesized addressable peptide microarray (PepArray[™]), we can systematically screen thousands of sequences in a single experiment and make quantitative measurements of antibody/epitope binding. This combination of high-throughput capacity with quantitative measurements, enables us to quickly and efficiently identify autoantibody biomarkers.

LC Sciences now offers a comprehensive epitope mapping service for high throughput, high-resolution identification of epitopes and other protein-protein interactions. A proprietary microarray platform and advanced microfluidic technologies ensure quantitative measurements of binding events. This combination of high-throughput capacity with quantitative measurement enables us to quickly and efficiently identify high affinity and high specificity target binding compounds. Epitope mapping assays are applicable for immunological studies, vaccine development, and biomarker development.

PHOSPHOPEPTIDE-BINDING PROTEIN BIOMARKERS

Phosphopeptide-binding or domain-binding is a common property among signaling proteins. We offer a simple, high-throughput method for obtaining quantitative measurements of protein biomarker activities. Customer specified phosphopeptides are in situ synthesized on an addressable high density microchip. The PepArray[™] technology also provides the flexibility of synthesizing microarrays containing probes with modifications such as phosphopeptides, peptidomimetics, other amino acid analogs or various other types of modifications. Incorporation of modifications greatly increases the number of applications for these microarrays.



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