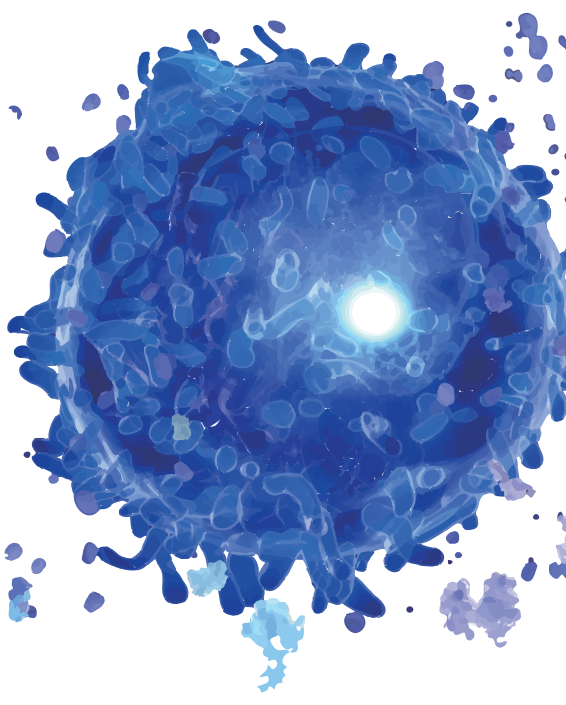
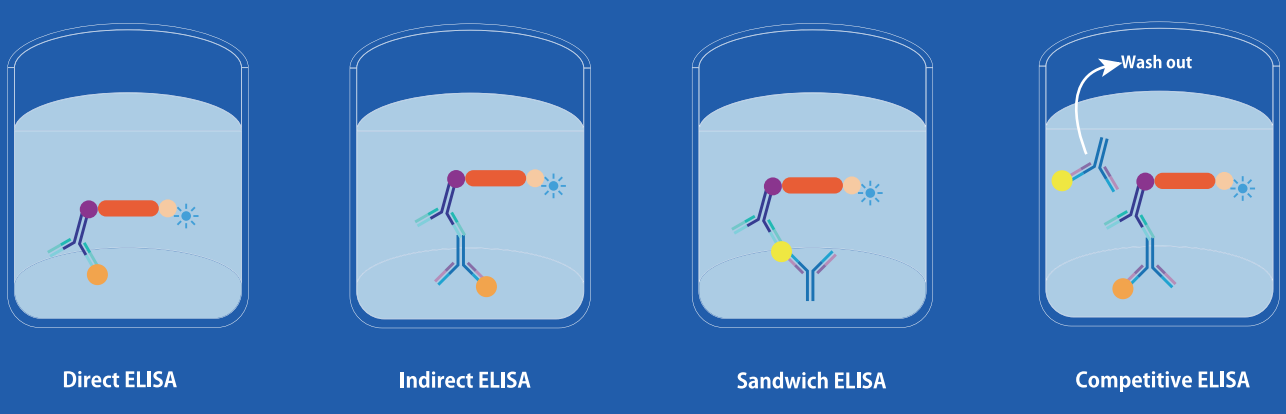
Cytokine Detection Technology

Cytokines are a class of highly active, multifunctional, soluble small-molecule proteins secreted by activated immune cells and certain stromal cells. Cytokines are widely involved in various biological functions such as immune response, cell migration, signal transduction through paracrine, autocrine, and endocrine approaches. Cytokine assays can assist in determining the immune function of the body and help in research related to the disease mechanism, diagnosis, and treatment. There are various assays for cytokines, and you can choose the most appropriate assay according to sample size, assay needs, and budget.



Enzyme-linked immunosorbent assay (ELISA)

ELISA is the most commonly used immunoassay. This assay uses a primary antibody for capturing and a secondary antibody linked to an enzyme or radioisotope for detection. While most ELISA kits can only detect one cytokine at a time, novel multiplexing systems have managed to overcome this limitation by simultaneously detecting the expression of multiple cytokines in a single assay.

