

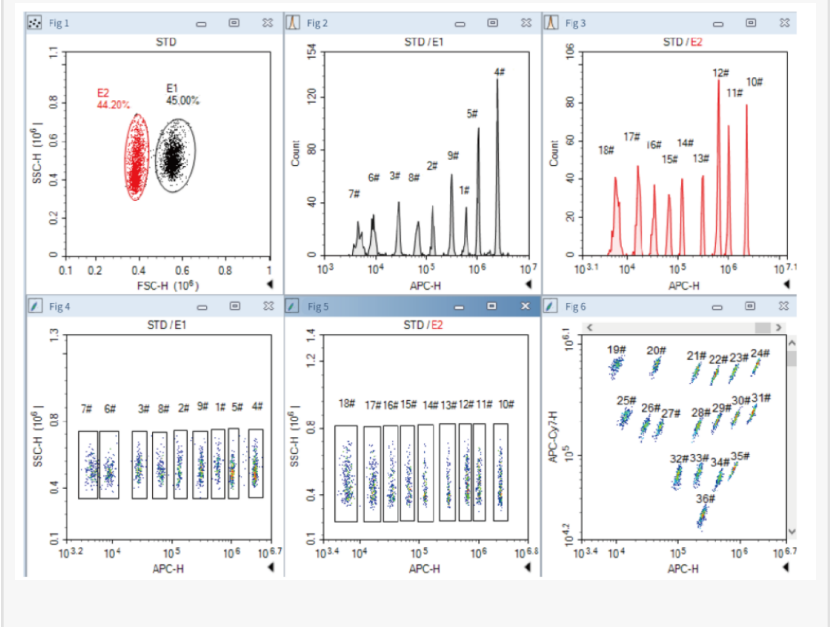
150,000 Global Flow Cytometers: Cloud-Clone CBA Technology Enables Restriction-Free Multiplex Assays

Cytometric Bead Array kits unlock existing laboratory flow cytometry hardware for high-throughput protein multiplex quantification

HUSTON, TX, UNITED STATES,
September 1, 2026 /EINPresswire.com/

Flow cytometers are nearly universal laboratory instruments across life-science research institutes globally. While dedicated multiplex detection platforms are powerful tools for protein profiling, many such specialised systems suffer from limited global deployment, creating practical barriers for many research teams. [Cloud-Clone's](#) Cytometric Bead Array (CBA) technology transforms widely-available flow cytometers into robust multiplex protein quantification systems. Researchers can perform high-panel multiplex measurements using existing laboratory hardware, removing barriers of specialised-instrument scarcity, long waiting times and high outsourced-testing costs. This news release introduces the technical principles, instrument compatibility, performance advantages and supply-chain strengths of Cloud-Clone CBA assay kits.

Flow cytometers represent standard laboratory infrastructure supporting core experimental workflows ranging from cellular immunophenotyping to cell-cycle and apoptosis analysis. Market statistics indicate over 23,000 new flow cytometer units were shipped globally in 2025, corresponding to a market size of USD 5.68 billion. Including installed base, the global inventory



of flow cytometers is estimated to sit between 150,000-200,000 units, meaning most life-science laboratories have access to at least one flow cytometer.

Nevertheless, researchers pursuing multiplex protein quantification often rely on dedicated suspended-bead multiplex detection platforms. Despite solid technical performance, these specialised analytical systems have relatively limited global installation numbers. Low instrument availability leads to booking bottlenecks, long lead-times and high costs for outsourced testing, preventing many research groups from conducting high-panel multiplex profiling.

Is there a solution that empowers laboratories to leverage their existing flow cytometers to run multiplex quantification workflows? Cloud-Clone Cytometric Bead Array (CBA) technology delivers exactly this capability.

CBA Technology: Empowering Multi-functional Workflows on Standard Flow Cytometers

At its core, CBA (Cytometric Bead Array) technology conjugates capture antibodies for distinct target analytes onto fluor-encoded microspheres. These bead populations are mixed and incubated with test samples to form sandwich-type “bead-target-detection-antibody” immune complexes, which are then analysed directly on a flow cytometer. The flow instrument identifies analyte identities via APC-based bead coding and computes target-protein concentrations by measuring PE fluorescence intensity.

