



## Multiplex Analysis with Fluorescent Bead Array

### Technology description

The multiple analyte profiling technology (xMAP™) from Luminex Corporation allows the simultaneous detection and quantification of up to 100 different analytes **within a single small sample volume**.

This multiplex analysis technology incorporates bioassays, fluorescent microspheres as solid support, fluidics, lasers and advanced computer algorithms. The 5.5 µm polystyrene beads internally dyed with different ratios of two distinct fluorophores (red and infrared) present carboxyl groups on their surface.

As a result, each bead can be conjugated with its own specific detection reagent in a different way.

### Phases of the assay

#### 1/ Incubation

The conjugated microspheres are mixed and incubated with the sample in a 96-well microplate to react with the specific analytes.

#### 2/ Reaction

To detect and quantify each of the captured targets, a fluorescently labelled reporter molecule that specifically binds the analyte is added. Most of the time, the reporter molecule is the combination of a biotinylated antibody and a streptavidin molecule labelled with phycoerythrin.

#### 3/ Detection

Following the incubation, the contents of each well is led into the array reader and precision fluidics align the beads in single file through a flow cell where **two lasers excite the beads individually**: the red classification laser excites the dyes in each bead, identifying its spectral address, and the green reporter laser excites the reporter molecule associated with the bead which allows the quantification of the analyte captured in the immunoassay.

#### 4/ Quantification

Software simultaneously records the fluorescent signals for each bead, translating the signals into data for each bead-based assay.

### Multiplex assay for

- Allergy/Autoimmunity profiling
- Infectious disease detection
- Cancer biomarkers identification
- Cytokines measurements
- Vaccine release test
- Enzyme activity
- R&D applications for individual requirements.

## Benefits

- Easy to use multi-analyte detection system
- High sensitivity (similar to ELISA) and great specificity
- Short detection time with real-time analysis and accurate quantification of the multiple biological interactions in 96 samples
- Significant reduction of laboratory costs
- Works effectively with low consumption of biological sample and analytes per multiplex assay
- No additional washing stage needed
- Detection of all kind of biomolecules



# Our multiplexed assay platform



MULTIPLEXED  
ASSAY

Based on its expertise in coupling chemistry, and a specialized team with years of experience on the xMAP™ Luminex technology, Indicia Biotechnology develops multiplexed immunoassays for diagnostic and bioanalytical applications.

In order to cover all customer needs, we offer a large panel of services:

## Bead conjugation

- Coupling of analyte (proteins, peptides, antibodies) with optimized binding procedure
- Quality Control: beads numeration, control of bound molecules
- First evaluation of bead's performance.

## Feasibility study

For customers who wish to investigate the performance of the technology before acquiring the instrument, our team can conduct a rapid feasibility study with its application.

## Singleplexed and multiplexed immunoassays development

- Evaluation and screening of raw materials
- Preparation of reporter molecules
- Bead conjugation
- Optimization of each singleplexed immunoassay condition
- Multiplexed assay development and cross-reactivity study
- Reproducibility and stability evaluation of bead reagents
- Validation.

## Reagent manufacturing (OEM)

On request, Indicia Biotechnology provides coated-beads and ready-to-use kits.

## Sample analysis

Indicia Biotechnology can validate and run your samples in any commercial kit. Sample analysis results are provided in electronic and written formats specifying the origin of all key reagents and detailed method protocols.



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