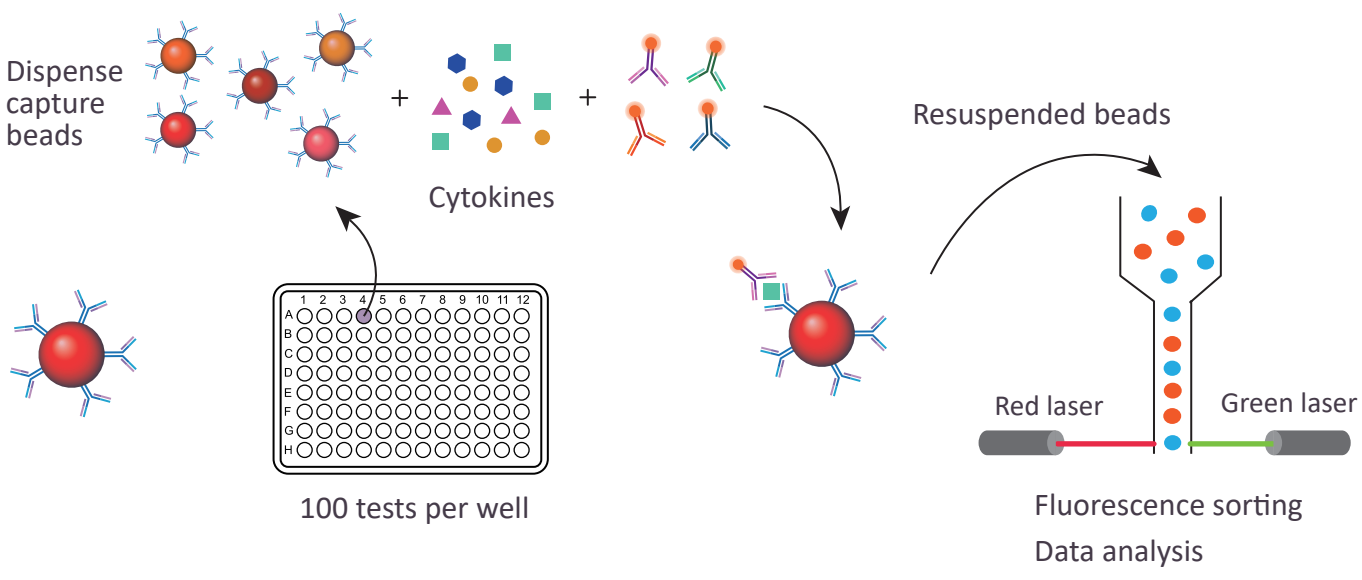


Features:

- Mostly single-indicator assays, but can also be customized for multi-indicator assays
- More suitable for validation studies
- Suitable for serum, plasma, urine, thoracic and ascitic fluid, cell culture supernatant, intracellular proteins, etc.
- Higher sample requirements (often 100~200 µL)
- High sensitivity (usually 20~100 pg/mL), good reproducibility
- Qualitative and quantitative
- Less costly

Luminex xMAP Technology

Polystyrene microspheres of 5.6 µm diameter are dyed with the two red sorting fluorescent dyes at different ratios, resulting in up to 100 fluorescent coded microspheres. Antibody molecules or gene probes are covalently cross-linked to specific coding microspheres, each of which corresponds to a specific assay. The fluorescent coding microspheres for each test are mixed and then added to the substance or amplification fragment to be tested, and the resulting complex reacts with the labeled fluorescent. Subsequently, microspheres are driven through the red and green lasers in a single column by the flowing sheath solution. Red and green lasers are used to determine the fluorescence code and fluorescence intensity of the reporter molecules on the microspheres, respectively. This method supported a rapid and accurate quantitative assay.

