



Q&A with Ardena Experts

Comparison of ELLA and Meso Scale Discovery V-Plex technologies for biomarker analysis

Sijranke Post, PhD
Scientist – Project Manager

What is ELLA and MSD V-Plex, and how do they work for biomarker analysis?

ELLA from Bio-Techne is a benchtop automated ELISA platform for consistent biomarker detection, where the assay is performed in a validated cartridge to deliver fast, reproducible data with no manual steps. Advanced microfluidic circuitry performs every step of the assay process to help eliminate variability and minimize user error.

Meso Scale Discovery V-Plex assays on the other hand provide a rapid and convenient method for manually measuring biomarker targets within a single, small volume sample. The assays are sandwich immunoassays that use the electro-chemiluminescence technique and are validated by Meso Scale Diagnostics.

How do the two platforms differ in terms of assay performance?

ELLA's controlled automation helps ensure consistent results, regardless of the lab, instrument, or operator. It has a built-in standard curve, and single-plex assays quantify up to 14, 30, or 70 samples in triplicate (+ 2 QCs), while multiplex assays can measure 5-8 analytes for 30 samples in duplicate (+ 2 QCs).

In contrast, MSD V-Plex's requires the preparation of a standard curve, and single-plex assays can measure up to 35 samples in duplicate (+ 7 calibration standards and 3 QCs), while multiplex assays measure up to 10 analytes for 35 samples in duplicate (+ 7 calibration standards and 3 QCs).

ELLA is highly sensitive (e.g. IL-8 = 0.19 pg/mL), while MSD V-Plex is sensitive (e.g. IL-8 = 0.588 pg/mL).

Furthermore, individual preparation of the MSD assays can lead to inconsistent results that can depend on the lab, instrument, or operator.

How do the costs compare for ELLA and MSD V-Plex?

The costs of ELLA and MSD V-Plex kits vary per assay, but ELLA can be more cost-effective for certain assays. For instance, in general ELLA simple plex assays are more cost effective when > 70 samples (up to 50% of the costs of the MSD), while MSD Single-plex assays are more cost effective when ≤ 70 samples are analyzed. In addition, for multiplex the Simple Plex human Cytokine Screening Panel 2 (IFN-, IL-2, IL-6, IL-8, IL-10 and TNF-) is up to ~30% of the costs of MSD when compared to the MSD V-Plex Multi-plex human Proinflammatory panel I (same cytokines + IL-12p70 and IL-13). Both platforms offer QCs and CoAs for their kits.

How quick can data be delivered?

The turnaround time for data differs as well between both platforms; ELLA can analyze 200 samples within 1 day and results can be reported within 24 hours after the processing of the samples, while MSD V-Plex can analyze 200 samples within 3 days and report within 72 hours after the testing.

Find the table with the full comparison of ELLA vs. MSD V-Plex in the next page.

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through drug development**

Questions	ELLA	MSD (V-Plex®)
Kit description	Simple Plex Cartridge Kit for quantitation of analytes. Includes wash buffer and sample diluent SD13. For use with the Ella automated immunoassay system. QCs can be purchased separately	MSD V-plex kit with precoated plate (96-well) for use on de mesoscale platform. Includes calibrator, Sulfo-tag labelled antibodies, diluents and read buffer. QCs can be purchased separately (V-Plex Plus kit)
What type of analytes can be measured?	Immunology, Inflammation, neuroscience, cell and gene therapy, Cancer, COVID-19 Serology	Immunology, Inflammation, neuroscience, cell and gene therapy, COVID-19 Serology
What kind of studies are suitable?	Exploratory	Exploratory, primary end point
What type of species and number analytes can be measured on which platform?	Human (190), Mouse (37) and Rat (14)	Human (67), NHP (Cynomolgus and Rhesus monkeys; 30), Mouse (25), Rat (16) and Canine (5)
Sample compatibility	Serum, plasma, cell culture supernatants, urine, CSF	Serum, plasma, cell culture supernatants, urine, CSF
How much sample volume is required?	2.5 to 25 µL	25 µL
Is the assay prone for errors?	No (controlled automation help ensure consistent results no matter the lab, instrument, or operator)	Yes (Individual preparation can lead to inconsistent results dependent on lab, instrument, or operator)
Do I need to prepare a standard curve for the assay?	No (Built-in standard curve)	Yes
How many samples can be measured on a single-plex assay?	Single Plex assays quantify up to 14, 30, or 70 samples in triplicate (+ 2 QCs)	35 samples in duplicate (+ 7 calibration standards and 3 QCs)
How many analytes/ samples can be measured on a multi-plex assay?	5, 6, 7, or 8 analytes for 30 samples in duplicate (+ 2 QCs)	Max. 10 analytes for 35 samples in duplicate (+ 7 calibration standards and 3 QCs)
What is the turn around time for sample analysis?	1.5 hours / cartridge 200 samples can be analyzed within 1 day and reported within 24 hours after finish sample processing	4.5-5.0 hours / plate 200 samples can be analyzed within 3 days and reported within 72 hours after finish sample processing
What are the differences in costs?	e.g. Simple Plex Human IL-8 Cartridge > 70 samples is more cost effective (up to 50% of the costs of the MSD) e.g. Simple Plex human Cytokine Screening Panel 2 (IFN-γ, IL-2, IL-6, IL-8, IL-10 and TNF-α) almost always more cost effective (down to ~33% of the costs of the MSD)	e.g. Single-plex human IL-8 ≤ 70 samples is more cost effective e.g. Multi-plex e.g. human Proinflammatory panel I (IFN-γ, IL-1β, IL-2, IL-4, IL-6, IL-8, IL-10, IL-12p70, IL-13 and TNF-α)
Are QCs available?	Yes (High and Low control samples for some kits)	Yes (High, Mid, and Low control samples for some kits)
Are CoAs available (for kits and QCs)?	Yes	Yes
What are typical sensitivities?	Highly sensitive (e.g. IL-8 = 0.19 pg/mL)	Sensitive (e.g. IL-8 = 0.588 pg/mL)
What type of assays are readily available for each platform?	Single plex, Multianalyte (quantify 2, 3, or 4 target analytes in parallel), Multiplex and customizable cartridges are available	V-PLEX kits are available as individual analyte kits, preconfigured multiplex panels, and custom multiplex panels.
What are the differences in assay performance?	Highly reproducible Lot to lot consistency (Less than 7% variability across assay lots)	Reproducible Lot to lot variability observed
Can I easily transfer the assay to a different site?	Yes (only ELLA platform is needed)	Yes (however dependent on kit lot variability)
What other options available for each platform?	<ul style="list-style-type: none"> The customizable digoxigenin assay allows you to build your own immunoassay using your hand-picked reagents (48 samples). Viral Titer Quantification (AAV1, AAV2, AAV6, AAV8) Impurity Testing (CHO HCP, HEK 293 HCP 3G, Endonuclease) 	<ul style="list-style-type: none"> Preconfigured panels can be customized by choosing any subset of the panel's assays. These custom kits use the same components (plates, antibodies, and other reagents) as the preconfigured panels and meet the same specifications for quality and performance.