Simply put, CBA converts a cell-analysis flow cytometer into a protein-quantification platform. Laboratories with existing flow cytometry hardware avoid large additional capital expenditure; multiplex high-throughput testing can be implemented simply by purchasing assay kits. Cloud-Clone CBA kits are compatible with mainstream flow cytometer models including Beckman Coulter DxFLEX and CytoFLEX series, BD FACSMelody and FACSCanto series, Agilent NovoCyte series, and Thermo Fisher Attune NxT. Entry-level analytical through high-end sorting flow cytometers can run the assays reliably when equipped with APC and PE channels; the APC-Cy7 channel is required for panels measuring more than 27 analytes.

Figure 1. Representative image of compatible flow cytometry instrument (Agilent NovoCyte)

Broad Compatibility Across Major Instrument Brands and Laboratory Settings

The global flow-cytometry market is dominated by several major suppliers. In 2023, Beckman Coulter, BD, Agilent and Thermo Fisher Scientific together captured approximately 78.3% of the global market share. This broad market footprint means Cloud-Clone CBA kits are functional for most mainstream flow cytometers deployed worldwide. Cloud-Clone’s dual-platform compatible design delivers high versatility with no hard restrictions on instrument brand or model. Assays only require the corresponding lasers and optical detection channels. This compatibility greatly lowers the practical barriers for multiplex biomarker research for laboratories operating mid-tier analytical flow cytometers.

Paradigm Shift: From Split-Sample Testing to Single-Tube Multiplex Readout

Traditional ELISA workflows demand repeated sample partitioning; measuring 36 analytes from one sample requires 36 separate reactions. This drives high sample consumption, accumulates

inter-assay variation, and risks data distortion from repeated freeze-thawing of precious clinical or animal-model specimens.

Benefiting from homogeneous liquid-phase reaction chemistry, Cloud-Clone CBA assays enable parallel detection of multiple analytes from merely 25 μ L sample volume. Assay sensitivity reaches pg/mL levels with a dynamic range spanning 3-5 orders of magnitude, and most samples do not require serial dilution retesting.

Cloud-Clone's newly released 36-plex neuro-endocrine-immune Panel demonstrates these strengths concretely. The panel integrates RAAS-system hormones (ALD, AngII), cardiac biomarkers (ANP, BNP), sympathetic nervous-system mediators (EPI, NE), vascular endothelial factor (EDN1), together with comprehensive Th1/Th2/Th17 cytokine profiles within a single reaction vessel. Previously, these analytes could rarely be measured in parallel on one platform due to methodological limitations. Now, a standard flow cytometer can deliver time-series datasets capturing both neuroendocrine perturbations and inflammatory immune networks in a single run.

Figure 2. Representative bead-array dot-plot data for Cloud-Clone 36-plex CBA panel

Supply-Chain Resilience: Independently-Sourced Core Assay Components

Geopolitical uncertainties create risks for global scientific-instrument supply chains. Secure, self-sufficient reagent development and manufacturing has become critical for sustaining research continuity.

Cloud-Clone develops CBA assays relying on in-house raw-material resources drawing from an antibody library exceeding 270000 clones. Core components including fluor-encoded microspheres and matched capture-detection antibody pairs are produced in-house. Every multiplex panel undergoes comprehensive cross-reactivity assessment, matrix-effect characterisation and spike-recovery validation. Typical spike recovery sits between 80%-120% with $R^2 \geq 0.97$, delivering performance comparable to internationally-available benchmark products.

The global installed base of 150000-200000 flow cytometers represents a vast existing research infrastructure. Cloud-Clone CBA Cytometric Bead Array technology unlocks the full potential of this widely-deployed laboratory hardware. Researchers can run high-throughput multiplex protein quantification within their own laboratories, without capital investment in new specialised equipment and without delays caused by outsourced sample testing.

As multiplex protein-profiling becomes instrument-agnostic, systems-biology research becomes more accessible to research teams worldwide. Cloud-Clone will keep expanding its CBA panel portfolio, continuously optimise assay performance, and support global researchers exploring complex immune, cardiovascular, neuroendocrine and inflammatory disease mechanisms.

For further product information, please visit Cloud-Clone official website: <http://www.cloud-clone.com/>.

About Cloud-Clone Corp.

Cloud-Clone Corp. is dedicated to the development and production of high-quality immunoassay reagents and detection solutions. With a focus on antibody engineering, multiplex assay

development, and cross-platform compatibility, the company provides research tools designed to support precision medicine and advanced biomedical investigation globally. Our core products and services include the research and development of proteins, antibodies, ELISA kits, primary cells, and multiplex cytokine assay kits, as well as professional CRO services to fully meet the diverse needs of biomedical research and related fields.

For more information about Cloud-Clone Corp, visit www.cloud-clone.com.

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