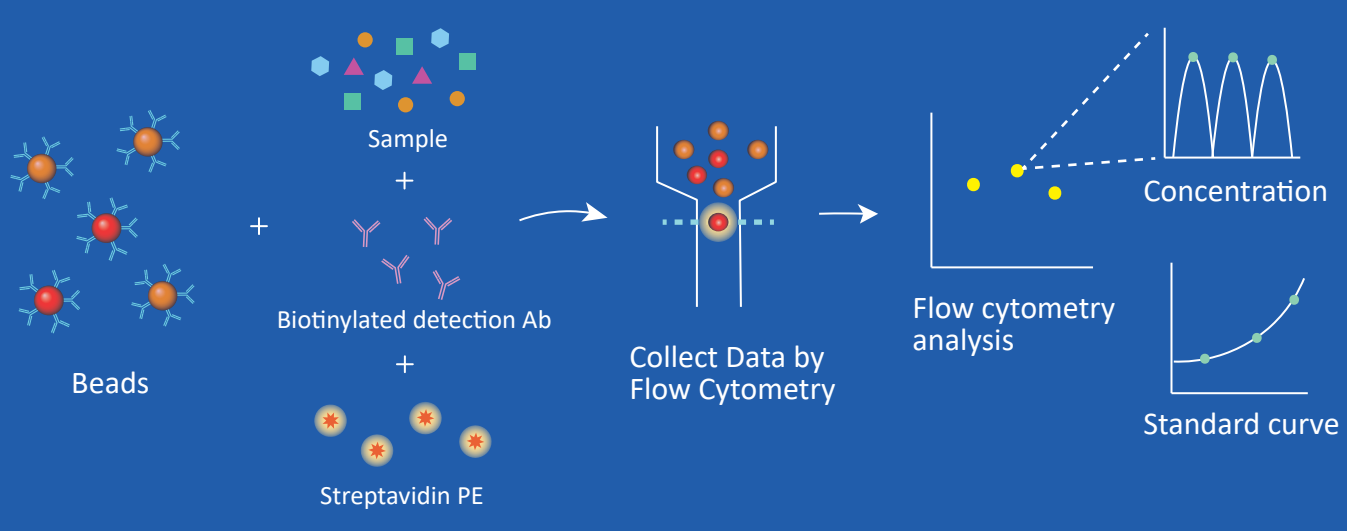


Features:

- More suitable for screening studies
- High throughput technology for simultaneous measurement of up to 80 proteins in a single well
- Low sample volume requirements, only 25 µL~50 µL of liquid sample and 200 µg of total protein are required for multiplexed assays
- Suitable for a wide range of biological samples, including serum/plasma, culture supernatant, cells, and tissue lysates
- Dual antibody sandwich & fluorescence assay for effective detection of micro-indicators at a lower limit, pg/mL

Cytometric Bead Array (CBA)

CBA is an applied technique that combines flow cytometric fluorescence detection and micro-sphere immunoassay to quantify multiple proteins simultaneously, easily, and quickly. The principle of CBA is that microspheres of different fluorescence intensities with capture antibodies can identify specific proteins, and are analyzed by flow cytometry after interacting with samples (e.g., serum, plasma, culture supernatant, cell lysate, etc.) and PE detection (detection antibody). Depending on PE fluorescence intensity, the analysis is performed by FCAP Array software, and standards are compared to determine or quantify results in the sample.



Features:

- Multi-parameter teasing, often 18 indicators can be measured
- Suitable for serum, plasma, tears, atrial fluid, saliva, body cavity lavage, cell culture supernatant, intracellular proteins, etc.
- Sample requirement is about 15~50 µL
- High sensitivity, usually 2~5 pg/mL
- Qualitative and relatively quantitative

Using these comprehensive assays, Creative Proteomics can meet the needs of different research stages for cytokine screening and detection, providing researchers the complete set of research solutions from protein system screening, focused assays/validation, to early monitoring.

Contact Us

Creative Proteomics